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ENCYCLOPÆDIA BRITANNICA.

R H I

Rhizo-
phora.

RHIZOPHORA, the MANGROVE, or *Mangle*, a genus of plants belonging to the dodecandria class; and in the natural method ranking under the 12th order, *Holoraceæ*. These plants are natives of the East and West Indies, and often grow 40 or 50 feet high. They grow only in water and on the banks of rivers, where the tide flows up twice a-day. They preserve the verdure of their leaves throughout the year. From the lowest branches issue long roots, which hang down to the water, and penetrate into the earth. In this position they resemble so many arcades, from five to ten feet high, which serve to support the body of the tree, and even to advance it daily into the bed of the water. These arcades are so closely intertwined one with another, that they form a kind of natural and transparent terrace, raised with such solidity over the water, that one might walk upon them, were it not that the branches are too much encumbered with leaves. The most natural way of propagating these trees, is to suffer the several slender small filaments which issue from the main branches to take root in the earth. The most common method, however, is that of laying the small lower branches in baskets of mould or earth till they have taken root.

The description just given pertains chiefly to a particular species of mangrove, termed by the West Indians *black mangles*, on account of the brown dusky colour of the wood. The bark is very brown, smooth, pliant when green, and generally used in the West India islands for tanning of leather. Below this bark lies a cuticle, or skin, which is lighter, thinner, and more tender. The wood is nearly of the same colour with the bark; hard, pliant, and very heavy. It is frequently used for fuel, for which purpose it is said to be remarkably proper; the fires which are made of this wood being both clearer, more ardent and durable than those made of any other materials whatever.—The wood is compact; almost incorruptible; never splinters; is easily worked; and were it not for its enormous weight, would be commodiously employed in almost all kinds of work, as it possesses every property of good timber. To the roots and branches of mangroves that are immersed in the water, oysters frequently attach themselves; so that wherever this curious plant is found growing on the sea-shore, oyster-fishing is very easy; and in such cases these shell-fish may be literally said to grow upon trees.

The red mangle or mangrove grows on the sea-
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shore, and at the mouth of large rivers; but does not advance, like the former, into the water. It generally rises to the height of 20 or 30 feet, with crooked, knotty branches, which proceed from all parts of the trunk. The bark is slender, of a brown colour, and, when young, is smooth, and adheres very closely to the wood; but when old, appears quite cracked, and is easily detached from it. Under this bark is a skin as thick as parchment, red, and adhering closely to the wood, from which it cannot be detached till the tree is felled and dry. The wood is hard, compact, heavy, of a deep red, with a very fine grain. The pith or heart of the wood being cut into small pieces, and boiled in water, imparts a very beautiful red to the liquor, which communicates the same colour to wool and linen. The great weight and hardness of the wood prevent it from being generally used. From the fruit of this tree, which, when ripe, is of a violet colour, and resembles some grapes in taste, is prepared an agreeable liquor, much esteemed by the inhabitants of the Caribbee islands.

White mangle, so termed from the colour of its wood, grows, like the two former, upon the banks of rivers, but is seldom found near the sea. The bark is gray; the wood, as we have said, white, and when green supple; but dries as soon as cut down, and becomes very light and brittle. This species is generally called *rope-mangrove*, from the use to which the bark is applied by the inhabitants of the West Indies. This bark, which, on account of the great abundance of sap, is easily detached when green from the wood, is beaten or bruised betwixt two stones, until the hard and woody part is totally separated from that which is soft and tender. This last, which is the true cortical substance, is twisted into ropes of all sizes, which are exceedingly strong, and not apt to rot in the water.

RHODE-ISLAND, one of the smallest of the United States of America, not exceeding 47 miles in length and 37 in breadth, is bounded on the N. and E. by the province of Massachusetts; on the S. by the Atlantic, and on the W. by Connecticut. It is divided into five counties, viz. Newport, Providence, Washington, Bristol, and Kent, which are subdivided into 30 townships, containing 68,825 inhabitants, and including 948 slaves. This state is intersected by rivers in all directions; and the winters in the maritime parts of it are milder than in the interior of the country. The summers are delightful, and the rivers and bays teem with

A

fish

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fish of different kinds. It is generally allowed by travellers, that Newport is the best fish market in the world. This state also produces rye, barley, oats, and in some places wheat sufficient for home consumption. Cyder is made here for exportation; and it abounds with grasses, fruits, and culinary roots and plants, all of an excellent quality. The north-western parts are but thinly inhabited, and more rocky and barren than the rest of the state. There are extensive dairies in some parts of it, which produce butter and cheese of the best quality, and in large quantities for exportation. Iron ore is found in great abundance in many parts of the state; and the iron-works on Patuxet river, 12 miles from Providence, are supplied with ore from a bed about four miles and a half distant, where a variety of ores, curious stones, and ochres, are also met with; and there is a copper mine mixed with iron in the township of Cumberland. This ore is strongly impregnated with loadstone, large pieces of which have been found in the vicinity; but no method has yet been discovered of working it to advantage. Here also lime-stone abounds, of which large quantities of lime are made and exported. This stone is of various colours, and is the genuine marble of the white, plain, and variegated kinds, receiving as fine a polish as any stone in America. In this state there are also several mineral springs, to one of which, not far from Providence, numbers resort to bathe, and drink the waters. The chief towns of the state are Providence and Newport. The slave-trade, which was a source of wealth to many, has been happily abolished. Bristol carries on a considerable trade to Africa, the West Indies, and different parts of the United States: but the inhabitants of the prosperous town of Providence have in their hands the greatest part of the commerce; they had 129 vessels in the year 1791. The common exports are flax-seed, timber, horses, cattle, beef, pork, fish, poultry, onions, butter, cheese, barley, grain, spirits, cotton and linen goods. The imports consist of West India and European goods, and logwood is brought from the bay of Honduras. At the different ports of this state more than 600 vessels enter and clear out annually. The amount of exports in 1794, was valued at 954,573 dollars. At Providence there is a cotton manufactory, the produce of which is sent to the southern states; but the manufactures of bar and sheet iron, steel, nail-rods, and nails, implements of husbandry, stoves, pots, &c. are the most extensive. The constitution of the state is founded on the charter granted in 1663 by Charles II.; and the revolution made no essential change on the form of government. The legislature consists of two branches; a senate composed of ten members, besides a governor and deputy-governor, and a house of representatives. The members of the legislature are chosen twice a year, and there are two sessions of this body annually. It was first settled from Massachusetts. So little has the civil authority to do with religion here, that no contract between a minister and a society is of any force, for which reason a great number of sects have always been found here; yet it is said that the sabbath, and all religious institutions are more neglected in this, than in any other of the New England states.

RHODE-ISLAND, an island of N. America, in a state of the same name, situated between $41^{\circ} 28'$ and $41^{\circ} 42'$ N. Lat. and between $71^{\circ} 17'$ and $71^{\circ} 27'$ W. long.

from Greenwich, or about 15 miles long, and its medium breadth about 3 and a half. It is a famous resort for invalids from the southern climates, as it is exceedingly pleasant and healthful, being at one period regarded as the Eden of America; but the change is great which has been effected by the ravages of war, and a decrease of business. Between 30,000 and 40,000 sheep are fed upon this island, besides cattle and horses. The soil, climate, and situation of this island, are perhaps not exceeded by any other in the world.

RHODES, a celebrated island in the Archipelago, Ancient the largest and most easterly of the Cyclades, was names and known in ancient times by the names of *Asteria*, *O-* etymology.
phiusa, *Æthraea*, *Trinacria*, *Corymbia*, *Poessa*, *Atabyria*, *Marcia*, *Oloessa*, *Stadia*, *Telchims*, *Pelagia*, and *Rhodus*. In later ages, the name of *Rhodus*, or *Rhodes*, prevailed, from the Greek word *rhodon*, as is commonly supposed, signifying a "rose;" the island abounding very much with these flowers. Others, however, give different etymologies, among which it is difficult to find one preferable to another. It is about 20 miles distant from the coasts of Lycia and Caria, and about 120 miles in compass.

Several ancient authors assert, that Rhodes was for- Its origin.
merly covered by the sea, but gradually raised its head above the waves, and became an island. Delos and Rhodes (says Pliny), islands which have long been * Pliny, lib. ii. cap. 87.
celebrated, sprung at first from the sea. The same fact is supported by such a variety of other evidence as render it indubitable. Philo † ascribes the event to the † Philo de Mundo.
decrease of the waters of the ocean. If his conjecture be not without foundation, most of the isles of the Archipelago, being lower than Rhodes, must have had a similar origin. But it is much more probable that the volcanic fires, which in the fourth year of the 135th Olympiad, raised Therasia and Thera, known at present by the name of *Santorin*, from the depths of the sea, and have in our days thrown out several small islands adjacent, also produced in some ancient era Rhodes and Delos.

The first inhabitants of Rhodes, according to Diodorus Siculus, were called the *Telchines*, who came originally from the island of Crete. These, by their skill in astrology, perceiving that the island was soon to be drowned with water, left their habitations, and made room for the Heliades, or grandsons of Phœbus, who took possession of the island after that god had cleared it from the water and mud with which it was overwhelmed. These Heliades, it seems, excelled all other men in learning, and especially in astrology; invented navigation, &c. In after ages, however, being infested with great serpents which bred in the island, they had recourse to an oracle in Delos, which advised them to admit Phorbas, a Thessalian, with his followers, into Rhodes. This was accordingly done: and Phorbas having destroyed the serpents, was, after his death, honoured as a demigod. Afterwards a colony of Cretans settled in some part of the island, and a little before the Trojan war, Meletemus the son of Hercules, who was made king of the whole island, and governed with great justice and moderation.

After the Trojan war, all the ancient inhabitants First inhabitants.
were driven out by the Dorians, who continued to be masters of the island for many ages. The government was at first monarchical; but a little before the expedition

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2

3

Rhodes. tion of Xerxes into Greece, a republican form of government was introduced; during which the Rhodians applied themselves to navigation, and became very powerful by sea, planting several colonies in distant countries. In the time of the Peloponnesian war, the republic of Rhodes was rent into two factions, one of which favoured the Athenians, and another the Spartans; but at length the latter prevailing, democracy was abolished, and an aristocracy introduced. About 351 B. C. we find the Rhodians oppressed by Mausolus king of Caria, and at last reduced by Artemisia his widow. In this emergency, they applied to the Athenians, by whose assistance, probably, they regained their liberty.

5 Submit to Alexander, but revolt after his death. From this time to that of Alexander the Great, the Rhodians enjoyed an uninterrupted tranquillity. To him they voluntarily submitted; and were on that account highly favoured by him: but no sooner did they hear of his death, than they drove out the Macedonian garrisons, and once more became a free people. About this time happened a dreadful inundation at Rhodes; which, being accompanied with violent storms of rain, and hailstones of an extraordinary bigness, beat down many houses, and killed great numbers of the inhabitants. As the city was built in the form of an amphitheatre, and no care had been taken to clear the pipes and conduits which conveyed the water into the sea, the lower parts of the city were in an instant laid under water, several houses quite covered, and the inhabitants drowned before they could get to the higher places. As the deluge increased, and the violent showers continued, some of the inhabitants made to their ships, and abandoned the place, while others miserably perished in the waters. But while the city was thus threatened with utter destruction, the wall on a sudden burst asunder, and the water discharging itself by a violent current into the sea, unexpectedly delivered the inhabitants from all danger.

6 Violent inundation at Rhodes. The Rhodians suffered greatly by this unexpected accident, but soon retrieved their losses by a close application to trade. During the wars which took place among the successors of Alexander, the Rhodians observed a strict neutrality; by which means they enriched themselves so much, that Rhodes became one of the most opulent states of that age; insomuch that, for the common good of Greece, they undertook the *piratic war*, and, at their own charge, cleared the seas of the pirates who had for many years infested the coasts of Europe and Asia. However, notwithstanding the neutrality they professed, as the most advantageous branches of their commerce were derived from Egypt, they were more attached to Ptolemy, king of that country, than to any of the neighbouring princes. When therefore Antigonus, having engaged in a war with Ptolemy about the island of Cyprus, demanded succours of them, they earnestly intreated him not to compel them to declare war against their ancient friend and ally. But this answer, prudent as it was, drew upon them the displeasure of Antigonus, who immediately ordered one of his admirals to sail with his fleet to Rhodes, and seize all the ships that came out of the harbour for Egypt. The Rhodians, finding their harbour blocked up by the fleet of Antigonus, equipped a good number of galleys, fell upon the enemy, and obliged him, with the loss of many ships, to quit his station. Hereupon

Antigonus, charging them as aggressors, and beginners of an unjust war, threatened to besiege their city with the strength of his whole army. The Rhodians endeavoured by frequent embassies to appease his wrath; but all their remonstrances served rather to provoke than allay his resentment: and the only terms upon which he would hearken to any accommodation were, that the Rhodians should declare war against Ptolemy, that they should admit his fleet into their harbour, and that an hundred of the chief citizens should be delivered up to him as hostages for the performance of these articles. The Rhodians sent ambassadors to all their allies, and to Ptolemy in particular, imploring their assistance, and representing to the latter, that their attachment to his interest had drawn upon them the danger to which they were exposed. The preparations on both sides were immense. As Antigonus was near fourscore years of age at that time, he committed the whole management of the war to his son Demetrius, who appeared before the city of Rhodes with 200 ships of war, 170 transports having on board 40,000 men, and 1000 other vessels laden with provisions and all sorts of warlike engines. As Rhodes had enjoyed for many years a profound tranquillity, and been free from all devastations, the expectation of booty, in the plunder of so wealthy a city, allured multitudes of pirates and mercenaries to join Demetrius in this expedition; insomuch that the whole sea between the continent and the island was covered with ships: which struck the Rhodians, who had a prospect of this mighty armament from the walls, with great terror and consternation.

Demetrius, having landed his troops without the reach of the enemy's machines, detached several small bodies to lay waste the country round the city, and cut down the trees and groves, employing the timber, and materials of the houses without the walls, to fortify his camp with strong ramparts and a triple palisade; which work, as many hands were employed, was finished in a few days. The Rhodians, on their part, prepared for a vigorous defence. Many great commanders, who had signalized themselves on other occasions, threw themselves into the city, being desirous to try their skill in military affairs against Demetrius, who was reputed one of the most experienced captains in the conduct of sieges that antiquity had produced. The besieged began with dismissing from the city all such persons as were useless; and then taking an account of those who were capable of bearing arms, they found that the citizens amounted to 6000, and the foreigners to 1000. Liberty was promised to all the slaves who should distinguish themselves by any glorious action, and the public engaged to pay the masters their full ransom. A proclamation was likewise made, declaring, that whoever died in defence of their country should be buried at the expence of the public; that his parents and children should be maintained out of the treasury; that fortunes should be given to his daughters; and his sons, when they were grown up, should be crowned and presented with a complete suit of armour at the great solemnity of Bacchus; which decree kindled an incredible ardour in all ranks of men.

Demetrius, having planted all his engines, began to batter with incredible fury the walls on the side of the harbour; but was for eight days successively repulsed by the besieged, who set fire to most of his warlike engines,

Rhodes.

8 Rhodes besieged by Demetrius.

9 The inhabitants prepared for a vigorous defence.

10 Engines of Demetrius burnt.

Rhodes. gines, and thereby obliged him to allow them some respite, which they made good use of in repairing the breaches, and building new walls where the old ones were either weak or low. When Demetrius had repaired his engines, he ordered a general assault to be made, and caused his troops to advance with loud shouts, thinking by this means to strike terror into the enemy. But the besieged were so far from being intimidated, that they repulsed the aggressors with great slaughter, and performed the most astonishing feats of bravery. Demetrius returned to the assault next day; but was in the same manner forced to retire, after having lost a great number of men, and some officers of distinction. He had seized, at his first landing, an eminence at a small distance from the city; and, having fortified this advantageous post, he caused several batteries to be erected there, with engines, which incessantly discharged against the walls stones of 150 pounds weight. The towers, being thus furiously battered night and day, began to totter, and several breaches were opened in the walls: but the Rhodians, unexpectedly sallying out, drove the enemy from their post, overturned their machines, and made a most dreadful havoc; inasmuch that some of them retired on board their vessels, and were with difficulty prevailed upon to come ashore again.

II
Several desperate assaults without success.

Demetrius now ordered a scalade by sea and land at the same time; and so employed the besieged, that they were at a loss what place they should chiefly defend. The attack was carried on with the utmost fury on all sides, and the besieged defended themselves with the greatest intrepidity. Such of the enemy as advanced first were thrown down from the ladders, and miserably bruised. Several of the chief officers, having mounted the walls to encourage the soldiers by their example, were there either killed or taken prisoners. After the combat had lasted many hours, with great slaughter on both sides, Demetrius, notwithstanding all his valour, thought it necessary to retire, in order to repair his engines, and give his men some days rest.

Demetrius being sensible that he could not reduce the city till he was master of the port, after having refreshed his men, he returned with new vigour against the fortifications which defended the entry into the harbour. When he came within the cast of a dart, he caused a vast quantity of burning torches and firebrands to be thrown into the Rhodian ships, which were riding there; and at the same time galled, with dreadful showers of darts, arrows, and stones, such as offered to extinguish the flames. However, in spite of their utmost efforts, the Rhodians put a stop to the fire; and, having with great expedition manned three of their strongest ships, drove with such violence against the vessels on which the enemy's machines were planted, that they were shattered in pieces, and the engines dismounted and thrown into the sea. Exceplus the Rhodian admiral, being encouraged by this success, attacked the enemy's fleet with his three ships, and sunk a great many vessels; but was himself at last taken prisoner: the other two vessels made their escape, and regained the port.

As unfortunate as this last attack had proved to Demetrius, he determined to undertake another; and, in order to succeed in his attempt, he ordered a machine

of a new invention to be constructed, which was thrice the height and breadth of those he had lately lost. When the work was finished, he caused the engine to be placed near the port, which he was resolved, at all adventures, to force. But as it was upon the point of entering the harbour, a dreadful storm arising, drove it against the shore, with the vessels on which it had been reared. The besieged, who were attentive to improve all favourable conjunctures, while the tempest was still raging, made a sally against those who defended the eminence mentioned above; and, though repulsed several times, carried it at last, obliging the Demetrians, to the number of 400, to throw down their arms and submit. After this victory gained by the Rhodians, there arrived to their aid 150 Gnoſians, and 500 men sent by Ptolemy from Egypt, most of them being natives of Rhodes, who had served among the king's troops.

Demetrius being extremely mortified to see all his batteries against the harbour rendered ineffectual, resolved to employ them by land, in hopes of carrying the city by assault, or at least reducing it to the necessity of capitulating. With this view, having got together a vast quantity of timber and other materials, he framed the famous engine called *helepolis*, which was by many degrees larger than any that had ever been invented before. Its basis was square, each side being in length near 50 cubits, and made up of square pieces of timber, bound together with plates of iron. In the middle part he placed thick planks, about a cubit distance from each other; and on these the men were to stand who forced the engine forward. The whole was moved upon eight strong and large wheels, whose felloes were strengthened with strong iron plates. In order to facilitate and vary the movements of the *helepolis*, casters were placed under it, whereby it was turned in an instant to what side the workmen and engineers pleased. From each of the four angles a large pillar of wood was carried to about the height of 100 cubits, and inclining to each other; the whole machine consisting of nine stories, whose dimensions gradually lessened in the ascent. The first story was supported by 43 beams, and the last by no more than nine. Three sides of the machine were plated over with iron, to prevent its being damaged by the fire that might be thrown from the city. In the front of each story were windows of the same size and shape as the engines that were to be discharged from thence. To each window were shutters, to draw up for the defence of those who managed the machines, and to deaden the force of the stones thrown by the enemy, the shutters being covered with skins stuffed with wool. Every story was furnished with two large staircases, that whatever was necessary might be brought up by one, while others were going down by the other, and so every thing may be dispatched without tumult or confusion. This huge machine was moved forwards by 3000 of the strongest men of the whole army; but the art with which it was built greatly facilitated the motion. Demetrius caused likewise to be made several testudoes or pent-houses, to cover his men while they advanced to fill up the trenches and ditches; and invented a new sort of galleries, through which those who were employed at the siege might pass and repass at their pleasure, without the least danger. He employed all his seamen in levelling the ground over which the machines

Rhodes.

12

Demetrius frames a new machine called *helepolis*.

Rhodes. machines were to be brought up, to the space of four furlongs. The number of workmen who were employed on this occasion amounted to 30,000.

13
The Rhodians raise a new wall.

In the mean time, the Rhodians, observing these formidable preparations, were busy in raising a new wall within that which the enemy intended to batter with the helepolis. In order to accomplish this work, they pulled down the wall which surrounded the theatre, some neighbouring houses, and even some temples, after having solemnly promised to build more magnificent structures in honour of the gods, if the city were preserved. At the same time, they sent out nine of their best ships to seize such of the enemy's vessels as they could meet with, and thereby distress them for want of provisions. As these ships were commanded by their bravest sea-officers, they soon returned with an immense booty, and a great many prisoners. Among other vessels, they took a galley richly laden, on board of which they found a great variety of valuable furniture, and a royal robe, which Phila herself had wrought and sent as a present to her husband Demetrius, accompanied with a letter written with her own hand. The Rhodians sent the furniture, the royal robe, and even the letter, to Ptolemy; which exasperated Demetrius to a great degree.

14
The walls undermined without success.

While Demetrius was preparing to attack the city, the Rhodians having assembled the people and magistrates to consult about the measures they should take, some proposed in the assembly the pulling down of the statues of Antigonus and his son Demetrius, which till then had been held in the utmost veneration. But this proposal was generally rejected with indignation, and their prudent conduct greatly allayed the wrath both of Antigonus and Demetrius. However, the latter continued to carry on the siege with the utmost vigour, thinking it would reflect no small dishonour on him were he obliged to quit the place without making himself master of it. He caused the walls to be secretly undermined: but, when they were ready to fall, a deserter very opportunely gave notice of the whole to the townsmen; who having, with all expedition, drawn a deep trench all along the wall, began to countermine, and, meeting the enemy under ground, obliged them to abandon the work. While both parties guarded the mines, one Athenagoras a Milesian, who had been sent to the assistance of the Rhodians by Ptolemy with a body of mercenaries, promised to betray the city to the Demetrians, and let them in through the mines in the night-time. But this was only in order to ensnare them; for Alexander, a noble Macedonian, whom Demetrius, had sent with a choice body of troops to take possession of a post agreed on, no sooner appeared, but he was taken prisoner by the Rhodians, who were waiting for him under arms.—Athenagoras was crowned by the senate with a crown of gold, and presented with five talents of silver.

15
A general assault to no purpose.

Demetrius now gave over all thoughts of undermining the walls, and placed all his hopes of reducing the city in the battering engines which he had contrived. Having therefore levelled the ground under the walls he brought up his helepolis, with four testudoes on each side of it. Two other testudoes of an extraordinary size, bearing battering-rams, were likewise moved forwards by 1000 men. Each story of the helepolis was filled with all sorts of engines for

discharging of stones, arrows, and darts. When all things were ready, Demetrius ordered the signal to be given; when his men, setting up a shout, assaulted the city on all sides both by sea and land. But, in the heat of the attack, when the walls were ready to fall by the repeated strokes of the battering-rams, ambassadors arrived from Cnidus, earnestly soliciting Demetrius to suspend all further hostilities, and at the same time giving him hopes that they should prevail upon the Rhodians to submit to an honourable capitulation. A suspension of arms was accordingly agreed on, and ambassadors sent from both sides. But the Rhodians refusing to capitulate on the conditions offered them, the attack was renewed with so much fury, and the machines played off in so brisk a manner, that a large tower built with square stones, and the wall that flanked it, were battered down. The besieged, nevertheless, fought in the breach with so much courage and resolution, that the enemy, after various unsuccessful attempts, were forced to abandon the enterprise, and retire.

Rhodes.

In this conjuncture, a fleet which Ptolemy had freighted with 300,000 measures of corn, and different kinds of pulse for the use of the Rhodians, arrived very seasonably in the port, notwithstanding the vigilance of the enemy's ships, which cruized on the coasts of the island to surprize them. A few days after came in safe two other fleets, one sent by Cassander, with 100,000 bushels of barley; the other by Lyfimachus, with 400,000 bushels of corn and as many of barley. This seasonable and plentiful supply arriving when the city began to suffer for want of provisions, inspired the besieged with new courage, and raised their drooping spirits. Being thus animated, they formed a design of setting the enemy's engines on fire; and with this view ordered a body of men to fall out the night ensuing, about the second watch, with torches and firebrands, having first placed on the walls an incredible number of engines, to discharge stones, arrows, darts, and fire-balls, against those who should attempt to oppose their detachment. The Rhodian troops, pursuant to their orders, all on a sudden sallied out, and advancing, in spite of all opposition, to the batteries, set them on fire, while the engines from the walls played incessantly on those who endeavoured to extinguish the flames. The Demetrians on this occasion fell in great numbers, being incapable, in the darkness of the night, either to see the engines that continually discharged showers of stones and arrows upon them, or to join in one body and repulse the enemy. The conflagration was so great, that several plates of iron falling from the helepolis, that vast engine would have been entirely consumed, had not the troops that were stationed in it with all possible speed quenched the fire with water, before prepared, and ready in the apartments of the engine against such accidents. Demetrius, fearing lest all his machines should be consumed, called together, by sound of trumpet, those whose province it was to move them; and, by their help, brought them off before they were entirely destroyed. When it was day, he commanded all the darts and arrows that had been shot by the Rhodians to be carefully gathered, that he might from their number form some judgement of the number of machines in the city. Above 800 firebrands were found on the spot, and no fewer

16
The besieged receive a large reinforcement of provisions.

than.

Rhodes. than 1500 darts, all discharged in a very small portion of the night. This struck the prince himself with no small terror; for he never imagined that they would have been able to bear the charges of such formidable preparations. However, after having caused the slain to be buried, and given directions for the curing of the wounded, he applied himself to the repairing of his machines, which had been dismounted and rendered quite unserviceable.

17
They build a third wall.

In the mean time, the besieged, improving the respite allowed them by the removal of the machines, built a third wall in the form of a crescent, which took in all that part that was most exposed to the enemy's batteries; and, besides, drew a deep trench behind the breach, to prevent the enemy from entering the city that way. At the same time, they detached a squadron of their best ships, under the command of Amyntas, who made over to the continent of Asia; and there meeting with some privateers who were commissioned by Demetrius, took both the ships and the men, among whom were Timocles the chief of the pirates, and several other officers of distinction belonging to the fleet of Demetrius. On their return, they fell in with several vessels laden with corn for the enemy's camp, which they likewise took, and brought into the port. These were soon followed by a numerous fleet of small vessels loaded with corn and provisions sent them by Ptolemy, together with 1500 men, commanded by Antigonus a Macedonian of great experience in military affairs.—Demetrius, in the mean time, having repaired his machines, brought them up anew to the walls: which he incessantly battered till he opened a great breach and threw down several towers. But when he came to the assault, the Rhodians, under the command of Aminias, defended themselves with such resolution and intrepidity, that he was in three successive attacks repulsed with great slaughter, and at last forced to retire. The Rhodians likewise, on this occasion, lost several officers; and amongst others, the brave Aminias their commander.

18
Demetrius makes a breach in the walls, but is still repulsed.

While the Rhodians were thus signaling themselves in the defence of their country, a second embassy arrived at the camp of Demetrius from Athens and the other cities of Greece, soliciting Demetrius to compose matters, and strike up a peace with the Rhodians. At the request of the ambassadors, who were in all above 50, a cessation of arms was agreed upon; but the terms offered by Demetrius being again rejected by the Rhodians, the ambassadors returned home without being able to bring the contending parties to an agreement. Hostilities were therefore renewed; and Demetrius, whose imagination was fertile in expedients for succeeding in his projects, formed a detachment of 1500 of his best troops, under the conduct of Alcimus and Mancius, two officers of great resolution and experience, ordering them to enter the breach at midnight, and, forcing the entrenchment behind it, to possess themselves of the posts about the theatre, where it would be no difficult matter to maintain themselves against any efforts of the townsmen. In order to facilitate the execution of so important and dangerous an undertaking, and amuse the enemy with false attacks, he at the same time, upon a signal given, ordered the rest of the army to set up a shout, and attack the city on all sides both by sea and land. By this means

19
His troops enter the breach;

he hoped that, the besieged being alarmed in all parts, his detachment might find an opportunity of forcing the entrenchments which covered the breach, and afterwards of seizing the advantageous post about the theatre. This feint had all the success the prince could expect; for the troops having set up a shout from all quarters, as if they were advancing to a general assault, the detachment commanded by Alcimus and Mancius entered the breach, and fell upon those who defended the ditch, and the wall that covered it, with such vigour, that, having slain the most part of them and put the rest in confusion, they advanced to the theatre, and seized on the post adjoining to it. This occasioned a general uproar in the city, as if it had been already taken: but the commanding officers dispatched orders to the soldiers on the ramparts not to quit their posts, nor stir from their respective stations. Having thus secured the walls, they put themselves at the head of a chosen body of their own troops, and of those who were lately come from Egypt, and with these charged the enemy's detachment. But the darkness of the night prevented them from dislodging the enemy and regaining the advantageous posts they had seized. Day, however, no sooner appeared, than they renewed their attack with wonderful bravery. The Demetrians without the walls, with loud shouts endeavoured to animate those who had entered the place, and inspire them with resolution to maintain their ground till they were relieved with fresh troops. The Rhodians being sensible that their fortunes, liberties, and all that was dear to them in the world, lay at stake, fought like men in the utmost despair, the enemy defending their posts for several hours without giving ground in the least. At length the Rhodians, encouraging each other to exert themselves in defence of their country, and animated by the example of their leaders, made a last effort, and, breaking into the very heart of the enemy's battalion, there killed both their commanders. After their death the rest were easily put in disorder, and all to a man either killed or taken prisoners. The Rhodians likewise on this occasion lost many of their best commanders; and among the rest Damotetis, their chief magistrate, a man of extraordinary valour, who had signaled himself during the whole time of the siege.

Rhodes.

20
but are all killed or taken.

Demetrius, not at all discouraged by this check, was making the necessary preparations for a new assault, when he received letters from his father Antigonus, enjoining him to conclude a peace with the Rhodians upon the best terms he could get, lest he should lose his whole army in the siege of a single town. From this time Demetrius wanted only some plausible pretence for breaking up the siege. The Rhodians likewise were now more inclined to come to an agreement than formerly; Ptolemy having acquainted them that he intended to send a great quantity of corn, and 3000 men to their assistance, but that he would first have them try whether they could make up matters with Demetrius upon reasonable terms. At the same time ambassadors arrived from the Ætolian republic, soliciting the contending parties to put an end to a war which might involve all the east in endless calamities.

21
The helepoleis rendered useless.

An accident which happened to Demetrius in this conjuncture, did not a little contribute towards the wished-for pacification. This prince was preparing to advance his helepoleis against the city, when a Rhodian engineer

Rhodes. engineer found means to render it quite useless. He undermined the tract of ground over which the helepolis was to pass the next day in order to approach the walls. Demetrius, not suspecting any stratagem of this nature, caused the engine to be moved forward, which coming to the place that was undermined, sunk so deep into the ground that it was impossible to draw it out again. This misfortune, if we believe Vegetius and Vitruvius, determined Demetrius to hearken to the Ætolian ambassadors, and at last to strike up a peace upon the following conditions: That the republic of Rhodes should be maintained in the full enjoyment of their ancient rights, privileges, and liberties, without any foreign garrison; that they should renew their ancient alliance with Antigonus, and assist him in his wars against all states and princes except Ptolemy king of Egypt; and that, for the effectual performance of the articles stipulated between them, they should deliver 100 hostages, such as Demetrius should make choice of, except those who bore any public employment.

22
The siege
raised.

Thus was the siege raised, after it had continued a whole year; and the Rhodians amply rewarded all those who had distinguished themselves in the service of their country. They also set up statues to Ptolemy, Cassander, and Lyfimachus; to all of whom they paid the highest honours, especially to the first, whom they worshipped as a god. Demetrius at his departure presented them with the helepolis, and all the other machines which he had employed in battering the city; from the sale of which, with some additional sums of their own, they erected the famous colossus. After this they applied themselves entirely to trade and navigation; by which means they became quite masters of the sea, and much more opulent than any of the neighbouring nations. As far as lay in their power, they endeavoured to preserve a neutrality with regard to the jarring nations of the east. However, they could not avoid a war with the Byzantines, the occasion of which was as follows: The Byzantines being obliged to pay a yearly tribute of 80 talents to the Gauls, in order to raise this sum, they came to a resolution of laying a toll on all ships that traded to the Pontic sea. This resolution provoked the Rhodians, who were a trading nation, above all the rest. For this reason they immediately dispatched ambassadors to the Byzantines, complaining of the new tax; but as the Byzantines had no other method of satisfying the Gauls, they persisted in their resolution. The Rhodians now declared war, and prevailed upon Prusias king of Bithynia, and Attalus king of Pergamus, to assist them; by which confederacy the Byzantines were so intimidated, that they agreed to exact no toll from ships trading to the Pontic sea, the demand which had been the occasion of the war.

23
War with
the Byzan-
tines.

24
A dreadful
earthquake
at Rhodes.

About this time happened a dreadful earthquake, which threw down the colossus, the arsenal, and great part of the city walls of Rhodes; which calamity the Rhodians improved to their advantage, sending ambassadors to all the Grecian princes and states, to whom their losses were so much exaggerated, that their countrymen obtained immense sums of money under pretence of repairing them. Hiero king of Syracuse presented them with 100 talents; and, besides, exempted from all tolls and duties such as traded to Rhodes. Ptolemy king of Egypt gave them 100 talents, a million of mea-

asures of wheat, materials for building 20 quinqueremes and the like number of triremes; and, besides, sent them 100 architects, 300 workmen, and materials for repairing their public buildings, to a great value, paying them moreover 14 talents a-year for the maintenance of the workmen whom he sent them. Antigonus gave them 100 talents of silver, with 10,000 pieces of timber, each piece being 16 cubits long; 7000 planks; 3000 pounds of iron, as many of pitch and rosin, and 1000 measures of tar. Chryseis, a woman of distinction, sent them 100,000 measures of wheat, and 3000 pounds of lead. Antiochus exempted from all taxes and duties the Rhodian ships trading to his dominions; presented them with 10 galleys, and 200,000 measures of corn, with many other things of great value. Prusias, Mithridates, and all the princes then reigning in Asia, made them proportionable presents: in short, all the Greek towns and nations, all the princes of Europe and Asia, contributed, according to their ability, to the relief of the Rhodians on that occasion; inasmuch that their city not only soon arose from its ruins, but attained to an higher pitch of splendour than ever.

In the year 203 B. C. the Rhodians engaged in a war with Philip of Macedon. This monarch had invaded the territories of Attalus king of Pergamus; and because the Rhodians seemed to favour their ancient friend, sent one Heraclides, by birth a Tarentine, to set fire to their fleet; at the same time that he dispatched ambassadors into Crete, in order to stir up the Cretans against the Rhodians, and prevent them from sending any assistance to Attalus. Upon this war was immediately proclaimed. Philip at first gained an inconsiderable advantage in a naval engagement; but the next year was defeated with the loss of 11,000 men, while the Rhodians lost but 60 men and Attalus 70. After this he carefully avoided coming to an engagement at sea either with Attalus or the Rhodians. The combined fleet, in the mean time, sailed towards the island of Ægina in hopes of intercepting him: but having failed in their purpose, they sailed to Athens, where they concluded a treaty with that people; and, on their return, drew all the Cyclades into a confederacy against Philip. But while the allies were thus wasting their time in negotiations, Philip, having divided his forces into two bodies, sent one, under the command of Philocles, to ravage the Athenian territories; and put the other aboard his fleet, with orders to sail to Meronea, a city on the north side of Thrace. He then marched towards that city himself with a body of forces, took it by assault, and reduced a great many others; so that the confederates would, in all probability, have had little reason to boast of their success, had not the Romans come to their assistance, whose help the war was soon terminated to their advantage. In the war which took place between the Romans and Antiochus the Great king of Syria, the Rhodians were very useful allies to the former. The best part of their fleet was indeed destroyed by a treacherous contrivance of Polyxenides the Syrian admiral; but they soon fitted out another, and defeated a Syrian squadron commanded by the celebrated Hannibal, the Carthaginian commander; after which, in conjunction with the Romans, they utterly defeated the whole Syrian fleet commanded by Polyxenides; which, together

Rhodes.

25
War with
Philip of
Macedon.

26
The Rhodians
assisted
by the
Romans.

Rhodes.

together with the loss of the battle of Magresia, so dispirited Antiochus, that he submitted to whatever conditions the Romans pleased.

27
Rhodes besieged by Mithridates without success.

For these services the Rhodians were rewarded with the provinces of Lycia and Caria; but tyrannizing over the people in a terrible manner, the Lycians applied to the Romans for protection. This was readily granted; but the Rhodians were so much displeased with their interfering in this matter, that they secretly favoured Perseus in the war which broke out between him and the Roman republic. For this offence the two provinces above-mentioned were taken from them; but the Rhodians, having banished or put to death those who had favoured Perseus, were again admitted into favour, and greatly honoured by the senate. In the Mithridatic war, their alliance with Rome brought upon them the king of Pontus with all his force; but having lost the greatest part of his fleet before the city, he was obliged to raise the siege without performing any remarkable exploit. In the war which Pompey made on the Cilician pirates, the Rhodians assisted him with all their naval force, and had a great share in the victories which he gained. In the civil war between Cæsar and Pompey, they assisted the latter with a very numerous fleet. After his death they sided with Cæsar; which drew upon them the resentment of C. Cassius, who advanced to the island of Rhodes with a powerful fleet, after having reduced the greatest part of the continent. The Rhodians, terrified at his approach, sent ambassadors intreating him to make up matters in an amicable manner, and promising to stand neuter, and recal the ships which they had sent to the assistance of the triumviri. Cassius insisted upon their delivering up their fleet to him, and putting him in possession both of their harbour and city. This demand the Rhodians would by no means comply with, and therefore began to put themselves in a condition to stand a siege; but first sent Archelaus, who had taught Cassius the Greek tongue while he studied at Rhodes, to intercede with his disciple in their behalf. Archelaus could not, with all his authority, prevail upon him to moderate his demands; wherefore the Rhodians, having created one Alexander, a bold and enterprising man, their prætor or prytanis, equipped a fleet of 33 sail, and sent it out under the command of Mnæseus, an experienced sea-officer, to offer Cassius battle. Both fleets fought with incredible bravery, and the victory was long doubtful: but the Rhodians, being at length overpowered by numbers, were forced to return with their fleet to Rhodes; two of their ships being sunk, and the rest very much damaged by the heavy ships of the Romans. This was the first time, as our author observes, that the Rhodians were fairly overcome in a sea-fight.

28
The Rhodians defeated in two naval engagements by Cassius.

Cassius, who had beheld this fight from a neighbouring hill, having refitted his fleet, which had been no less damaged than that of the Rhodians, repaired to Loryma, a stronghold on the continent belonging to the Rhodians. This castle he took by assault; and from hence conveyed his land-forces, under the conduct of Fannius and Lentulus, over into the island. His fleet consisted of 80 ships of war and above 200 transports. The Rhodians no sooner saw this mighty fleet appear, but they went out again to meet the enemy. The second engagement was far more bloody than the first; many ships were sunk, and great numbers of men kill-

ed on both sides. But victory anew declared for the Romans; who immediately blocked up the city of Rhodes both by sea and land. As the Rhodians had not had time to furnish the city with sufficient store of provisions, some of the inhabitants, fearing that if it were taken either by assault or by famine, Cassius would put all the inhabitants to the sword, as Brutus had lately done at Xanthus, privately opened the gate to him, and put him in possession of the town, which he nevertheless treated as if it had been taken by assault. He commanded 50 of the chief citizens, who were suspected to favour the adverse party, to be brought before him, and sentenced them all to die; others, to the number of 25, who had commanded the fleet or army, because they did not appear when summoned, he proscribed. Having thus punished such as had either acted or spoken against him or his party, he commanded the Rhodians to deliver up to him all their ships, and whatever money they had in the public treasury. He then plundered the temples; stripping them of all their valuable furniture, vessels, and statues. He is said not to have left one statue in the whole city, except that of the sun; bragging, at his departure, that he had stripped the Rhodians of all they had, leaving them nothing but the sun. As to private persons, he commanded them, under severe penalties, to bring to him all the gold and silver they had, promising, by a public crier, a tenth part to such as should discover any hidden treasures. The Rhodians at first concealed some part of their wealth, imagining that Cassius intended by this proclamation only to terrify them; but when they found he was in earnest, and saw several wealthy citizens put to death for concealing only a small portion of their riches, they desired that the time prefixed for the bringing in their gold and silver might be prolonged. Cassius willingly granted them their request; and then through fear they dug up what they had hid underground, and laid at his feet all they were worth in the world. By this means he extorted from private persons above 8000 talents. He then fined the city in 500 more; and leaving L. Varus there with a strong garrison to exact the fine without any abatement, he returned to the continent.

Rhodes.

29
Who takes and cruelly pillages the city.

After the death of Cassius, Marc Antony restored the Rhodians to their ancient rights and privileges; bestowing upon them the islands of Andros, Naxos, Tenos, and the city of Myndus. But these the Rhodians so oppressed and loaded with taxes, that the same Antony, though a great friend to the Rhodian republic, was obliged to divest her of the sovereignty over those places, which he had a little before so liberally bestowed upon her. From this time to the reign of the emperor Claudius we find no mention made of the Rhodians. That prince, as Dion informs us, deprived them of their liberty for having crucified some Roman citizens. However, he soon restored them to their former condition, as we read in Suetonius and Tacitus. The latter adds, that they had been as often deprived of, as restored to, their liberty, by way of punishment or reward for their different behaviour, as they had obliged the Romans with their assistance in foreign wars, or provoked them with their seditions at home. Pliny, who wrote in the beginning of Vespasian's reign, styles Rhodes a beautiful and free town. But this liberty they did not long enjoy, the island became soon after reduced

30
Rhodes reduced to a Roman province by Vespasian.

Rhodes

by the same Vespasian to a Roman province, and obliged to pay a yearly tribute to their new masters. This province was called the *province of the islands*. The Roman prætor who governed it resided at Rhodes, as the chief city under his jurisdiction; and Rome, notwithstanding the eminent services rendered her by this republic, thenceforth treated the Rhodians not as allies, but vassals.

31
Expeditions of Villaret grand-master of the knights of Jerusalem against Rhodes.

The island of Rhodes continued subject to the Romans till the reign of the emperor Andronicus; when Villaret, grand-master of the knights of Jerusalem, then residing in Cyprus, finding himself much exposed to the attacks of the Saracens in that island, resolved to exchange it for that of Rhodes. This island too was almost entirely occupied by the Saracens; Andronicus the eastern emperor possessing little more in it than a castle. Nevertheless he refused to grant the investiture of the island to Villaret. The latter, without spending time in fruitless negotiations, sailed directly for Rhodes, where he landed his troops, provisions, and warlike stores, in spite of the opposition made by the Saracens, who then united against the common enemy. As Villaret foresaw that the capital must be taken before he could reduce the island, he instantly laid siege to it. The inhabitants defended themselves obstinately, upon which the grandmaster thought proper to turn the siege into a blockade; but he soon found himself so closely surrounded by the Greeks and Saracens, that he could get no supply either of forage or provisions for his army. But having at length obtained a supply of provisions by means of large fums borrowed of the Florentines, he came out of his trenches and attacked the Saracens, with a full resolution either to conquer or die. A bloody fight ensued, in which a great number of the bravest knights were killed: but at length the Saracens gave way, and fled to their ships; upon which the city was immediately assaulted and taken. The Greeks and other Christians had their lives and liberties given them, but the Saracens were all cut to pieces. The reduction of the capital was followed by that of all the other places of inferior strength throughout the island; and in four years after their landing, the whole was subjugated, and the conquerors took the title of the *Knights of Rhodes*. For many years those knights continued the terror of the Saracens and Turks, and sustained a severe siege from Mohammed II. who was compelled to abandon the enterprise; but at length the Turkish sultan Solyman resolved at all events to drive them from it. Before he undertook the expedition, he sent a message commanding them to depart from the island without delay; in which case he promised that neither they nor the inhabitants should suffer any injury, but threatened them with his utmost vengeance if they refused his offer. The knights, however, proving obstinate, Solyman attacked the city with a fleet of 400 sail and an army of 140,000 men.

33
The city besieged by Solyman.

The trenches were soon brought close to the counter-scarp, and a strong battery raised against the town; which, however, did but little damage, till the sultan being informed by a spy of this particular, and that he was in danger of receiving some fatal shot from the tower of St John which overlooked his camp, he planted a battery against that tower, and quickly brought it down. Solyman, however, finding the whole place in some measure covered with strong fortifications of such

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height as to command all his batteries, ordered an immense quantity of stones and earth to be brought; in which so great a number of hands were employed night and day by turns, that they quickly raised a couple of hillocks high enough to overtop the city-walls. They plied them accordingly with such a continual fire, that the grandmaster was obliged to cause them to be strongly propped within with earth and timber. All this while the besieged, who, from the top of the grandmaster's palace, could discover how their batteries were planted, demolished them with their cannon almost as fast as they raised them.

Here the enemy thought proper to alter their measures, and to plant a strong battery against the tower of St Nicholas, which, in the former siege by Mohammed, had resisted all the efforts of the then grand-vizier. This the bashaw of Romania caused to be battered with 12 large pieces of brass cannon, but had the mortification to see them all dismounted by those of the tower: to prevent which in future, he ordered them to be fired only in the night, and in the day had them covered with gabions and earth. This had such success, that, after 5000 cannon-shot, the wall began to shake and tumble into the ditch; but he was surpris'd to find another wall behind it, well terraced, and bordered with artillery, and himself obliged either to begin afresh or give up the enterprise: and yet this last was what Solyman preferred, when he was told of its being built on a hard rock, incapable of being sapped, and how firmly it had held out against all the efforts of Mohammed's vizier. The next attack was therefore ordered by him to be made against the bastions of the town, and that with a vast number of the largest artillery, which continued firing during a whole month; so that the new wall of the bastion of England was quite demolished, though the old one stood proof against all their shot. That of Italy, which was battered by 17 large pieces of cannon, was still worse damaged; upon which Martinengo the engineer advised the grand-master to cause a sally to be made on the trenches of the enemy out of the breach, whilst he was making fresh entrenchments behind it. His advice succeeded: and the 200 men who sallied out sword in hand having surpris'd the Turks in the trench, cut most of them in pieces. At the same time a new detachment, which was sent to repulse them, being obliged, as that engineer rightly judged, to pass by a spot which lay open to their artillery, were likewise mostly destroyed by the continual fire that came from it, whilst the assailants were employed in filling up several fathoms of the trench before they retired. By that time the breach had been repaired with such new works, that all the efforts to mount it by assault proved equally ineffectual and destructive.

Unfortunately for the besieged, the continual fire they had made caused such a consumption of their powder, that they began to feel the want of it; the perfidious d'Amarald, whose province it had been to visit the magazines of it, having amused the council with a false report, that there was more than sufficient to maintain the siege, though it should last a whole twelvemonth. But here the grand master found means to supply in some measure that unexpected defect, by the cautious provision he had made of a large quantity of saltpetre, which was immediately ground and made into gunpowder, though he was at the same time obliged to order the engineers

Rhodes.

34
Terribly battered.

35
The besieged want powder, but find means to supply the defect.

Rhodes. to be more sparing of it for the future, and to make use of it only in the defence of such breaches as the enemy should make.

All this while the Turks had not gained an inch of ground; and the breaches they had made were so suddenly either repaired or defended by new entrenchments, that the very rubbish of them must be mounted by assault. Solyman, therefore, thought it now advisable to let his numerous pioneers at work, in five different parts, in digging of mines, each of which led to the bastion opposite to it. Some of these were countermined by a new invented method of Martinengo; who, by the help of braced skins, or drums, could discover where the miners were at work. Some of these he perceived, which he caused to be opened, and the miners to be driven out by hand grenades; others to be smothered, or burned, by setting fire to gunpowder. Yet did not this hinder two considerable ones to be sprung, which did a vast deal of damage to the bastion of England, by throwing down about six fathoms of the wall, and filling up the ditch with its rubbish: whereupon the Turks immediately climbed up sword in hand to the top of it, and planted seven of their standards upon the parapet; but being stopped by a traverse, the knights, recovering from their surprize fell upon them with such fury, that they were obliged to abandon it with great loss. The grand-master, who was then at church, quickly came to the place with his short pike in his hand, attended by his knights, encouraging all he met with, burghers, soldiers, and others, to fight bravely in defence of their religion and country, and arrived time enough to assist in taking down their standards, and driving down the enemy by the way they came up. In vain did the vizier Mustapha endeavour to prevent their flight by killing some of the foremost with his sword, and driving the rest back; they were obliged to abandon the bastion, and, which was still worse, met with that death in their flight, which they had strove to shun from the fire-arms which were discharged upon them from the ramparts. Three sangiacs lost their lives in this attack, besides some thousands of the Turks; the grand-master, on his side, lost some of his bravest knights, particularly his standard-bearer.

The attacks were almost daily renewed with the same ill success and loss of men, every general striving to signalize himself in the sight of their emperor. At length the old general Peri, or Pyrrus, having harassed the troops which guarded the bastion of Italy for several days successively without intermission, caused a strong detachment, which he had kept concealed behind a cavalier, to mount the place by break of day, on the 13th of September; where, finding them overcome with sleep and fatigue, they cut the throats of the sentinels, and, sliding through the breach, were just going to fall upon them. The Italians, however, quickly recovered themselves and their arms, and gave them an obstinate repulse. The contest was fierce and bloody on both sides; and the bashaw, still supplying his own with new reinforcements, would hardly have failed of overpowering the other, had had not the grand-master, whom the alarm had quickly reached, timely intervened, and, by his presence, as well as example, revived his Rhodians, and thrown a sudden panic among the enemy. Pyrrus, desirous to do something to wipe off the disgrace of this repulse, tried his fortune next on an adjoining work, lately raised by the grand-master Caretti: but here his soldiers met with

a still worse treatment, being almost overwhelmed with the hand-grenades, melted pitch, and boiling oil, which came pouring upon them, whilst the forces which were on the adjacent flanks made as great a slaughter of those that fled; insomuch that the janissaries began to resume their old murmuring tone, and cry out that they were brought thither only to be slaughtered.

The grand vizier Mustapha, afraid lest their complaints should reach his master, agreed at length, as the last resort, to make a fresh attempt on the bastion of England, whilst, to cause a diversion, the bashaw Achmed sprung some fresh mines at an opposite part of the city. This was accordingly executed on the 17th of September; when the former, at the head of five battalions, resolutely mounted or rather crept up the breach, and, in spite of the fire of the English, advanced so far as to pitch some standards on the top; when, on a sudden, a crowd of English knights, commanded by one Bouk, or Burk, sallied out of their entrenchments, and, assisted by some other officers of distinction, obliged them to retire, though in good order. Mustapha, provoked at it, led them back, and killed several knights with his own hand; and had his men supported him as they ought, the place must have been yielded to him: but the fire which was made from the adjacent batteries and musketry disconcerted them to such a degree, that neither threats nor entreaties could prevent their abandoning the enterprise, and dragging him away with them by main force. The Rhodians lost in that action several brave knights, both English and German; and, in particular, John Burk, their valiant commander: but the Turks lost above 3000 men, besides many officers of distinction. Much the same ill success having attended Achmed with his mines, one of which had been opened, and the other only bringing some fathoms of the wall down, he was also obliged to retreat; his troops, though some of the very best, being forced to disperse themselves, after having borne the fire and fury of the Spanish and Auvergnian knights as long as they were able.

By this time Solyman, ashamed and exasperated at his ill success, called a general council; in which he made some stinging reflections on his vizier, for having represented the reduction of Rhodes as a very easy enterprise. To avoid the effects of the sultan's resentment, the subtle Mustapha declared, that hitherto they had fought the enemy as it were upon equal terms, as if they had been afraid of taking an ungenerous advantage of their superiority, by which, said he, we have given them an opportunity of opposing us with their united force wherever we attacked them. But let us now resolve upon a general assault on several sides of the town; and see what a poor defence their strength, thus divided, will be able to make against our united force. The advice was immediately approved by all, and the time appointed for the execution of it was on the 24th of that month, and every thing was ordered to be got ready against that day. Accordingly the town was actually assaulted at four different parts, after having suffered a continual fire for some time from their artillery in order to widen the breaches; by which the grand-master easily understood their design, and that the bastions of England and Spain, the post of Provence, and terrace of Italy, were pitched upon for the assault, and took his precautions accordingly.

The morning was no sooner come, than each party mounted

36
Desperate
encounters
in mines,
&c.

Rhodes,

37
An assault
in four dif-
ferent
places at
once.

Rhodes. mounted their respective breach with an undaunted bravery, the young sultan, to animate them the more, having ordered his throne to be reared on an eminence, whence he could see all that was done. The Rhodians, on the other hand, were no less diligent in repulsing them with their cannon and other fire-arms, with their melted lead, boiling oil, stink pots, and other usual expedients. The one side ascend the scaling ladders, fearless of all that opposed them; the other overturn their ladders and send them tumbling down headlong into the ditches, where they were overwhelmed with stones, or dispatched with darts and other missile weapons. The bastion of England proves the scene of the greatest slaughter and bloodshed; and the grand-master makes that his post of honour, and, by his presence and example, inspires his men with fresh vigour and bravery, whilst the continual thunder of his artillery makes such horrid work among the assailants as chills all their courage, and forces them to give way: the lieutenant-general, who commands the attack, leads them back with fresh vigour, and mounts the breach at the head of all; immediately after comes a cannon-ball from the Spanish bastion, which overturns him dead into the ditch. This disaster, instead of fear and dread, fills them with a furious desire of revenging his death: but all their obstinacy cannot make the Rhodians go one step back, whilst the priests, monks, young men and old, and even women of every rank and age, assist them with an uncommon ardour and firmness; some in overwhelming the enemy with stones; others in destroying them with melted lead, sulphur, and other combustibles; and a third sort in supplying the combatants with bread, wine, and other refreshments.

The assault was no less desperate and bloody on the bastion of Spain, where the knights, who guarded it, not expecting to be so soon attacked, and ashamed to stand idle, were assisting the bastion of Italy; which gave the Turks an opportunity to mount the breach, and penetrate as far as their intrenchments, where they planted no less than 30 of their standards on them. The grand-master was quickly apprised of it, and ordered the bastion of Auvergne to play against them; which was done with such diligence, and such continual fire, whilst the Rhodians enter the bastion by the help of their casemates, and, sword in hand, fall upon them with equal fury, that the Turks, alike beset by the fire of the artillery and the arms of the Rhodian knights, were forced to abandon the place with a considerable loss. The aga with great bravery rallies them afresh, and brings them back, by which time the grand-master likewise appeared. The fight was renewed with greater fierceness; and such slaughter was made on both sides, that the grand-master was obliged to draw 200 men out of St Nicholas tower to his assistance: these were commanded by some Roman knights, who led them on with such speed and bravery, that their very appearance on the bastion made the janissaries draw back; which Solyman observing from his eminence, caused a retreat to be sounded, to conceal the disgrace of their flight. In these attacks there fell about 15,000 of his best troops, besides several officers of distinction. The loss of the besieged was no less considerable, if we judge from the small number of their forces; but the greatest of all to them was that of some of their bravest and most distinguished knights and commanders, many of whom were killed, and scarce any escaped unwound-

Rhodes. ed. But the most dreadful fate of all had like to have fallen on the favourite vizier Mustapha, who had proposed this general assault: the ill success of which had so enraged the proud sultan, that he condemned him to be shot with arrows at the head of his army; which dreadful sentence was just ready to be executed, when the old bashaw, by his intreaties, obtained a suspension of it, in hopes that, when his fury was abated, he should also obtain his pardon.

Solyman, however, was so discouraged by his ill successes, that he was on the point of raising the siege, and would have actually done so, had he not been diverted from it by the advice which he received from an Albanian deserter, some say by a letter from the traitor d' Amarald, that the far greater part of the knights were either killed or wounded, and those that remained altogether incapable of sustaining a fresh assault. This having determined him to try his fortune once more, the command of his forces was turned over to the bashaw Achmed; and, to show that he designed not to stir till he was master of the place, he ordered a house to be built on the adjacent mount Philermo for his winter-quarters. Achmed marched directly against the bastion of Spain, which had suffered the most; where, before he could open the trenches, his men fell thick and threefold by the constant fire both of small and great guns from the bastion of Auvergne. He lost still a much greater number in rearing a rampart of earth to cover the attack, and give him an opportunity of sapping the wall; and, as soon as he saw a large piece fall, ordered his men to mount the breach. They were no sooner come to the top, than they found a new work and entrenchments which Martinengo had reared; and there they were welcomed with such a brisk fire from the artillery, that they were glad to recover their trenches with the utmost precipitation, after having lost the much greater part of their men. The attack was renewed, and a reciprocal fire continued with great obstinacy, till a musket-shot deprived that indefatigable engineer of one of his eyes, and the order of his assiduous services for some time. The grand-master, having ordered him to be carried to his palace, took his place, and kept it till he was quite cured, which was not till 34 days after; and continued all the time in the intrenchments with his handful of knights, scarcely allowing himself rest night or day, and ever ready to expose himself to the greatest dangers, with an ardour more becoming a junior officer than an old worn out sovereign; which made his knights more lavish of their own lives than their paucity and present circumstances could well admit of.

Soon after this, the treason of d'Amarald was discovered, and he was condemned to death and executed; but by this time the city was reduced to the last extremity. The pope, emperor, and other crowned heads, had been long and often importuned by the grand-master for speedy assistance, without success; and, as an addition to all the other disasters, those succours which were sent to him from France and England perished at sea. The new supply which he had sent for of provisions from Candia had the same ill fate; so that the winds, seas, and every thing, seemed combined to bring on the destruction of that city and order. The only resource which could be thought of, under so dismal a situation, was, to send for the few remaining knights and forces which were left to guard the other islands, to come to the defence of their capital, in hopes that, if

Rhodes.

they could save this, the others might in time be recovered, in case the Turks should seize upon them. On the other hand, Solyman, grown impatient at the small ground his general had gained, gave him express orders to renew the attack with all imaginable speed and vigour, before the succours which he apprehended were coming from Europe, obliged him to raise the siege. Achmed instantly obeyed, raised a battery of 17 large cannon against the bastion of Italy, and quickly after made himself master of it, obliging the garrison to retire farther into the city. Here the grand-master was forced to demolish two of the churches, to prevent the enemy's seizing on them; and, with their materials, caused some new works and entrenchments to be made to hinder their proceeding farther.

The Turks, however, gained ground every day, though they still lost vast numbers of their men; at length the 30th of November came, when the grand-master, and both the besiegers and besieged, thought the last assault was to be given. The bashaw Pyrrus, who commanded it, led his men directly to the entrenchments; upon which the bells of all the churches sounded the alarm. The grand-master, and his few knights, troops, and citizens, ran in crowds, and in a confused disorderly manner, to the entrenchments, each fighting in his own way, or rather as his fear directed him. This attack would have proved one of the most desperate that had yet been felt, had not a most vehement rain intervened, which carried away all the earth which the enemy had reared to serve them as a rampart against the artillery of the bastion of Auvergne; so that being now quite exposed to their continual fire, they fell in such great numbers, that the bashaw could no longer make them stand their ground, but all precipitately fled towards their camp. This last repulse threw the proud sultan into such a fury, that none of his officers dared to come near him; and the shame of his having now spent near six whole months with such a numerous army before the place, and having lost such myriads of his brave troops with so little advantage, had made him quite desperate, and they all dreaded the consequences of his resentment.

Pyrrus at length, having given it time to cool, ventured to approach him, and propose a new project to him, which, if approved, could hardly fail of success; which was, to offer the town a generous capitulation; and he observed, that in case the stubborn knights should reject it, yet being now reduced to so small a number, as well as their forces and fortifications almost destroyed, the citizens, who were most of them Greeks, and less ambitious of glory than solicitous for their own preservation, would undoubtedly accept of any composition that should secure to them their lives and effects.

This proposal being relished by the sultan, letters were immediately dispersed about the city in his name, exhorting them to submit to his government, and threatening them at the same time with the most dreadful effects of his resentment if they persisted in their obstinacy. Pyrrus likewise dispatched a Genoese to approach as near as he could to the bastion of Auvergne, and to intreat the knights to take pity of so many of their Christian brethren, and not expose them to the dreadful effects which must follow their refusal of a capitulation, so generously offered them at their last extremity. Other agents were likewise employed in other places: to all of whom the grand-master ordered some

of his men to return this answer, That his order never treated with infidels but with sword in hand. An Albanian was sent next with a letter from the sultan to him, who met with the same repulse; after which, he ordered his men to fire upon any that should present themselves upon the same pretences; which was actually done. But this did not prevent the Rhodians from listening to the terms offered by the Turks, and holding frequent cabals upon that subject; in which the general massacre of a town taken by assault, the dreadful slavery of those that escaped, the rape of their wives and daughters, the destruction of their churches, the profanation of their holy relics and sacred utensils, and other dire consequences of an obstinate refusal, being duly weighed against the sultan's offers, quickly determined their choice. The grand-master, however, proving inexorable to all their intreaties, they applied to their Greek metropolitan, who readily went and represented all these things to him in the most pathetic terms: Yet he met with no better reception; but was told that he and his knights were determined to be buried under the ruins of the city if their swords could no longer defend it, and he hoped their example would not permit them to show less courage on that occasion. This answer produced a quite contrary effect; and, as the citizens thought delays dangerous at such a juncture, they came in a body to him by the very next morning, and plainly told him, that if he paid no greater regard to their preservation, they would not fail of taking the most proper measures to preserve the lives and chastity of their wives and children.

This resolution could not but greatly alarm the grand-master; who thereupon called a council of all the knights, and informed them himself of the condition of the place. These all agreed, particularly the engineer Martinengo, that it was no longer defensible, and no other resource left but to accept the sultan's offers; adding, at the same time, that though they were all ready, according to the obligations of their order, to fight to the last drop of their blood, yet it was no less their duty to provide for the safety of the inhabitants, who, not being bound by the same obligations, ought not to be made a sacrifice to their glory. It was therefore agreed, with the grand-master's consent, to accept of the next offers the sultan should make. He did not let them wait long: for the fear he was in of a fresh succour from Europe, the intrepidity of the knights, and the shame of being forced to raise the siege, prevailed upon him to hang out his pacific flag, which was quickly answered by another on the Rhodian side; upon which the Turks, coming out of their trenches, delivered up the sultan's letter for the grand-master, to the grand-prior of St Giles, and the engineer Martinengo. The terms offered in it by Solyman appeared so advantageous, that they immediately exchanged hostages; and the knights that were sent to him had the honour to be introduced to him, and to hear them confirmed by his own mouth, though not without threats of putting all to fire and sword in case of refusal, or even delay. Two ambassadors were forthwith sent to him, to demand a truce of three days to settle the capitulation and interests of the inhabitants, who were part Greeks and part Latins; but this was absolutely refused by the impatient monarch, out of a suspicion of the rumoured succour being near, and that the truce was only to gain time till it was come.

He therefore ordered the hostilities to be renewed with fresh fury; in which the Rhodians made a most noble

Rhodes.

Rhodes. noble defence, considering their small number, and that they had now only the barbican or false bray of the bastion of Spain left to defend themselves, and once more repulsed the enemy: at which the sultan was so enraged, that he resolved to overpower them by numbers on the next day; which was, after a stout defence, so effectually done, that they were forced to abandon that outwork, and retire into the city. In the meanwhile, the burghers, who had but a day or two before raised a fresh uproar against the grand-master, under pretence that he was going to give them up a prey to an infidel who regarded neither oaths nor solemn treaties, perceiving their own danger, came now to desire him to renew the negotiations, and only begged the liberty of sending one of their deputies along with his, to secure their interests in the capitulation. He readily consented to it; but gave them a charge to show the bashaw Achmed the treaty formerly concluded between Bajazet and his predecessor d'Aubuisson, in which the former had entailed a dreadful curse on any of his successors that should infringe it. This was done, in hopes that the showing it to his master, who valued himself so much upon his strict observance of his law, might produce some qualm in him which might lengthen the agreement, for they were still as much in hopes of a succour from Europe as he was in fear of it; but to their great surprize, Achmed had no sooner perused than he tore it all in pieces, trampled it under his feet, and in a rage ordered them to be gone. The grand-master found no other resource than to send them back to him the next day; when that minister, who knew his master's impatience to have the affair concluded, quickly agreed with them upon the terms, which were in substance as follow:

1. That the churches should not be profaned.
2. That the inhabitants should not be forced to part with their children to be made janissaries.
3. That they should enjoy the free exercise of their religion.
4. That they should be free from taxes during five years.
5. That those who had a mind to leave the island should have free leave to do so.
6. That if the grand-master and his knights had not a sufficient number of vessels to transport themselves and their effects into Candia, the sultan should supply that defect.
7. That they should have twelve days allowed them, from the signing of the articles, to send all their effects on board.
8. That they should have the liberty of carrying away their relics, chalices, and other sacred utensils belonging to the great church of St John, together with all their ornaments and other effects.
9. That they should likewise carry with them all the artillery with which they were wont to arm the galleys of the order.
10. That the islands belonging to it, together with the castle of St Peter, should be delivered up to the Turks.
11. That, for the more easy execution of these articles, the Turkish army should be removed at some miles distance from the capital.
12. That the aga of the janissaries, at the head of 4000 of his men, should be allowed to go and take possession of the place.

From this time the island of Rhodes has been subject to the Turks; and, like other countries subject to that tyrannical yoke, has lost its former importance. The air is good, and the soil fertile, but ill cultivated. The capital is surrounded with triple walls and double ditches, and is looked upon to be impregnable. It is inhabited by Turks and Jews; the Christians being obliged to oc-

cupy the suburbs, as not being allowed to stay in the town during the night. The town is situated in E. Long. 28. 25. N. Lat. 36. 54.

RHODIOLA, ROSE-WORT; a genus of plants belonging to the dicœcia class; and in the natural method ranking under the 13th order, *Succulentæ*. See BOTANY Index.

RHODIUM, a metal which is obtained from the ores of platina. See CHEMISTRY; and under PLATINA, ORES, Reduction of, &c.

Oil of RHODIUM, an essential oil obtained from a species of aspalathus.

RHODODENDRON, DWARF ROSE-BAY; a genus of plants belonging to the decandria class; and in the natural method ranking under the 18th order, *Bicornes*. See BOTANY Index.

RHODORA, a genus of plants belonging to the decandria class; and of which there is only one species. See BOTANY Index.

RHOEA. See RHEA, ORNITHOLOGY Index.

RHOEADÆ (rhœas, Linnæus's name, after Dioscorides, for the red poppy), the name of the 27th order in Linnæus's fragments of a natural method, consisting of poppy and a few genera which resemble it in habit and structure. See BOTANY Index.

RHOMBOIDES, in *Geometry*, a quadrilateral figure whose opposite sides and angles are equal, but is neither equilateral nor equiangular.

RHOMBOIDES, in *Anatomy*, a thin, broad, and obliquely square fleshy muscle, situated between the basis of the scapula and the spina dorsi; so called from its figure. Its general use is to draw backward and upward the subspinal portion of the basis scapulæ.

RHOMBUS, in *Geometry*, an oblique-angled parallelogram, or quadrilateral figure, whose sides are equal and parallel, but the angles unequal, two of the opposite ones being obtuse and two acute.

RHOMB Solid, consists of two equal and right cones joined together at their bases.

RHONE, one of the largest rivers in France, which, rising among the Alps of Switzerland, passes through the lake of Geneva, visits that city, and then runs southwest to Lyons; where, joining the river Soane, it continues its course due south, passing by Orange, Avignon, and Arles, and falls into the Mediterranean a little above Marseilles.

RHOPIUM, a genus of plants, belonging to the gynandria class; and in the natural method ranking with those that are doubtful. See BOTANY Index.

RHUBARB. See RHEUM, BOTANY and MATERIA MEDICA Index.

RHUMB, in *Navigation*, a vertical circle of any given place, or intersection of such a circle with the horizon; in which last sense rhumb is the same with a point of the compass.

RHUMB-Line is also used for the line which a ship describes when sailing in the same collateral point of the compass, or oblique to the meridians.

RHUNKENIUS, DAVID, an eminent classical scholar, was born at Stolpen in Prussian Pomerania, in the year 1723. Of the early part of his studies little is known, but it appears that he was some time at Schlaff, from which he removed to Königsburg, where he met with the celebrated Kant, whose system has so much engaged the attention of Europe. He afterwards went to
Gottingen

Rhodiola
||
Rhunkenius.

Rhunke-
nius.

Göttingen to attend the learned Gesner, and to enlarge his knowledge of the Greek language. Some time after this period he formed an acquaintance with Ritter and Berger while he resided at Witteburg, where he continued about two years; and his first public attempt, being a thesis *De Galla Placidia Augusta*, daughter of Theodosius, and the sister of Arcadius and Honorius, was in this place. Rhunkenius was engaged to go to Leyden by Ernesti, to complete his knowledge of ancient literature. He gave up the study of divinity, for which he was at first designed, and prevailed with his parents to allow him to go to Leyden, where he arrived with recommendations to many of the learned, and pursued his studies with avidity and zeal, accompanying Alberti in his visit to the Spa in the year 1750. Hemsterhuis wished to attach him to Holland, urging him to persevere in the study of the law, as affording an additional chance of employment. This advice he thought proper to follow, and published a translation of some works of Theodorus, Stephanus, and some other celebrated lawyers in the time of Justinian, which he found in manuscript in the university of Leyden.

He went to Paris in the year 1755, where Capomer, who was at that time keeper of the king's library, kindly received him; and he formed an acquaintance with Dr S. Musgrave and Mr T. Tytwhit, who were there for the purpose of examining the manuscripts of Euripides. He had also formed the resolution of going to Spain, but Hemsterhuis recalled him, as he needed his assistance as lecturer in the Greek tongue. In 1755, Rhunkenius took possession of his office, and read an excellent discourse *De Græcia Artium et Doctrinarum Inventrice*.

About this time he was useful to Ernesti, in his edition of Callimachus; and in 1761, he succeeded Oudendorp as professor of history and of eloquence, delivering an oration *De Doctore Umbratico*. About a year after this event, Rhunkenius was offered the chair of Gesner by the university of Göttingen, which he declined accepting, but he recommended Heyne, who was the successful candidate.

In 1764 he married an Italian lady, who, about six years afterwards, lost both her speech and sight by a stroke of apoplexy. She had two daughters, one of whom was afterwards blind, and the wife of our author survived her husband. The desire of Rhunkenius to do Ernesti a favour, made him turn his attention to the Memorabilia of Xenophon; and he was led to examine with particular attention, the treatise of Longinus on the sublime. Having risen superior to his domestic misfortunes about the year 1772, he pursued his new edition of Velleius Paterculus, and he prepared a second edition of *Epistolæ Criticæ*, and a collection of Scholia on Plato. In the year 1766, he published a valuable little tract *De Vita et Scriptis Longini*, in the form of a thesis, to which he prefixed the name of one of his pupils. His Velleius Paterculus appeared in 1779, and in 1780 Homer's reputed hymn to Ceres. In 1786, he published the first part of Apuleius, which had been prepared by Oudendorp, and a new edition of his own Timæus in 1789, and at the same time he collected and published the works of Marc-Anthony Murat, in 5 vols. octavo.

Both the body and mind of Rhunkenius were much weakened in consequence of the loss of friends, an attack of the gout, and the misfortunes of the Batavian republic;

but he was in some measure relieved by the satisfaction he felt at the dedication of Homer by Wolf, although he was not of that writer's opinion that the works of Homer were written by different authors. He sunk into a kind of stupor on the 14th of May, 1798, which in two days put a period to his existence.

His knowledge and learning were unquestionably great, and he was allowed to be lively, cheerful, and gay, even to an extreme. Many posthumous honours were conferred upon him, and a pension settled on his unfortunate widow. When Whyttenbach took possession of Rhunkenius's chair, he delivered a discourse on the early age of Rhunkenius, which he proposed as an example to the Batavian youth who made the belles lettres their study.

RHUS, SUMACH, a genus of plants, belonging to the pentandria class; and in the natural method ranking under the 43d order, *Dumofæ*. See BOTANY Index.

1. The coriaria, or elm-leaved sumach, grows naturally in Italy, Spain, Turkey, Syria, and Palestine. The branches of this tree are used instead of oak-bark for tanning of leather; and it is said that the Turkey leather is all tanned with this shrub. It has a ligneous stalk, which divides at bottom into many irregular branches, rising to the height of eight or ten feet; the bark is hairy, of an herbaceous brown colour; the leaves are winged, composed of seven or eight pair of lobes, terminated by an odd one, bluntly sawed on their edges, hairy on their under side, of a yellowish-green colour, and placed alternately on the branches; the flowers grow in loose panicles on the end of the branches, which are of a whitish herbaceous colour, each panicle being composed of several spikes of flowers sitting close to the footstalks. The leaves and seeds of this sort are used in medicine, and are esteemed very restraining and styptic.

2. The typhinum, Virginian sumach, or vinegar plant, grows naturally in almost every part of North America. This hath a woody stem, with many irregular branches, which are generally crooked and deformed. The young branches are covered with a soft velvet-like down, resembling greatly that of a young stag's horn, both in colour and texture, from whence the common people have given it the appellation of *stag's horn*; the leaves are winged, composed of six or seven pair of oblong heart-shaped lobes, terminated by an odd one, ending in acute points, hairy on their under side, as is also the midrib. The flowers are produced in close tufts at the end of the branches, and are succeeded by seeds, inclosed in purple woolly succulent covers; so that the bunches are of a beautiful purple colour in autumn; and the leaves, before they fall in autumn, change to a purplish colour at first, and before they fall to a feuille-mort. This plant, originally a native of North America, has been long cultivated in the north of Germany, and is lately introduced into Russia. It has got the name of the *vinegar plant* from the double reason of the young germen of its fruit, when fermented, producing either new or adding to the strength of old weak vinegar, whilst its ripe berries afford an agreeable acid, which might supply the place when necessary of the citric acid. The powerful astringency of this plant in all its parts recommends it as useful in several of the arts. As for example, the ripe berries boiled with alum make a good dye

Rhunke-
nius,
Rhus.

Rhus. dyé for hats. The plant in all its parts may be used as a succedaneum for oak-bark in tanning, especially the white glove leather. It will likewise answer to prepare a dye for black, green, and yellow colours; and with martial vitriol it makes a good ink. The milky juice that flows from incisions made in the trunk or branches, makes when dried the basis of a varnish little inferior to the Chinese. Bees are remarkably fond of its flowers; and it affords more honey than any of the flowering shrubs, so that it may prove a useful branch of economy, where rearing these insects is an object. The natives of America use the dried leaves as tobacco.

3. The glabrum, with winged leaves, grows naturally in many parts of North America; this is commonly titled by the gardeners *New England sumach*. The stem of this is stronger and rises higher than that of the former; the branches spread more horizontally; they are not quite so downy as those of the last, and the down is of a brownish colour; the leaves are composed of many more pairs of lobes, which are smooth on both sides; the flowers are disposed in loose panicles, which are of an herbaceous colour.

4. The Carolinianum, with sawed winged leaves, grows naturally in Carolina; the seeds of this were brought from thence by the late Mr Cateby, who has given a figure of the plant in his Natural History of Carolina. This is by the gardeners called the *scarlet Carolina sumach*; it rises commonly to the height of seven or eight feet, dividing into many irregular branches, which are smooth, of a purple colour, and pounced over with a greyish powder, as are also the footstalks of the leaves. The leaves are composed of seven or eight pair of lobes, terminated by an odd one; these are not always placed exactly opposite on the midrib, but are sometimes alternate. The upper side of the lobes is of a dark green, and their under hoary, but smooth. The flowers are produced at the end of the branches in very close panicles, which are large, and of a bright red colour.

5. The Canadense, with winged spear-shaped leaves, grows naturally in Canada, Maryland, and several other parts of North America. This hath smooth branches of a purple colour, covered with a grey pounce. The leaves are composed of seven or eight pairs of lobes, terminated by an odd one; the lobes are spear-shaped, sawed on their edges, of a lucid green on their upper surface, but hoary on their under, and are smooth. The flowers are produced at the end of the branches in large panicles, which are composed of several smaller, each standing upon separate footstalks; they are of a deep red colour, and the whole panicle is covered with a grey pounce, as if it had been scattered over them.

6. The copallinum, or narrow-leaved sumach, grows naturally in most parts of North America, where it is known by the title of *beach sumach*, probably from the place where it grows. This is of humbler growth than either of the former, seldom rising more than four or five feet high in Britain, dividing into many spreading branches, which are smooth, of a light brown colour, closely garnished with winged leaves, composed of four or five pair of narrow lobes, terminated by an odd one; they are of a light green on both sides, and in autumn change purplish. The midrib, which sustains the lobes, has on each side a winged or leafy border, which runs

Rhus. from one pair of lobes to another, ending in joints at each pair, by which it is easily distinguished from the other sorts. The flowers are produced in loose panicles at the end of the branches, of a yellowish herbaceous colour.

These six sorts are hardy plants, and will thrive in the open air here. The first and fourth sorts are not quite so hardy as the others, so must have a better situation, otherwise their branches will be injured by severe frost in the winter. They are easily propagated by seeds, which if sown in autumn the plants will come up the following spring; but if they are sown in spring, they will not come up till the next spring; they may be either sown in pots, or the full ground. If they are sown in pots in autumn, the pots should be placed under a common frame in winter, where the seeds may be protected from hard frost; and in the spring, if the pots are plunged into a very moderate hot-bed, the plants will soon rise, and have thereby more time to get strength before winter. When the plants come up, they must be gradually hardened to bear the open air, into which they should be removed as soon as the weather is favourable, placing them where they may have the morning sun; in the summer, they must be kept clean from weeds, and in dry weather watered. Toward autumn it will be proper to stint their growth by keeping them dry, that the extremity of their shoots may harden; for if they are replete with moisture, the early frosts in autumn will pinch them, which will cause their shoots to decay almost to the bottom if the plants are not screened from them. If the pots are put under a common frame in autumn, it will secure the plants from injury: for while they are young and the shoots soft, they will be in danger of suffering, if the winter proves very severe; but in mild weather they must always enjoy the open air, therefore should never be covered but in frost. The spring following, just before the plants begin to shoot, they should be shaken out of the pots, and carefully separated, so as not to tear the roots; and transplanted into a nursery, in rows three feet asunder, and one foot distance in the rows. In this nursery they may stand two years to get strength, and then may be transplanted where they are to remain.

7. Besides these, Linnæus has included in this genus the toxicodendron or poison tree, under the name of *rhus vernix* or *poison-ash*. This grows naturally in Virginia, Pennsylvania, New England, Carolina, and Japan, rising with a strong woody stalk to the height of 20 feet and upwards; though in this country it is seldom seen above 12, by reason of the plants being extremely tender. The bark is brown, inclining to gray; the branches are garnished with winged leaves composed of three or four pair of lobes terminated by an odd one. The lobes vary greatly in their shape, but for the most part they are oval and spear-shaped. The foot-stalks become of a bright purple towards the latter part of summer, and in autumn all the leaves are of a beautiful purple before they fall off.

All the species of sumach abound with an acrid milky juice, which is reckoned poisonous; but this property is most remarkable in the vernix. The most distinct account of it is to be found in Professor Kalm's Travels in North America. "An incision (says he) being made into the tree, a whitish yellow juice, which has a nauseous smell, comes out between the bark and the wood,

Rhus. wood. This tree is not known for its good qualities, but greatly so for the effect of its poison; which though it is noxious to some people, yet does not in the least affect others. And therefore one person can handle the tree as he pleases, cut it, peel off its bark, rub it or the wood upon his hands, smell at it, spread the juice upon the skin, and make more experiments, with no inconvenience to himself: another person, on the contrary, dares not meddle with the tree while its wood is fresh; nor can he venture to touch a hand which has handled it, nor even to expose himself to the smoke of a fire which is made with this wood, without soon feeling its bad effects; for the face, the hands, and frequently the whole body, swells excessively, and is affected with a very acute pain. Sometimes bladders or blisters arise in great plenty, and make the sick person look as if he were infected by a leprosy. In some people the external thin skin, or cuticle, peels off in a few days, as is the case when a person has scalded or burnt any part of his body. Nay, the nature of some persons will not even allow them to approach the place where the tree grows, or to expose themselves to the wind when it carries the effluvia or exhalations of this tree with it, without letting them feel the inconvenience of the swelling which I have just now described. Their eyes are sometimes shut up for one, or two, or more days together, by the swelling. I know two brothers, one of whom could without danger handle this tree in what manner he pleased, whereas the other could not come near it without swelling. A person sometimes does not know that he has touched this poisonous plant, or that he has been near it, before his face and hands show it by their swelling. I have known old people who were more afraid of this tree than of a viper; and I was acquainted with a person who, merely by the noxious exhalations of it, was swelled to such a degree, that he was as stiff as a log of wood, and could only be turned about in sheets.

"I have tried experiments of every kind with the poison-tree on myself. I have spread its juice upon my hands, cut and broke its branches, peeled off its bark, and rubbed my hands with it, smelt at it, carried pieces of it in my bare hands, and repeated all this frequently, without feeling the baneful effects so commonly annexed to it; but I, however, once experienced, that the poison of the sumach was not entirely without effect upon me. On a hot day in summer, as I was in some degree of perspiration, I cut a branch of the tree, and carried it in my hand for about half an hour together, and smelt it now and then. I felt no effects from it in the evening. But next morning I awoke with a violent itching of my eyelids and the parts thereabouts; and this was so painful, that I could hardly keep my hands from it. It ceased after I had washed my eyes for a while with very cold water. But my eyelids were very stiff all that day. At night the itching returned; and in the morning when I awoke, I felt it as ill as the morning before, and I used the same remedy against it. However, it continued almost for a whole week together; and my eyes were very red, and my eyelids were with difficulty moved during all that time. My pain ceased entirely afterwards. About the same time I had spread the juice of the tree very thick upon my hand. Three days after, it occasioned blisters,

which soon went off without affecting me much. I have not experienced any thing more of the effects of the plant, nor had I any desire so to do. However, I found that it could not exert its power upon me when I was not perspiring.

"I have never heard that the poison of this sumach has been mortal, but the pain ceases after a few days duration. The natives formerly made their flutes of this tree, because it has a great deal of pith. Some people assured me, that a person suffering from its noisome exhalations, would easily recover by spreading a mixture of the wood burnt to charcoal, and hog's lard, upon the swelled parts. Some asserted, that they had really tried this remedy. In some places this tree is rooted out, on purpose that its poison may not affect the workmen."

The natives are said to distinguish this tree in the dark by its extreme coldness to the touch. The juice of some kinds of sumach, when exposed to the heat of the sun, becomes so thick and clammy, that it is used for birdlime, and the inspissated juice of the poison-ash is said to be the fine varnish of Japan. A cataplasm made with the fresh juice of the poison-ash, applied to the feet, is said by Hughes, in his Natural History of Barbadoes, to kill the vermin called by the West Indians *chigers*. Very good vinegar is made from an infusion of the fruit of an American sumach, which from that reason is called the *vinegar-tree*. The resin called *gum copal* is from the *rhus copallinum*.

RHYME, RHIME, *Ryme* or *Rime*, in *Poetry*, the similar sound or cadence and termination of two words which end two verses, &c. Or rhyme is a similitude of sound between the last syllable or syllables of a verse, succeeding either immediately or at a distance of two or three lines. See *POETRY*, N^o 177, &c.

RHYMER, THOMAS THE, a poet of Scotland, who lived in the 13th century, and whose real name was Sir Thomas Lermont. The life and writings of this poet are involved in much obscurity; but his fame, both as a prophet and poet, has always stood high among his countrymen. Eslelement was the chief family of his name, from which, it is said, he derived his origin; but his family title appears to have been taken from Ercildon, or, as it has been corrupted in modern times, from Earlstoun, in the county of Berwick, where the remains of his house are still pointed out, and known by the name of *Rhymer's Tower*. The period of the union with England was the crisis of his fame as an inspired poet; for Robert Birrel informs us, that "at this tyme all the hail commons of Scotland that had red or understanding, wer daylie speiking and exponeing of Thomas Rymer hes prophesie, and of other prophesies quhilk wer prophesied in auld tymes." It is obvious that he distinguished himself by his poetical works, as we learn from the testimony of early writers. He is commemorated by Robert of Brunne, who lived in the beginning of the 14th century, as the author of *Sir Tristrem*, a romance lately published by Mr Walter Scot. On a stone still preserved in the front wall of the church of Earlstoun we meet with this inscription:

"Auld Rhymer's race lies in this place."

RHYTHM, in *Music*, the variety in the movement, as to the quickness or slowness, length or shortness, of the

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Rhythm.

Rial
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Ricaut.

the notes. Or it may be defined more generally, the proportion which the parts of the motion have to each other.

RIAL, or RYAL, a Spanish coin. See *MONEY-Table*.

RIAL, or *Royal*, is also the name of a piece of gold anciently current among us for 10s.

RIBAN, or RIBBAN, in *Heraldry*, the eighth part of a bend. See *HERALDRY*.

RIBAND, or RIBBON, a narrow sort of silk, chiefly used for head-ornaments, badges of chivalry, &c. See *WEAVING*.

Ribbons of all sorts are prohibited from being imported.

RIBANDS (from *rib* and *bend*), in naval architecture, long narrow flexible pieces of timber, nailed upon the outside of the ribs, from the stem to the stern-post, so as to envelope the ship lengthwise, and appear on her side and bottom like the meridians on the surface of the globe. The ribands being judiciously arranged with regard to their height and distance from each other, and forming regular sweeps about the ship's body, will compose a kind of frame, whose interior surface will determine the curve of all the intermediate or filling-timbers which are stationed between the principal ones. As the figure of the ship's bottom approaches to that of a conoid, and the ribands have a limited breadth, it is apparent that they cannot be applied to this convex surface without forming a double curve, which will be partly vertical and partly horizontal; so that the vertical curve will increase by approaching the stem, and still more by drawing near the stern-post. It is also evident, that by deviating from the middle line of the ship's length, as they approach the extreme breadth at the midship-frame, the ribands will also form an horizontal curve. The lowest of these, which is terminated upon the stem and stern-post, at the height of the rising line of the floor, and answers to the upper part of the floor-timber upon the midship-frame, is called the *floor-riband*. That which coincides with the wing-transom, at the height of the lower deck upon the midship-frame, is termed the *breadth-riband*; all the rest, which are placed between these two, are called *intermediate-ribands*. See *SHIP-BUILDING*.

RIBES, the CURRANT and GOOSEBERRY-BUSH, a genus of plants belonging to the pentandria class, and in the natural method ranking under the 36th order, *Pomaceæ*. See *BOTANY INDEX*; and for the method of cultivating these fruits, see *GARDENING*.

RICAUT, or RYCAUT, SIR PAUL, an eminent English traveller, of the time of whose birth we find no account; but in 1661, he was appointed secretary to the earl of Winchelsea, who was sent ambassador extraordinary to the Ottoman Porte. During his continuance in that station, he wrote, "The present State of the Ottoman empire, in three-books, containing the maxims of the Turkish policy, their religion, and military discipline," London, folio, 1670. He afterwards resided 11 years as consul at Smyrna, where, at the command of Charles II. he composed "The present state of the Greek and Armenian Churches, anno Christi 1678." On his return, Lord Clarendon being appointed lord-lieutenant of Ireland, made him his principal secretary for Leinster and Connaught; King James II. knighted him; and made him one of the privy council in Ire-

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land, and judge of the court of admiralty; all which he held to the Revolution. He was employed by King William as resident at the Hanse-towns in Lower Saxony, where he continued for ten years; but being worn out with age and infirmities, he obtained leave to return in 1700, and died the same year. Ricaut continued "Knolles's History of the Turks," and "Platina's Lives of the Popes;" besides which, there are some other productions under his name.

RICCIA, a genus of plants of the natural order of algae, and belonging to the cryptogamia class. See *BOTANY INDEX*.

RICE. See *ORYZA*. "Rice *bras* (says Mr Mar-^{History of} den) whilst in the husk, is in Indian called *paddee*, and *Sumatra*, assumes a different name in each of its other various P. 600. states. We observe no distinction of this kind in Europe, where our grain retains through all its stages, till it becomes flour, its original name of barley, wheat, or oats. The following, beside many others, are names applied to rice, in its different stages of growth and preparation; *paddee*, original name of the seed: *oossay*, grain of last season: *bunnee*, the plants before removed to the favours: *bras*, or *bray*, rice, the husk of the *paddee*, being taken off: *charroop*, rice cleaned for boiling: *nassée*, boiled rice: *peerang*, yellow rice: *jambar*, a service of rice, &c.

Among people whose general objects of contemplation are few, those which do of necessity engage their attention, are often more nicely discriminated than the same objects among more enlightened people, whose ideas ranging over the extensive field of art and science, disdain to fix long on obvious and common matters. *Paddee*, in Sumatra and the Malay islands, is distinguished into two sorts; *Laddang* or upland *paddee*, and *Sarwoor* or low-land, which are always kept separate, and will not grow reciprocally. Of these the former bears the higher price, being a whiter, heartier, and better flavoured grain, and having the advantage in point of keeping. The latter is much more prolific from the seed, and liable to less risk in the culture, but is of a watery substance, produces less increase in boiling, and is subject to a swifter decay. It is, however, in more common use than the former. Beside this general distinction, the *paddee* of each sort, particularly the *Laddang*, presents a variety of species, which, as far as my information extends, I shall enumerate, and endeavour to describe. The common kind of dry ground *paddee*: colour, light brown: the size rather large, and very little crooked at the extremity. *Paddee undallong*: dry ground: short round grain: grows in whorles or bunches round the stock. *Paddee ebbafs*: dry ground: large grain: common. *Paddee galloo*: dry ground: light coloured: scarce. *Paddee sennee*: dry ground: deep coloured: small grain: scarce. *Paddee ejoo*: dry ground: light coloured. *Paddee kooning*: dry ground: deep yellow: fine rice: crooked and pointed. *Paddee coocoor ballum*: dry ground: much esteemed: light coloured: small, and very much crooked, resembling a dove's nail, from whence its name. *Paddee pesang*: dry ground: outer coat light brown; inner red: longer, smaller, and less crooked than the *coocoor ballum*. *Paddee fantong*: the finest sort that is planted in wet ground: small, straight, and light coloured. In general it may be observed that the larger grained rice is the least esteemed, and the smaller and whiter the most prized.

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Ricaut
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Rice.

Rice. prized. In the Lampoon country they make a distinction of paddee *crawang* and paddee *jerroo*; the former of which is a month earlier in growth than the latter."

The following is the Chinese method of cultivating rice, as it is given by Sir George Staunton:

"Much of the low grounds in the middle and southern provinces of the empire are appropriated to the culture of that grain. It constitutes, in fact, the principal part of the food of all those inhabitants, who are not so indigent as to be forced to subsist on other and cheaper kinds of grain. A great proportion of the surface of the country is well adapted for the production of rice, which, from the time the seed is committed to the soil till the plant approaches to maturity, requires to be immersed in a sheet of water. Many and great rivers run through the principal provinces of China, the low grounds bordering on those rivers are annually inundated, by which means is brought upon their surface a rich mud or mucilage that fertilizes the soil, in the same manner as Egypt receives its fecundative quality from the overflowing of the Nile. The periodical rains which fall near the sources of the Yellow and the Kiang rivers, not very far distant from those of the Ganges and the Burumpooter, among the mountains bounding India to the north, and China to the west, often swell those rivers to a prodigious height, though not a drop of rain should have fallen on the plains through which they afterwards flow.

"After the mud has lain some days upon the plains in China, preparations are made for planting them with rice. For this purpose, a small piece of ground is inclosed by a bank of clay; the earth is ploughed up; and an upright harrow, with a row of wooden pins in the lower end, is drawn lightly over it by a buffalo. The grain, which had previously been steeped in dung diluted with animal water, is then sown very thickly upon it. A thin sheet of water is immediately brought over it, either by channels leading to the spot from a source above it, or when below it by means of a chain pump, of which the use is as familiar as that of a hoe to every Chinese husbandman. In a few days the remainder of the ground intended for cultivation, if stiff, is ploughed, the lumps broken by hoes, and the surface levelled by the harrow. As soon as the shoots have attained the height of six or seven inches, they are plucked up by the roots, the tops of the blades cut off, and each root is planted separately, sometimes in small furrows turned with the plough, and sometimes in holes made in rows by a drilling stick for that purpose. The roots are about half a foot asunder. Water is brought over them a second time. For the convenience of irrigation, and to regulate its proportion, the rice fields are subdivided by narrow ridges of clay, into small inclosures. Through a channel, in each ridge, the water is conveyed at will to every subdivision of the field. As the rice approaches to maturity, the water, by evaporation and absorption, disappears entirely; and the crop, when ripe, covers dry ground. The first crop or harvest, in the southern provinces particularly, happens towards the end of May or beginning of June. The instrument for reaping is a small sickle, dentated like a saw, and crooked. Neither carts nor cattle are used to carry the sheaves off from the spot where they were reaped; but they are placed regularly in frames, two of which, suspended at the extremities of a bamboo

pole, are carried across the shoulders of a man, to the place intended for disengaging the grain from the stems which had supported it. This operation is performed, not only by a flail, as is customary in Europe, or by cattle treading the corn in the manner of other Orientalists, but sometimes also by striking it against a plank set upon its edge, or beating it against the side of a large tub scolloped for that purpose; the back and sides being much higher than the front, to prevent the grain from being dispersed. After being winnowed, it is carried to the granary.

"To remove the skin or husk of rice, a large strong earthen vessel, or hollow stone, in form somewhat like that which is used elsewhere for filtering water, is fixed firmly in the ground; and the grain, placed in it, is struck with a conical stone fixed to the extremity of a lever, and cleared, sometimes indeed imperfectly, from the husk. The stone is worked frequently by a person treading upon the end of the lever. The same object is attained also by passing the grain between two flat stones of a circular form, the upper of which turns round upon the other, but at such a distance from it as not to break the intermediate grain. The operation is performed on a large scale in mills turned by water; the axis of the wheel carrying several arms, which, by striking upon the ends of levers, raise them in the same manner as is done by treading on them. Sometimes twenty of these levers are worked at once. The straw from which the grain has been disengaged is cut chiefly into chaff, to serve as provender for the very few cattle employed in the Chinese husbandry.

"The labour of the first crop being finished, the ground is immediately prepared for the reception of fresh seeds. The first operation undertaken is that of pulling up the stubble, collecting it into small heaps, which are burnt, and the ashes scattered upon the field. The former processes are afterwards renewed. The second crop is generally ripe late in October or early in November. The grain is treated as before; but the stubble is no longer burnt. It is turned under with the plough, and left to putrify in the earth. This, with the slime brought upon the ground by inundation, are the only manures usually employed in the culture of rice."

Rice is recommended as the best corrective of *spirit* flour, of which there is a great quantity in Scotland every year, and of course a great deal of unpleasant and unwholesome bread. The writer of the paper alluded to directs ten pounds of flour and one pound of ground rice, with the usual quantity of yeast, to be placed for about two hours before a fire, and then formed into bread in the common way. This addition of rice, besides correcting the bad qualities of the damaged flour, adds, he says, much to its nutriment: and he is undoubtedly right; for the flour of rice, though very nutritious, is so dry, that it is difficult to make bread of it by itself.

RICE-Bird. See ORYZIVORA, } ORNITHOLOGY
RICE-Bunting. See EMBERIZA, } Index.
RICHARD I. II. and III. kings of England. See ENGLAND.

RICHARDIA, a genus of plants belonging to the hexandria class, and in the natural method ranking under the 47th order, *Stellatae*. See BOTANY Index.

RICHARDSON, SAMUEL, a celebrated English sentimental

Rice
Richardson.

Richardson. sentimental novel-writer, born in 1688, was bred to the business of a printer, which he exercised all his life with eminence. Though he is said to have understood no language but his own, yet he acquired great reputation by his three epistolary novels, entitled *Pamela*, *Clarissa*, and *Sir Charles Grandison*; which show an uncommon knowledge of human nature. His purpose being to promote virtue, his pictures of moral excellence are by much too highly coloured; and he has described his favourite characters such rather as we might wish them to be, than as they are to be found in reality. It is also objected by some, that his writings have not always the good effect intended: for that, instead of improving natural characters, they have fashioned many artificial ones; and have taught delicate and refined ladies and gentlemen to despise every one but their own self-exalted persons. But after all that can be urged of the ill effects of Mr Richardson's novels on weak minds, eager to adopt characters they can only burlesque; a sensible reader will improve more by studying such models of perfection, than of those nearer to the natural standard of human frailty, and where those frailties are artfully exaggerated so as to fix and misemploy the attention on them. A stroke of the palsy carried off Mr Richardson, after a few days illness, upon the 4th of July 1761. He was a man of fine parts, and a lover of virtue; which, for aught we have ever heard to the contrary, he showed in his life and conversation as well as in his writings. Besides the works above mentioned, he is the author of an *Æsop's Fables*, a *Tour through Britain*, 4 vols, and a volume of *Familiar Letters upon business and other subjects*. He is said from his childhood to have delighted in letter writing; and therefore was the more easily led to throw his romances into that form; which, if it enlivens the history in some respects, yet lengthens it with uninteresting prate, and formalities that mean nothing, and on that account is sometimes found a little tedious and fatiguing.

The most eminent writers of our own country, and even of foreign parts, have paid their tribute to the transcendent talents of Mr Richardson, whose works have been published in almost every language and country of Europe. They have been greatly admired, notwithstanding every dissimilitude of manners, or every disadvantage of translation. The celebrated M. Diderot, speaking of the means employed to move the passions, in his *Essay on Dramatic Poetry*, mentions Richardson as a perfect master of that art: "How striking (says he), how pathetic, are his descriptions! His personages, though silent, are alive before me; and of those who speak, the actions are still more affecting than the words."—The famous John-James Rousseau, speaking, in his letter to M. d'Alembert, of the novels of Richardson, asserts, "that nothing was ever written equal to, or even approaching them, in any language."—Mr Aaron Hill calls his *Pamela* a "delightful nursery of virtue."—Dr Warton speaks thus of *Clementina*: "Of all representations of madness, that of *Clementina*, in the *History of Sir Charles Grandison*, is the most deeply interesting. I know not whether even the madness of *Lear* is wrought up, and expressed, by so many little strokes of nature and passion. It is absolute pedantry to prefer and compare the madness of *Orestes* in *Euripides* to this of *Clementina*."—Dr John-

son, in his *Introduction to the 97th number of the Rambler*, which was written by Mr Richardson, observes, that the reader was indebted for that day's entertainment to an author, "from whom the age has received greater favours, who has enlarged the knowledge of human nature, and taught the passions to move at the command of virtue;" and, in his *Life of Rowe*, he says, "The character of *Lothario* seems to have been expanded by Richardson into that of *Lovelace*; but he has excelled his original in the moral effect of the fiction. *Lothario*, with gaiety which cannot be hated, and bravery which cannot be despised, retains too much of the spectator's kindness. It was in the power of Richardson alone to teach us at once esteem and detestation; to make virtuous resentment overpower all the benevolence which wit, and elegance, and courage, naturally excite; and to lose at last the hero in the villain."—Dr Young very pertinently observed, that Mr Richardson, with the mere advantages of nature, improved by a very moderate progress in education, struck out at once, and of his own accord, into a new province of writing, in which he succeeded to admiration. And what is more remarkable, that he not only began, but finished, the plan on which he set out, leaving no room for any one after him to render it more complete: and that not one of the various writers that have ever since attempted to imitate him, have in any respect equalled, or at all approached near him. This kind of romance is peculiarly his own; and "I consider him (continues the doctor) as a truly great natural genius; as great and supereminent in his way as *Shakespeare* and *Milton* were in theirs."

RICHARDSON, *Jonathan*, a celebrated painter of heads, was born about the year 1665, and against his inclination was placed by his father-in-law apprentice to a scrivener, with whom he lived six years; when obtaining his freedom by the death of his master, he followed the bent of his disposition, and at 20 years old became the disciple of *Riley*; with whom he lived four years, whose niece he married, and of whose manner he acquired enough to maintain a solid and lasting reputation, even during the lives of *Kneller* and *Dahl*; and to remain at the head of the profession when they went off the stage.

There is strength, roundness, and boldness in his colouring; but his men want dignity, and his women grace. The good sense of the nation is characterised in his portraits. You see he lived in an age when neither enthusiasm nor servility were predominant. Yet with a pencil so firm, possessed of a numerous and excellent collection of drawings, full of the theory, and profound in reflections on his art, he drew nothing well below the head, and was void of imagination. His attitudes, draperies, and back-grounds, are totally insipid and unmeaning; so ill did he apply to his own practice the sagacious rules and hints he bestowed on others. Though he wrote with fire and judgement, his paintings owed little to either. No man dived deeper into the inexhaustible stores of *Raphael*, or was more smitten with the native lustre of *Vandyck*. Yet though capable of tasting the elevation of the one and the elegance of the other, he could never contrive to see with their eyes, when he was to copy nature himself. One wonders that he could comment their works so well, and imitate them so little.

Richardson.

He quitted business himself some years before his death; but his temperance and virtue contributed to protract his life to a great length in the full enjoyment of his understanding, and in the felicity of domestic friendship. He had had a paralytic stroke that affected his arm, yet never disabled him from his customary walks and exercise. He had been in St James's Park, and died suddenly at his house in Queen's-square on his return home, May 28. 1745, when he had passed the 80th year of his age. He left a son and four daughters, one of whom was married to his disciple Mr Hudson, and another to Mr Grigson an attorney. The taste and learning of the son, and the harmony in which he lived with his father, are visible in the joint works they composed. The father in 1719 published two discourses: 1. An Essay on the whole Art of Criticism as it relates to Painting; 2. An Argument in behalf of the Science of a Connoisseur; bound in one volume octavo. In 1722 came forth An Account of some of the statues, bas-reliefs, drawings, and pictures, in Italy, &c. with Remarks by Mr Richardson, senior and junior. The son made the journey; and from his notes, letters, and observations, they both at his return compiled this valuable work. As the father was a formal man, with a slow, but loud and sonorous voice, and, in truth, with some affectation in his manner; and as there is much singularity in his style and expression, these peculiarities (for they were scarcely foibles) struck superficial readers, and between the laughs and the envious the book was much ridiculed. Yet both this and the former are full of matter, good sense, and instruction: and the very quaintness of some expressions, and their laboured novelty, show the difficulty the author had to convey mere visible ideas through the medium of language. Those works remind one of Cibber's inimitable treatise on the stage: when an author writes on his own profession, feels it profoundly, and is sensible his readers do not, he is not only excusable, but meritorious, for illuminating the subject by new metaphors or bolder figures than ordinary. He is the cockcomb that sneers, not he that instructs, in appropriated diction.

If these authors were censured when conversant within their own circle, it was not to be expected that they would be treated with milder indulgence when they ventured into a sifter region. In 1734, they published a very thick octavo, containing explanatory notes and remarks on Milton's Paradise Lost, with the life of the author, and a discourse on the poem. Again were the good sense, the judicious criticisms, and the sentiments that broke forth in this work, forgotten in the singularities that distinguish it. The father having said in apology for being little conversant in classic literature, that he had looked into them through his son, Hogarth, whom a quibble could furnish with wit, drew the father peeping through the nether end of a telescope, with which his son was perforated, at a Virgil aloft on a shelf. Yet how forcibly Richardson entered into the spirit of his author, appears from his comprehensive expression, that *Milton was an ancient, born two thousand years after his time*. Richardson, however, was as incapable of reaching the sublime or harmonious in poetry, as he was in painting, though so capable of illustrating both. Some specimens of verse that he has given us here and there in his works, excite no curiosi-

ty for more, though he informs us in his Milton, that Richardson if painting was his wife, poetry had been his secret concubine. It is remarkable, that another commentator of Milton has made the same confession, Richardson
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Riches.

— *Sunt et mihi carmina, me quoque dicunt
Vatem pastores* —

says Dr Bentley. Neither the doctor nor the painter add *sed non ego credulus illis*, though all their readers are ready to supply it for both. Besides his pictures and commentaries, we have a few etchings by his hand, particularly two or three of Milton, and his own head. The sale of his collection of drawings, in February 1747, lasted 18 days, and produced about 2060l. his pictures about 700l. Hudson his son-in-law bought many of the drawings.

RICHELET, CÆSAR PETER, a French writer, born in 1631 at Chemin in Champagne. He was the friend of Patru and Ablancourt; and like them applied himself to the study of the French language with success. He compiled a dictionary of that language, full of new and useful remarks; but exceptionable, as containing many satirical reflections and obscenities. The best edition is that of Lyons, 3 vols folio, 1728. He also collected a small dictionary of rhymes, and composed some other pieces in the grammatical and critical way. He died in 1698.

RICHEs, a word used always in the plural number, means wealth, money, possession, or a splendid sumptuous appearance. When used to express the fortune of private persons, whether patrimonial or acquired, it signifies *opulence*; a term which expresses not the enjoyment, but the possession, of numerous superfluities.—The riches of a state or kingdom expresses the produce of industry, of commerce, of different incorporated bodies, of the internal and external administration of the principal members of which the society is composed, &c.

Our Saviour says, that it is more easy for a camel to go through the eye of a needle, than for a rich man to enter the kingdom of heaven; and we find, in fact, that riches frequently bring along with them a degree of inattention, lukewarmness, and irreligion, such as sufficiently confirms the divine assertion; which is merely a general truth, and which by no means asserts the absolute impossibility of being virtuous and rich at the same time. For as the ancient philosophers wisely taught, riches, considered in themselves, and abstractedly from the bad purposes to which they may be applied, are not necessarily incompatible with virtue and wisdom. They are indeed absolutely indifferent; in good hands they will be useful, and promote the cause of truth, virtue, and humanity; and in bad hands they are the source of much mischief; on the one hand they confer the power of doing much good, and on the other they are equally powerful in doing ill.

To men, however, whose principles of virtue are not sufficiently founded, riches are unquestionably a dangerous and seducing bait; and as the ancients rightly taught, they are to the greatest number of men, in an infinite variety of circumstances, a powerful obstacle to the practice of moral virtues, to the progress of truth, and a weight which prevents them from rising to that degree of knowledge and perfection of which human nature is capable. They multiply without ceasing the occasions of vice, by the facility which they give to satisfy

Riches,
Richlieu.

tisfy a multitude of irregular passions, and to turn at length those who are attached to them from the road of virtue, and from the desire of inquiring after truth.

It is this which Seneca means to express, when he says, "that riches in a vast number of cases have been a great obstacle to philosophy; and that, to enjoy freedom of mind necessary for study, a man must live in poverty, or as if he were poor. Every man (adds he) who wishes to lead a pleasant, tranquil, and secure life, must avoid, as much as possible, the deceitfulness of riches, which are a bait with which we allow ourselves to be taken as in a snare, without afterwards having the power to extricate ourselves, being so much the more unhappy, that we believe we possess them, while, on the contrary, they tyrannize over us." *Senec. Epist.* 17. and *Epist.* 8.

"The wise man (says the same author in another place) does not love riches to excess, but he would not choose wholly to divest himself of them; he does not receive them into his soul, but into his house; he is careful of them, and employs them for the purpose of opening a wide field for virtue, and of making it appear in all its splendor. Who can doubt that a wise man has not more occasions of displaying the elevation and greatness of his mind when he is possessed of riches than when he labours under indigence, since, in the last condition, he can exercise only one virtue, namely, resignation; whereas, riches give him an opportunity of displaying, in their greatest lustre, the virtues of temperance, liberality, diligence, regularity, and magnificence. There is no occasion, then, to prohibit philosophers from the use of wealth, or to condemn wisdom to poverty. The philosopher may possess the greatest riches, provided he has not employed force or shed blood in acquiring them; provided he has not gained them by unjust or illegal means; in a word, provided the use which he makes of them be as pure as the source from which they were derived, and no person (the envious excepted) regretting his possession; he will not refuse the kindness of fortune, and will enjoy, without shame or pride, the wealth acquired by honest means; he will have more reason to glory, if, after exposing his riches to the view of the whole world, he can desire any person to carry away the reward of treachery or the fruits of oppression. If, after these words, his riches continue undiminished, this man is truly great, and worthy to be rich. If he has not allowed to enter into his possession the smallest piece of money gained by unwarrantable means, neither will he refuse the greatest riches, which are the blessings of fortune, and the fruit of virtue: if he can be rich, he will choose to be so, and he shall have riches; but he will regard them as blessings of uncertain possession, and of which he may be every moment deprived; he will not permit them to be a load to himself or to others; he will give them to the good, or to those whom he would make good; but he will give them with the nicest wisdom, taking care always to distribute them to the most worthy, and to those who remember that they must give an account, as well of the wealth which they receive from heaven, as of the purposes to which it is applied." *Senec. de Vita Beata*, cap. 21, 22, & 23.

RICHLIEU, JOHN ARMAND DU PLESSIS DE, cardinal of Richlieu and Fronfac, bishop of Lucon, &c. was born at Paris in 1585. He was of excellent parts;

and at the age of 22 had the address to obtain a dispensation to enjoy the bishopric of Lucon in 1607. Returning into France, he applied himself in a particular manner to the function of preaching; and his reputation this way procured him the office of almoner to the queen Mary de Medicis. His abilities in the management of affairs advanced him to be secretary of state in 1616; and the king soon gave him the preference to all his other secretaries. The death of the marquis d'Ancre having produced a revolution in state affairs, Richlieu retired to Avignon; where he employed himself in composing books of controversy and piety. The king having recalled him to court, he was made a cardinal in 1622; and, two years after, first minister of state, and grand master of the navigation. In 1626, the isle of Rhée was preserved by his care, and Rochelle taken, having stopped up the haven by that famous dyke which he ordered to be made there. He accompanied the king to the siege of Casal, and contributed not a little to the raising of it in 1629. He also obliged the Huguenots to the peace at Alets, which proved the ruin of that party; he took Pamerol, and succoured Casal besieged by Spinola. In the mean time the nobles found fault with his conduct, and persuaded the king to disfavor him. The cardinal, for his part, was unmoved with it; and by his reasonings overthrew what was thought to be determined against him; so that, instead of being disgraced, he from that moment became more powerful than ever. He punished all his enemies in the same manner as they would have had him suffer; and the day which produced this event, so glorious to Cardinal Richlieu, was called the *day of dupes*. This able minister had from thenceforwards an ascendancy over the king's mind; and he now resolved to humble the excessive pride of the house of Austria. For that purpose he concluded a treaty with Gustavus Adolphus king of Sweden, for carrying the war into the heart of Germany. He also entered into a league with the duke of Bavaria; secured Lorrain; raised a part of the princes of the empire against the emperor; treated with the Dutch to continue the war against Spain; favoured the Catalans and Portuguese till they shook off the Spanish yoke; and, in short, took so many different measures, that he accomplished his design; and after having carried on the war with success, was thinking of concluding it by a peace, when he died at Paris on the 4th of December 1642, aged 58. He was interred in the Sorbonne, where a magnificent mausoleum is erected to his memory. This great politician made the arts and sciences flourish; formed the botanical garden at Paris, called the *king's garden*; founded the French academy; established the royal printing-house; erected the palace afterwards called *Le Palais Royal*, which he presented to the king; and rebuilt the Sorbonne with a magnificence that appears truly royal. Besides his books of controversy and piety, there go under the name of this minister, *A Journal*, in 2 vols 12mo; and a *Political Testament*, in 12mo; all treating of politics and state affairs. Cardinal Mazarine pursued Richlieu's plan, and completed many of the schemes which he had begun, but left unfinished.

RICINUS, or PALMA CHRISTI, a genus of plants belonging to the monoecia class, and in the natural method ranking under the 38th order, *Tricocceæ*. See BOTANY and MATERIA MEDICA *Index*.

Richlieu,
Ricinus.

RICKETS,

Rickets

Ridicule.

RICKETS, in *Medicine*. See there, N^o 347.

RICOCHET, in *Gunnery*, is when guns, howitzers, or mortars, are loaded with small charges, and elevated from 5 to 12 degrees, so as to fire over the parapet, and the shot or shell rolls along the opposite rampart: it is called *ricochet-firing*, and the batteries are likewise called *ricochet-batteries*. This method of firing was first invented by M. Belidor, and first used at the siege of Ath in 1697. This mode of firing out of mortars was first tried in 1723 at the military school at Strasbourg, and with success. At the battle of Rosbach, in 1757, the king of Prussia had several 6-inch mortars made with trunnions, and mounted on travelling-carriages, which fired obliquely on the enemy's lines, and amongst their horse, loaded with 8 ounces of powder, and at an elevation of one degree 15 minutes, which did great execution; for the shells rolling along the lines, with burning fuses, made the stoutest of the enemy not wait for their bursting.

RICOTIA, a genus of plants, belonging to the tetradynamia class; and in the natural method ranking under the 30th order *Siliquosae*. See *BOTANY INDEX*.

RIDEAU, in *Fortification*, a small elevation of earth, extending itself lengthwise on a plain; serving to cover a camp or give an advantage in a post.

RIDEAU is sometimes also used for a trench, the earth of which is thrown up on its side, to serve as a parapet for covering the men.

RIDGE, in *Agriculture*, a long piece of rising land between two furrows. See *AGRICULTURE*.

RIDGLING, or RIDGEL, among farriers, &c. the male of any beast that has been but half gelt.

RIDICULE, in matters of literature, is that species of writing which excites contempt with laughter.

The *ridiculous*, however, differs from the *risible*, (see *RISIBLE*). A risible object produceth an emotion of laughter merely: a ridiculous object is improper as well as risible; and produceth a mixed emotion, which is vented by a laugh of derision or scorn.

Burlesque, though a great engine of ridicule, is not confined to that subject; for it is clearly distinguishable into burlesque that excites laughter merely, and burlesque that provokes derision or ridicule. A grave subject in which there is no impropriety, may be brought down by a certain colouring so as to be risible; which is the case of *Virgil Travestie*, and also the case of the *Secchia Rapita*; the authors laugh first, in order to make their readers laugh. The *Lutrin* is a burlesque poem of the other sort, laying hold of a low and trifling incident, to expose the luxury, indolence, and contentious spirit of a set of monks. Boileau, the author, gives a ridiculous air to the subject, by dressing it in the heroic style, and affecting to consider it as of the utmost dignity and importance. In a composition of this kind, no image professedly ludicrous ought to find quarter, because such images destroy the contrast; and accordingly the author shows always the grave face, and never once betrays a smile.

Though the burlesque that aims at ridicule produces its effects by elevating the style far above the subject, yet it has limits beyond which the elevation ought not to be carried: the poet, consulting the imagination of his readers, ought to confine himself to such images as are lively and readily apprehended: a strained elevation, soaring above an ordinary reach of fancy, makes

not a pleasant impression: the reader, fatigued with being always upon the stretch, is soon disgusted; and, if he persevere, becomes thoughtless and indifferent.—Further, a fiction gives no pleasure unless it be painted in colours so lively as to produce some perception of reality; which never can be done effectually where the images are formed with labour or difficulty. For these reasons, we cannot avoid condemning the *Batrachomyomachia*, said to be the composition of Homer: it is beyond the power of imagination to form a clear and lively image of frogs and mice acting with the dignity of the highest of our species; nor can we form a conception of the reality of such an action, in any manner so distinct as to interest our affections even in the slightest degree.

The *Rape of the Lock* is of a character clearly distinguishable from those now mentioned; it is not properly a burlesque performance, but what may rather be termed an *heroic-comical poem*: it treats a gay and familiar subject with pleasantry, and with a moderate degree of dignity: the author puts not on a mask like Boileau, nor professes to make us laugh like Tassoni. The *Rape of the Lock* is a genteel species of writing, less strained than those mentioned; and is pleasant or ludicrous without having ridicule for its chief aim; giving way, however, to ridicule, where it naturally arises from a particular character, such as that of Sir Plume. Addison's Spectator*, upon the exercise of the fan, is extremely gay and ludicrous, resembling in its subject the *Rape of the Lock*. * N^o 102.

There remains to show, by examples, the manner of treating subjects so as to give them a ridiculous appearance.

Il ne dit jamais, je vous donne, mais, je vous prete le bon jour. *Moliere.*

Orleans. I know him to be valiant.

Constable. I was told that by one that knows him better than you.

Orleans. What's he?

Constable. Marry, he told me so himself; and he said, he car'd not who knew it. *Henry V. Shakespeare.*

He never broke any man's head but his own, and that was against a post when he was drunk. *Ibid.*

Millamont. Sententious Mirabel! prithee don't look with that violent and inflexible wise face, like Solomon at the dividing of the child in an old tapestry-hanging. *Way of the World.*

A true critic, in the perusal of a book, is like a dog at a feast, whose thoughts and stomach are wholly set upon what the guests sling away, and consequently is apt to snarl most when there are the fewest bones.

Tale of a Tub.

In the following instances, the ridicule arises from absurd conceptions in the persons introduced.

Mascarille. Te souvient-il, vicomte, de cette demi-lune, que nous emportames sur les enemis au siege d'Afras?

Jodelet. Que veux-tu dire avec ta demi-lune? c'etoit bien une lune toute entiere.

Moliere, les Precieuses Ridicules, sc. 11.

Slander. I came yonder at Eaton to marry Mrs Anne Page; and she's a great lubberly boy.

Page.

Elem. of Criticism,

Ridicule.

Page. Upon my life then you took the wrong—
Slander. What need you tell me that? I think so
 when I took a boy for a girl: if I had been married to
 him, for all he was in woman's apparel, I would not
 have had him. *Merry Wives of Windsor.*

Valentine. Your blessing, Sir.

Sir Sampson. You've had it already, Sir; I think I
 sent it you to-day in a bill for four thousand pounds; a
 great deal of money, brother Forefight.

Forefight. Ay, indeed, Sir Sampson, a great deal of
 money for a young man; I wonder what he can do with
 it. *Love for Love, act ii. sc. 7.*

Millament. I nauseate walking; 'tis a country diversion;
 I lothe the country; and every thing that relates
 to it.

Sir Wisfull. Indeed, bah! look ye, look ye, you
 do? nay, 'tis like you may—here are choice of pas-
 times here in town, as plays and the like; that must be
 confests'd, indeed.

Millament. Ah Petourdie! I hate the town too.

Sir Wisfull. Dear heart, that's much—hah! that
 you should hate 'em both! hah! 'tis like you may;
 there are some cannot relish the town, and others can't
 away with the country—'tis like you may be one of
 these, Cousin. *Way of the World, act iv. sc. 4.*

Lord Froth. I assure you, Sir Paul, I laugh at no-
 body's jests but my own, or a lady's: I assure you, Sir
 Paul.

Bribe. How? how, my Lord? what, affront my wit?
 Let me perish, do I never say any thing worthy to be
 laugh'd at?

Lord Froth. O foy, do'nt misapprehend me, I don't
 say so, for I often smile at your conceptions. But there
 is nothing more unbecoming a man of quality than to
 laugh; 'tis such a vulgar expression of the passions!
 every body can laugh. Then especially to laugh at the
 jest of an inferior person, or when any body elie of the
 same quality does not laugh with one; ridiculous! To
 be pleas'd with what pleases the crowd! Now, when I
 laugh I always laugh alone.

Double Dealer, act i. sc. 4.

So sharp-sighted is pride in blemishes, and so willing
 to be gratified, that it takes up with the very slightest
 improprieties: such as a blunder by a foreigner in speak-
 ing our language, especially if the blunder can bear a
 sense that reflects on the speaker:

Quickly. The young man is an honest man.

Caus. What shall de honest man do in my closet?
 dere is no honest man dat shall come in my closet.

Merry Wives of Windsor.

Love speeches are finely ridiculed in the following
 passage:

Quoth he, My faith as adamantine,
 As chains of destiny, I'll maintain;
 Truc as Apollo ever spoke,
 Or oracle from heart of oak;
 And if you'll give my flame but vent,
 Now in close hugger-mugger pent,
 And shine upon me but benignly,
 With that one and that other pigfney,
 The sun and day shall sooner part
 Than love, or you, shake off my heart;

Ridicule.

The sun, that shall no more dispense
 His own, but your bright influence:
 I'll carve your name on barks of trees,
 With true love knots and flourishes;
 That shall infuse eternal spring,
 And everlasting flourishing:
 Drink every letter on't in flum,
 And make it brisk champagne become.
 Where'er you tread, your foot shall set
 The primrose and the violet;
 All spices, perfumes, and sweet powders
 Shall borrow from your breath their odours;
 Nature her charter shall renew
 And take all lives of things from you;
 The world depend upon your eye,
 And, when you frown upon it, die.
 Only our loves shall still survive,
 New worlds and natures to outlive;
 And, like to herald moons, remain
 All crescents, without change or wane.

Hudibras, part 2. canto 1.

Those who have a talent for ridicule, which is sel-
 dom united with a taste for delicate and refined beau-
 ties, are quick-sighted in improprieties; and these they
 eagerly grasp, in order to gratify their favourite propen-
 sity. Persons galled are provoked to maintain that ridi-
 cule is improper for grave subjects. Subjects really
 grave are by no means fit for ridicule; but then it is
 urged against them, that, when called in question whe-
 ther a certain subject be really grave, ridicule is the
 only means of determining the controverfy. Hence a
 celebrated question, Whether ridicule be or be not a
 test of truth?

On one side, it is observed, that the objects of ridi-
 cule are falsehood, incongruity, impropriety, or turpi-
 tude of certain kinds: but as the object of every exci-
 ted passion must be examined by reason, before we can
 determine whether it be proper or improper; so ridi-
 cule must, apparently at least, establish the truth of the
 improprieties designed to excite the passion of contempt.
 Hence it comes in to the aid of argument and reason,
 when its impressions on the imagination are consistent
 with the nature of things; but when it strikes the fancy
 and affections with fictitious images, it becomes the in-
 strument of deceit. But however ridicule may impress
 the idea of apparent turpitude or falsehood in the im-
 agination, yet still reason remains the supreme judge;
 and thus ridicule can never be the final test or touch-
 stone of truth and falsehood.

On the other side, it is contended that ridicule is not
 a subject of reasoning, but of sense or taste; (see and
 compare the articles *RISIBLE* and *CONGRUITY*). Stating
 the question, then, in more accurate terms, Whether
 the sense of ridicule be the proper test for distinguishing
 ridiculous objects from what are not so? they proceed
 thus: No person doubts that our sense of beauty is the
 true test of what is beautiful; and our sense of grand-
 deur, of what is great or sublime. Is it more doubtful
 whether our sense of ridicule be the true test of what
 is ridiculous? It is not only the true test, but indeed
 the only test; for this subject comes not, more than
 beauty or grandeur, under the province of reason. If
 any subject, by the influence of fashion or custom,
 have acquired a degree of veneration to which naturally
 it

Ridicule,
Riding.

it is not entitled, what are the proper means for wiping off the artificial colouring, and displaying the subject in its true light? A man of true taste sees the subject without disguise; but if he hesitate, let him apply the test of ridicule, which separates it from its artificial connections, and exposes it naked with all its native improprieties.—But it is urged, that the gravest and most serious matters may be set in a ridiculous light. Hardly so; for where an object is neither risible nor improper, it lies not open in any quarter to an attack from ridicule.

RIDING, in general, signifies the being carried along on any vehicle.

RIDING on horseback. See HORSEMANSHIP.

RIDING, in *Medicine*. During this exercise all the viscera are shaken, and pressed against each other; at the same time the pure air acts with a greater force on the lungs. Weakly persons, or those whose stomachs are infirm, should, however, be cautious of riding before their meals are somewhat digested.

RIDING, in naval affairs, is the state of a ship's being retained in a particular station, by means of one or more cables with their anchors, which are for this purpose sunk into the bottom of the sea, &c. in order to prevent the vessel from being driven at the mercy of the wind or current.—A rope is said to *ride*, when one of the turns by which it is wound about the capstern or windlafs lies over another, so as to interrupt the operation of heaving.

RIDING *Atwart*, the position of a ship which lies across the direction of the wind and tide, when the former is so strong as to prevent her from falling into the current of the latter.

RIDING *between the Wind and Tide*, the situation of a vessel at anchor, when the wind and tide act upon her in direct opposition, in such a manner as to destroy the effort of each other upon her hull; so that she is in a manner balanced between their reciprocal force, and rides without the least strain on her cables. When a ship does not labour heavily, or feel a great strain when anchored in an open road or bay, she is said to ride easy. On the contrary, when she pitches violently into the sea, so as to strain her cables, masts, or hull, it is called *riding hard*, and the vessel is termed a *bad roader*. A ship is rarely said to *ride* when she is fastened at both the ends, as in a harbour or river; that situation being comprehended in the article MOORING.

RIDING, a district visited by an officer.—Yorkshire is divided into three ridings, viz. the east, west, and north ridings. In all indictments in that county, both the town and riding must be expressed.

RIDING, as connected with gardening, and susceptible of embellishment. See GARDENING.

A riding, though in extent differing so widely from a garden, yet agrees with it in many particulars: for, exclusive of that community of character which results from their being both improvements, and both destined to pleasure, a closer relation arises from the property of a riding, to extend the idea of a seat, and appropriate a whole country to the mansion; for which purpose it must be distinguished from common roads, and the marks of distinction must be borrowed from a garden. Those which a farm or a park can supply are faint and few; but whenever circumstances belonging to a garden occur, they are immediately received as evidence of the

domain. The species of the trees will often be decisive: plantations of firs, whether placed on the sides of the way, or in clumps or woods in the view, denote the neighbourhood of a seat: even limes and horse-chestnuts are not indifferent; for they have always been frequent in improvements, and rare in the ordinary scenes of cultivated nature. If the riding be carried through a wood, the shrubs, which for their beauty or their fragrance have been transplanted from the country into gardens, such as the sweet-briar, the viburnum, the euonymus, and the woodbine, should be encouraged in the underwood; and to these may be added several which are still peculiar to shrubberies, but which might easily be transferred to the wildest coverts, and would require no further care.

Where the species are not, the disposition may be particular, and any appearance of design is a mark of improvement. A few trees standing out from a hedge-row, raise it to an elegance above common rusticity: and still more may be done by clumps in a field; they give it the air of a park. A close lane may be decorated with plantations in all the little vacant spaces: and even the groups originally on the spot (whether it be a wood, a field, or a lane), if properly selected, and those only left which are elegant, will have an effect: though every beauty of this kind may be found in nature, yet many of them are seldom seen together, and never unmixed. The number and the choice are symptoms of design.

Another symptom is variety. If the appendages of the riding be different in different fields, if in a lane, or a wood, some distinguishing circumstance be provided for every bend; or when, carried over an open exposure, it winds to several points of view; if this be the conduct throughout, the intention is evident, to amuse the length of the way: variety of ground is also a characteristic of a riding, when it seems to have proceeded from choice; and pleasure being the pursuit, the changes of the scene both compensate and account for the circuit.

But a part undistinguished from a common road, succeeding to others more adorned, will by the contrast alone be sometimes agreeable; and there are beauties frequent in the high-way, and almost peculiar to it, which may be very acceptable in a riding: a green lane is always delightful; a passage winding between thickets of brambles and briars, sometimes with, and sometimes without a little spring-wood rising amongst them, or a cut in a continued sweep through the furze of a down or the fern of a heath, is generally pleasant. Nor will the character be absolutely lost in the interruption, it will soon be resumed, and never forgotten; when it has been once strongly impressed, very slight means will preserve the idea.

Simplicity may prevail the whole length of the way when the way is all naturally pleasant, but especially if it be a communication between several spots, which in character are raised above the rest of the country: A fine open grove is unusual, except in a park or a garden; it has an elegance in the disposition which cannot be attributed to accident, and it seems to require a degree of preservation beyond the care of mere husbandry. A neat railing on the edge of a steep which commands a prospect, alone distinguishes that from other points of view. A building is still more strongly

Riding.

Observations on Modern Gardening, p. 227, &c.

Decorations of a riding.

¹ Riding. strongly characteristic: it may be only ornamental, or it may be accommodated to the reception of company; for though a place to alight at interrupts the range of a riding, yet, as the object of an airing, it may often be acceptable. A small spot which may be kept by the labour of one man, inclosed from the fields, and converted into a shrubbery or any other scene of a garden, will sometimes be a pleasing end to a short excursion from home: nothing so effectually extends the idea of a seat to a distance; and not being constantly visited, it will always retain the charms of novelty and variety.

² Of a village.

When a riding is carried along a high road, a kind of property may in appearance be claimed even there, by planting on both sides trees equidistant from each other, to give it the air of an approach: regularity intimates the neighbourhood of a mansion. A village therefore seems to be within the domain, if any of the inlets to it are avenues: other formal plantations about it, and still more trivial circumstances, when they are evidently ornamental, sometimes produce and always corroborate such an effect; but even without raising this idea, if the village be remarkable for its beauty, or only for its singularity, a passage through it may be an agreeable incident in a riding.

The same ground which in the fields is no more than rough, often seems to be romantic when it is the site of a village; the buildings and other circumstances mark and aggravate the irregularity. To strengthen this appearance, one cottage may be placed on the edge of a steep, and some winding steps of unhewn stone lead up to the door; another in a hollow, with all its little appurtenances hanging above it. The position of a few trees will sometimes answer the same purpose; a foot-bridge here and there for a communication between the sides of a narrow dip, will add to the character; and if there be any rills, they may be conducted so as greatly to improve it.

A village which has not these advantages of ground, may, however, be beautiful; it is distinguished by its elegance, when the larger intervals between the houses are filled with open groves, and little clumps are introduced upon other occasions. The church often is, it generally may be, made a picturesque object. Even the cottages may be neat and sometimes grouped with thickets. If the place be watered by a stream, the crossings may be in a variety of pleasing designs; and if a spring rise, or only a well for common use be sunk by the side of the way, a little covering over it may be contrived which shall at the same time be simple and pretty.

There are few villages which may not easily be rendered agreeable. A small alteration in a house will sometimes occasion a great difference in the appearance. By the help of a few trifling plantations, the objects which have a good effect may be shown to advantage, those which have not may be concealed, and such as are similar be disguised. And any form which offends the eye, whether of ground, of trees, or of buildings, may sometimes be broken by the slightest circumstances, by an advanced paling, or only by a bench. Variety and beauty, in such a subject, are rather the effects of attention than expence.

But if the passage through the village cannot be pleasant; if the buildings are all alike, or stand in un-

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meaning rows and similar situations; if the place furnishes no opportunities to contrast the forms of dwellings with those of out-houses; to introduce trees and thickets; to interpose fields and meadows; to mix farms with cottages; and to place the several objects in different positions: yet on the outside even of such a village there certainly is room for wood; and by that alone the whole may be grouped into a mass, which shall be agreeable when skirted by a riding; and still more so when seen from a distance. The separate farms in the fields, also, by planting some trees about them, or perhaps only by managing those already on the spot, may be made very interesting objects; or if a new one is to be built, beauty may be consulted in the form of the house, and the disposition of its appurtenances. Sometimes a character not their own, as the semblance of a castle or an abbey, may be given to them; they will thereby acquire a degree of consideration, which they cannot otherwise be entitled to: and objects to improve the views are so important to a riding, that buildings must sometimes be erected for that purpose only: but they should be such as by an actual effect adorn or dignify the scene; not those little slight deceptions which are too well known to succeed, and have no merit if they fail: for though a fallacy sometimes contributes to support a character, or suggests ideas to the imagination, yet in itself it may be no improvement of a scene; and a bit of turret, the tip of a spire, and the other ordinary subjects of these frivolous attempts, are so insignificant as objects, that whether they are real or fictitious is almost a matter of indifference.

The same means by which the prospects from a riding are improved, may be applied to those from a garden; though they are not essential to its character, they are important to its beauty; and wherever they abound, the extent only of the range which commands them, determines whether they shall be seen from a riding or a garden. If they belong to the latter, that assumes in some degree the predominant properties of the former, and the two characters approach very near to each other: but still each has its peculiarities. Progress is a prevailing idea in a riding; and the pleasantness of the way is, therefore, a principal consideration; but particular spots are more attended to in a garden; and to them the communications ought to be subordinate; their direction must be generally accommodated, their beauties sometimes sacrificed, to the situation and the character of the scenes they lead to; an agreeable approach to these must be preferred to an agreeable line for the walk; and the circumstances which might otherwise become it are misplaced, if they anticipate the openings: it should sometimes be contrasted to them; be retired and dark if they are splendid or gay, and simple if they are richly adorned. At other times it may burst unexpectedly out upon them; not on account of the surprise, which can have its effect only once; but the impressions are stronger by being sudden; and the contrast is enforced by the quickness of the transition.

In a riding, the scenes are only the amusements of the way, through which it proceeds without stopping: in a garden they are principal; and the subordination of the walk raises their importance. Every art, therefore, should be exerted to make them seem parts of the place.

D

place.

³ Riding. Of the buildings designed for objects in a riding.

⁴ Of a garden similar in character to a riding.

Riding.

place. Distant prospects cannot be so; and the alienation does not offend us; we are familiarized to it; the extent forbids every thought of a closer connection; and if a continuation be preserved between them and the points which command them, we are satisfied. But *home-views* suggest other ideas; they appear to be within our reach: they are not only beautiful in prospect, and we can perceive that the spots are delightful; but we wish to examine, to inhabit, and to enjoy them. Every apparent impediment to that gratification is a disappointment; and when the scenes begin beyond the opening, the consequence of the place is lowered; nothing within it engages our notice: it is an exhibition only of beauties, the property of which does not belong to it; and that idea, though indifferent in a riding, which is but a passage, is very disadvantageous to such a residence as a garden. To obviate such an idea, the points of view should be made important; the objects within be appendages to those without; the separations be removed or concealed; and large portions of the garden be annexed to the spots which are contiguous to it. The ideal boundary of the place is then carried beyond the scenes which are thus appropriated to it; and the wide circuit in which they lie, and the different positions in which they may be shown, afford a greater variety than can generally be found in any garden, the scenery of which is confined to the inclosure.

5
Description
of Persfield.

Persfield (A) is not a large place; the park contains about 300 acres; and the house stands in the midst of it. On the side of the approach, the inequalities of the ground are gentle, and the plantations pretty; but nothing there is great. On the other side, a beautiful lawn falls precipitately every way into a deep vale which shelves down the middle; the declivities are diversified with clumps and with groves; and a number of large trees straggle along the bottom. This lawn is encompassed with wood; and through the wood are walks, which open beyond it upon those romantic scenes which surround the park, and which are the glory of Persfield. The Wye runs immediately below the wood: the river is of a dirty colour; but the shape of its course is very various, winding first in the form of a horse-shoe, then proceeding in a large sweep to the town of Chepstowe, and afterwards to the Severn. The banks are high hills; in different places steep, bulging out, or hollow on the sides; rounded, flattened, or irregular at top; and covered with wood, or broken by rocks. They are sometimes seen in front; sometimes in perspective; falling back for the passage, or closing behind the bend of the river; appearing to meet, rising above, or shooting out beyond one another. The wood which incloses the lawn crowns an extensive range of these hills, which overlook all those on the opposite shore, with the country which appears above or between them; and winding themselves as the river winds, their sides, all rich and beautiful, are alternately exhibited; and the point of view in one spot becomes an object to the next.

In many places the principal feature is a continued rock, in length a quarter of a mile, perpendicular, high, and placed upon a height. To resemble ruins is com-

mon to rocks: but no ruin of any single structure was ever equal to this enormous pile; it seems to be the remains of a city; and other smaller heaps scattered about it appear to be fainter traces of the former extent, and strengthen the similitude. It stretches along the brow which terminates the forest of Dean; the face of it is composed of immense blocks of stone, but not rugged; the top is bare and uneven, but not craggy; and from the foot of it, a declivity, covered with thick-
et, slopes gently towards the Wye, but in one part is abruptly broken off by a ledge of rocks, of a different hue, and in a different direction. From the grotto it seems to rise immediately over a thick wood, which extends down a hill below the point of view, across the valley through which the Wye flows, and up the opposite banks, hides the river, and continues without interruption to the bottom of the rock: from another feat it is seen by itself without even its base; it faces another, with all its appendages about it; and sometimes the sight of it is partially intercepted by trees, beyond which, at a distance, its long line continues on through all the openings between them.

Another capital object is the castle of Chepstowe, a noble ruin of great extent; advanced to the very edge of a perpendicular rock, and so immediately rivetted into it, that from the top of the battlements down to the river seems but one precipice: the same ivy which overspreads the face of the one, twines and clusters among the fragments of the other; many towers, much of the walls, and large remains of the chapel, are standing. Close to it is a most romantic wooden bridge, very ancient, very grotesque, at an extraordinary height above the river, and seeming to abut against the ruins at one end, and some rocky hills at the other. The castle is so near to the alcove at Persfield, that little circumstances in it may be discerned; from other spots more distant, even from the lawn, and from a shrubbery on the side of the lawn, it is distinctly visible, and always beautiful, whether it is seen alone, or with the bridge, with the town, with more or with less of the rich meadows which lie along the banks of the Wye, to its junction three miles off with the Severn. A long sweep of that river also, its red cliffs, and the fine rising country in the counties of Somerset and Gloucester, generally terminate the prospect.

Most of the hills about Persfield are full of rocks; some are intermixed with hanging woods, and either advance a little before them, or retire within them, and are backed, or overhung, or separated by trees. In the walk to the cave, a long succession of them is frequently seen in perspective, all of a dark colour, and with wood in the intervals between them. In other parts the rocks are more wild and uncouth; and sometimes they stand on the tops of the highest hills; at other times down as low as the river; they are home-objects in one spot, and appear only in the back-ground of another.

The woods concur with the rocks to render the scenes of Persfield romantic; the place everywhere abounds with them; they cover the tops of the hills; they hang on the steeps; or they fill the depths of the valleys.

Riding.

(A) The seat of Mr Morris, near Chepstowe, in Monmouthshire.

Riding
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Ridley.

Ridley.

valleys. In one place they front, in another they rise above, in another they sink below the point of view; they are seen sometimes retiring beyond each other, and darkening as they recede; and sometimes an opening between two is closed by a third at a distance beyond them. A point, called the *Lover's Leap*, commands a continued surface of the thickest foliage, which over-spreads a vast hollow immediately underneath. Below the Chinese seat the course of the Wye is in the shape of a horse-shoe: it is on one side inclosed by a semicircular hanging wood; the direct steeps of a table-hill shut it in on the other; and the great rock fills the interval between them: in the midst of this rude scene lies the peninsula formed by the river, a mile at the least in length, and in the highest state of cultivation: near the isthmus the ground rises considerably, and thence descends in a broken surface, till it flattens to the water's edge at the other extremity. The whole is divided into corn fields and pastures; they are separated by hedges, coppices, and thickets; open clumps and single trees stand out in the meadows; and houses and other buildings, which belong to the farms, are scattered amongst them: nature so cultivated, surrounded by nature so wild, compose a most lovely landscape together.

The communications between these several points are generally by close walks; but the covert ends near the Chinese seat; and a path is afterwards conducted through the upper park to a rustic temple, which overlooks on one side some of the romantic views which have been described, and on the other the cultivated hills and valleys of Monmouthshire. To the rude and magnificent scenes of nature now succeeds a pleasant, fertile, and and beautiful country, divided into inclosures, not covered with woods, nor broken by rocks and precipices, but only varied by easy swells and gentle declivities. Yet the prospect is not tame; the hills in it are high; and it is bounded by a vast sweep of the Severn, which is here visible for many miles together, and receives in its course the Wye and the Avon.

From the temple a road leads to the Windcliff, an eminence much above the rest, and commanding the whole in one view. The Wye runs at the foot of the hill; the peninsula lies just below; the deep bosom of the semicircular hanging wood is full in sight; over part of it the great rock appears; all its base, all its accompaniments, are seen; the country immediately beyond it is full of lovely hillocks; and the higher grounds in the counties of Somerset and Gloucester rise in the horizon. The Severn seems to be, as it really is, above Chepstow, three or four miles wide; below the town it spreads almost to a sea; the county of Monmouth is there the hither shore, and between its beautiful hills appear at a great distance the mountains of Brecknock and Glamorganshire. In extent, in variety, and grandeur, few prospects are equal to this. It comprehends all the noble scenes of Persfield, encompassed by some of the finest country in Britain. See GARDENING.

RIDLEY, NICHOLAS, bishop of London, and a martyr to the Reformation, was descended of an ancient family, and born in the beginning of the 16th century, at Wilmontwick in Northumberland. From the grammar-school at Newcastle upon Tyne, he was sent to Pembroke-hall in Cambridge, in the year 1518, where

he was supported by his uncle Dr Robert Ridley, fellow of Queen's college. In 1522 he took his first degree in arts; two years after, was elected fellow; and, in 1525, he commenced master of arts. In 1527, having taken orders, he was sent by his uncle, for further improvement, to the Sorbonne at Paris; from thence he went to Louvain, and continued abroad till the year 1529. On his return to Cambridge, he was chosen under-treasurer of the university; and, in 1533, was elected senior proctor. He afterwards proceeded bachelor of divinity, and was chosen chaplain of the university, orator, and *magister glomerie*. At this time he was much admired as a preacher and disputant. He lost his kind uncle in 1536; but was soon after patronised by Dr Cranmer, archbishop of Canterbury, who made him his domestic chaplain, and presented him to the vicarage of Herne in East Kent; where, we are told, he preached the doctrine of the Reformation. In 1540, having commenced doctor of divinity, he was made king's chaplain; and in the same year, was elected master of his college in Cambridge. Soon after, Ridley was collated to a prebend in the church of Canterbury; and it was not long before he was accused in the bishop's court, at the instigation of Bishop Gardiner, of preaching against the doctrine of the Six Articles. The matter being referred to Cranmer, Ridley was acquitted. In 1545, he was made a prebendary of Westminster abbey; in 1547 was presented, by the fellows of Pembroke-hall, to the living of Soham, to the diocese of Norwich; and the same year was consecrated bishop of Rochester. In 1550 he was translated to the see of London; in which year he was one of the commissioners for examining Bishop Gardiner, and concurred in his deprivation. In the year 1552, our prelate returning from Cambridge, unfortunately for himself, paid a visit to the Princess, afterwards Queen Mary; to whom, prompted by his zeal for reformation, he expressed himself with too much freedom: for she was scarcely seated on the throne when Ridley was doomed a victim to her revenge. With Cranmer and Latimer he was burnt alive at Oxford, on the 16th of October 1555. He wrote, 1. A treatise concerning images in churches. 2. Brief declaration of the Lord's Supper. 3. Certain godly and comfortable conferences between Bishop Ridley and Mr Hugh Latimer, during their imprisonment. 4. A comparison between the comfortable doctrine of the Gospel and the traditions of the Popish religion; and other works.

RIDLEY, Dr *Glosser*, was of the same family with the preceding. He was born at sea, in the year 1702, on board the Gloucester East Indiaman, from which circumstance he obtained his Christian name. He was educated at Winchester school, and afterwards obtained a fellowship at New College, Oxford. He paid his court to the muses at an early period, and laid the foundation of those solid and elegant acquisitions which afterwards distinguished him so eminently as a divine, historian, and poet. During a vacation in 1728, he joined with four friends in composing a tragedy called "The Fruitless Redress," each undertaking an act agreeably to a plan which they had previously concerted. It was offered to Mr Wilkes, but never acted, and is still in manuscript. Dr Ridley in his youth was extremely attached to theatrical performances. The Redress, and another called Jugurtha, were exhibited at Midhurst in Sussex, and the actors were chiefly the gentlemen

Ridley
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Rienzi.

them who assisted him in their composition. We are informed that he played Mark Anthony, Jaffier, Horatio, and Monsees, with very great applause, which may be readily inferred from his graceful manner of speaking in the pulpit.

During a great part of his life he had only the small college living of Westow in Norfolk, and that of Poplar in Middlesex, which was the place of his residence. His college added to these some years after, the donative of Romford in Essex, which left him little or no time for what he considered as the necessary studies of his profession. Yet in this situation he remained in the possession of, and satisfied with domestic felicity, and enjoyed the intimate friendship of some who were equally distinguished for worth and learning.

The eight sermons which he preached at Lady Moyer's Lecture in 1740 and 1741, were given to the public in 1742. In the year 1756 he was invited to go to Ireland as first chaplain to the duke of Bedford, but declined to accept of it. In the year 1763 he published the life of Bishop Ridley, in 4to, by subscription, from the profits of which he was enabled to purchase 800l. in the public funds. In the concluding part of his life he lost both his sons, who were young men of considerable abilities. The elder, called James, was author of *Tales of the Genii*, and some other literary performances; and his brother Thomas was sent as a writer to Madras by the East India Company, where he suddenly died of the small pox. In the year 1765 Dr Ridley published his review of Philips's *Life of Cardinal Pole*; and as a reward for his labours in this controversy, he was presented, in 1768, by Archbishop Secker with a rich prebend in the cathedral church of Salisbury; the only reward he received from the great during a long and useful life. He was at last worn out with infirmities, and died in 1774, leaving behind him a wife and four daughters. By his elegant epitaph, written by Bishop Lowth, we are informed that the university of Oxford, for his merits, conferred upon him the degree of D. D. the highest literary honour which that learned body has to bestow.

RIENZI, NICHOLAS GABRINI DE, one of the most singular characters of the 14th century, was born at Rome, but it is not certainly known in what year. His father, as some affirm, was a vintner, but a miller according to others, and his mother was a laundress, yet they found means to give their son a liberal education; and to a fine natural understanding he added uncommon application. He was well acquainted with the laws and customs of nations; and had a vast memory, which enabled him to retain much of Cicero, Valerius Maximus, Livy, the two Senecas, and in particular Cæsar's Commentaries, which he constantly perused. This extensive erudition proved the foundation of his future rise. He acquired the reputation of a great antiquarian, from the time he spent among the inscriptions which are to be found at Rome, and these inspired him with exalted ideas of the liberty, the grandeur, and justice of the old Romans. He even persuaded himself, and found means to persuade others, that he should one day be the restorer of the Roman republic. The credulity of the people was powerfully encouraged and strengthened by his advantageous stature, by the attractions of his countenance, and by that air of consequence which he could assume at pleasure. The joint energy of all these prepossessing

qualities made a deep and almost indelible impression on the minds of his hearers. Rienzi.

Nor was his fame merely confined to the vulgar, for he even ingratiated himself into the good opinion of many distinguished personages belonging to the administration. The Romans chose him one of their deputies to Pope Clement VI. then at Avignon, the purport of whose mission was to persuade his holiness, that his absence from the capital was inimical to its interest. His commanding eloquence and gay conversation charmed the court of Avignon, from which Rienzi was encouraged to tell the Pope, that the great men of Rome were public thieves, robbers, adulterers, and profligates, by whose example the most horrid crimes were sanctioned. This ill-timed freedom of speech made Cardinal Colonna his enemy, though the friend of genuine merit, because he thought that some of his family were abused by such a thundering philippic, in consequence of which Rienzi was disgraced, and fell into extreme misery, vexation, and sickness, which, by being united with indigence, brought him to an hospital. But as the cardinal was compassionate, the offender was again brought before the Pope, who being informed that Rienzi was a good man, and the strenuous advocate of equity and justice, gave him higher proofs of his esteem and confidence than before. He was appointed apostolic notary, and sent back to Rome loaded with the effects of papal munificence.

The functions of this office he executed in such a manner as to become the idol of the people, whose affections he laboured to secure by exclaiming against the vices of the great, rendering them as odious as possible, for which imprudent liberties he was dismissed from office. In this situation of his affairs he endeavoured to kindle and keep alive in the minds of the people a zeal for their ancient liberties, displaying emblems of the ancient grandeur and present decline of the city, accompanied with harangues and many expressive predictions. Such an intrepid, and at the same time extraordinary conduct, made some regard him as a lunatic, while others hailed him as their guardian and deliverer. When he supposed that the numbers attached to his interest were sufficiently strong, he called them together, and gave them a dismal picture of the state of the city, overrun with debaucheries, which their governors had no capacity either to correct or amend. He declared that the Pope could, even at the rate of fourpence, raise 100,000 florins by firing, an equal sum by salt, and as much more by the customs and other duties, insinuating that he did not seize on the revenues without the consent of his Holiness.

This artful lie so powerfully animated his hearers, that they signified their determination to secure these treasures for whatever purposes might be most convenient, and that to his will they would cheerfully devote themselves. This resolution he caused them confirm by an oath, and it is said that he had the address to procure from the Pope's vicar the sanction of his authority. On the 20th of May he pretended that he did nothing but in consequence of the particular inspiration of the Holy Ghost, and about nine o'clock he came out of the church with his head bare, attended by the Pope's vicar, and about 100 men in armour. Having proceeded directly to the capital, and declared from the rostrum, with even more than his wonted boldness and energy, that the hour

Rienzi. of their emancipation was at length arrived; that he himself was to be their glorious deliverer, and that he poured contempt on the dangers to which he might be exposed in the service of his Holiness, and for the happy deliverance of the people. The laws of the "good establishment" were next ordered to be read; and he rested assured that the Romans would resolve to observe these laws, in consequence of which he pledged himself to re-establish them in a short time in their ancient grandeur and magnificence.

Plenty and security were the blessings promised by the good establishment, and the humbling of the nobles, who were regarded as common oppressors. Such ideas filled the people with transport, and they became zealously attached to the fanaticism of Rienzi. The multitude declared him to be sovereign of Rome, to whom they granted the power of life and death, of rewards and punishments, of making and repealing laws, of treating with foreign powers, and a full and absolute authority over all the Roman territories.

Having thus arrived at the zenith of his ambition, he concealed his artifice as much as possible, and pretended to be extremely averse to accept of their proffered honours, unless they would make choice of the Pope's vicar to be his copartner, and find means to procure the sanction of the Pope himself. His wish to have the vicar (bishop of Orvieto) as his copartner was readily complied with, while all the honours were paid to Rienzi, the duped bishop enjoying but a mere nominal authority. Rienzi was seated in his triumphal chariot, and the people were dismissed, overwhelmed with joy and expectation. This strange election was ratified by the Pope, although it was impossible that he could inwardly approve of it; and to procure a title exclusive of the prerogative of his Holiness, was the next object of Rienzi's ambition. He fought, therefore, and readily obtained the title of magistrate, which was conferred on him and his coadjutor, with the additional epithet of *deliverers of their country*. The conduct of Rienzi immediately subsequent to this elevation justly procured him esteem and respect, as well from the Romans as from neighbouring states; but as his beginning was mean and obscure, he soon became intoxicated with his sudden, his extraordinary elevation, and the incensed nobles having conspired against him, and successfully drove him from an authority which he had the prudence or address to retain not more than six months. At this critical period his life was only preserved by flight, and disguises to which he had afterwards recourse.

Having made an ineffectual effort at Rome to regain his authority, he went afterwards to Prague, to Charles king of the Romans, in consequence of which rash step he was thrown into prison at Avignon, where he continued for three years. When he procured his enlargement, Pope Innocent IV. who succeeded Clement, well knew that many of the Romans were still attached to Rienzi, and therefore he made choice of him as a fit object for assisting him in his design of humbling the other petty tyrants of Italy. In short, he was set at liberty, and appointed governor and senator of Rome. It was hoped that his chastisement would teach him more moderation in future, and that gratitude would induce him to preserve an inviolable attachment to the holy see during the remainder of his life. He met with considerable opposition in assuming his new authority, but cunning

and resolution enabled him to overcome it. But gratifying his passions, which were violent in the extreme, and disgracing his office and character by acts of cruelty; he was murdered on the 8th of October 1354.

Thus died Nicolas Rienzi, one of the most extraordinary characters of the age in which he lived; who, having formed a conspiracy big with extravagance, and carried it into execution nearly in the face of the whole world, with such remarkable success as to become sovereign of Rome; having blessed the Romans with plenty, liberty, and justice; having afforded protection to some princes, and proved a terror to others; having become the arbiter of crowned heads, established the ancient majesty and power of the Roman republic, and filled all Europe with his fame; finally, having procured their sanction whose authority he had usurped in opposition to their interests; he fell at last a sacrifice to the nobles whose ruin he had vowed, and to those vast projects, the execution of which was only prevented by his death.

RIFLE, in *Gunnery*. See GUNNERY, n^o 36, *et seq.*

RIGA, a large, strong, populous, and rich town of the Russian empire, and capital of Livonia. It is a large trading place, and has a very considerable fortress; the trade is chiefly in corn, skins, leather, and naval stores. It was taken by the Russians in 1710, after they had blocked it up a long while, during which the inhabitants were afflicted with the plague. The castle is square, and defended by four towers and six bastions; besides which, it has a fine arsenal. The protestants have still a handsome college here. The population is computed at 27,000. It is seated on a large plain on the river Dwina. E. Long. 24. 25. N. Lat. 57. 0.

RIGADOON, a gay and brisk dance, borrowed originally from Provence in France, and performed in figure by a man and woman.

RIGGING *of a SHIP*, a general name given to all the ropes employed to support the masts, and to extend or reduce the sails, or arrange them to the disposition of the wind. The former, which are used to sustain the masts, remain usually in a fixed position, and are called *standing rigging*; such are the shrouds, stays, and back-stays. The latter, whose office is to manage the sails, by communicating with various blocks or pulleys, situated in different parts of the masts, yards, shrouds, &c. are comprehended in the general term of *running rigging*; such are the braces, sheets, haliards, clue-lines, brails, &c.

In rigging a mast, the first thing usually fixed upon its head is a circular wreath or rope, called the *gromet*, or *collar*, which is firmly beat down upon the top of the hounds. The intent of this is to prevent the shrouds from being fretted or worn by the trestle-trees, or shoulders of the mast; after this are laid on the two pendants, from whose lower ends the main or fore tackles are suspended; and next, the shrouds of the starboard and larboard side, in pairs, alternately. The whole is covered by the stays, which are the largest ropes of the rigging.—When a yard is to be rigged, a gromet is also driven first on each of its extremities; next to this are fitted on the horses, the braces, and lastly, the lifts or top-sail sheet-blocks.

The principal objects to be considered in rigging a ship, appear to be strength, convenience, and simplicity: or, the properties of affording sufficient security to the masts, yards, and sails; of arranging the whole machinery

Rienzi
||
Rigging.

Right.

nery in the most advantageous manner, to sustain the masts, and facilitate the management of the sails; and of avoiding perplexity, and rejecting whatever is superfluous or unnecessary. The perfection of this art, then, consists in retaining all those qualities, and in preserving a judicious medium between them. See SHIP-BUILDING.

RIGHT, in *Geometry*, signifies the same with straight; thus, a straight line is called a *right* one.

RIGHT is a title conferred, 1. Together with *Reverend*, upon all bishops. 2. Together with *Honourable*, upon earls, viscounts, and barons. 3. By courtesy, together with *Honourable*, upon the sons of dukes, marquises, and the eldest sons of earls. 4. Together with *Honourable*, to the speaker of the house of commons; but to no other commoner excepting those who are members of his majesty's most honourable privy-council; and the three lord mayors of London, York, and Dublin, and the lord provost of Edinburgh, during their office. See HONOURABLE and PROVOST.

Hereditary RIGHT. See HEREDITARY.

1
The term
right ex-
plained.

RIGHT is a word which, in the propriety of the English language, is used sometimes as an adjective and sometimes as a substantive. As an adjective it is nearly of the same import with *fit*, *suitable*, *becoming*, *proper*; and whilst it expresses a quality, it indicates a relation*. Thus, when we say that an action is *right*, we must not only know the nature of the action, but if we speak intelligibly, must also perceive its relation to the end for which it was performed; for an action may be *right* with one end in view which would be *wrong* with another. The conduct of that general would be *right*, who, to save an army that could not be otherwise saved, should place a small detachment in a station where he knew they would all be inevitably cut off; but his conduct would be very *wrong* were he to throw away the life of a single individual for any purpose, however important, which he knew how to accomplish without such a sacrifice.

* See *Rec-
titude*.

Many philosophers have talked of actions being *right* and *wrong* in the abstract without regard to their natural consequences; and converting the word into a substantive, they have fancied an eternal rule of *right*, by which the morality of human conduct is in every particular case to be tried. But in these phrases we can discover no meaning. Whatever is *right* must be so on *some account or other*; and whatever is *fit*, must be fit for some *purpose*. When he who rests the foundation of virtue on the *moral sense*, speaks of an action being *right*, he must mean that it is such as, through the medium of that sense, will excite complacency in the mind of the agent, and gain to him the general approbation of mankind. When he who rests moral obligation on the will of God, speaks of some actions as *right* and of others as *wrong*, he must mean that the former are agreeable to the divine will, however made known to men, and the latter disagreeable to it; and the man who deduces the laws of virtue from what he calls the *fitness of things*, must have some *end in view*, for which things are fit, and denominate actions *right* or *wrong* as they tend to promote or counteract that end.

But the word *right*, used as a substantive, has in common as well as in philosophical language a signification which at first view appears to be very different from this. It denotes a *just claim* or an *honest possession*. Thus we say, a father has a *right* to reverence from his children, a

husband to the love and fidelity of his wife, and a king to the allegiance of his subjects. But if we trace these *rights* to their source, we shall find that they are all laws of moral obligation, and that they are called *rights* only because it is agreeable to the will of God, to the instinctive dictates of the moral sense, or to the fitness of things, if such a phrase has any meaning, that children reverence their parents, that wives love their husbands, and that subjects pay allegiance to their sovereign. This will be apparent to any man who shall put to himself such questions as these: "Why have parents a *right* to reverence from their children, husbands to the love of their wives, and sovereigns to the allegiance of their subjects?" As these questions contain in them nothing absurd, it is obvious that they are each capable of a precise answer; but it is impossible to give to any of them an answer which shall have any meaning, and not imply that *right* and *obligation* are reciprocal, or, in other words, that wherever there is a *right* in one person, there is a corresponding *obligation* upon others. Thus to the question, "Why have parents a right to reverence from their children?" it may be answered, "because, under God, they were the authors of their children's being, and protected them from danger, and furnished them with necessaries, when they were in a state so helpless that they could do nothing for themselves." This answer conveys no other meaning than that there is an obligation upon children, in return for benefits received, to reverence their parents. But what is the source of this obligation? It can only be the will of God, the moral sense, or the fitness of things.

This view of the nature of right will enable us to form a proper judgement of the assertion of a late writer, "that man has no rights." The arguments by which this apparent paradox is maintained, are not merely ingenious and plausible; they are absolutely conclusive. But then our philosopher, who never chooses to travel in the beaten track, takes the word *right* in a sense very different from that in which it has been used by all other men, and considers it as equivalent to *discretionary power*. "By the word *right* (says he) is understood a full and complete power of either doing a thing or omitting it, without the person's becoming liable to animadversion or censure from another; that is, in other words, without his incurring any degree of turpitude or guilt." In this sense of the word he affirms, and affirms truly, that a man has no rights, no discretionary power whatever, except in things of such total indifference as, whether "he shall sit on the right or on the left side of his fire, or dine on beef to-day or to-morrow."

Right.

Goodwin's
Political
Justice.

2
Rights of
man,

A proposition so evidently true as this stood not in need of argument to support it; but as his arguments are clearly expressed, and afford a complete confutation of some popular errors sanctioned by the respectable phrase *rights of man*, we shall give our readers an opportunity of studying them in his own words.

"Political society is founded on the principles of morality and justice. It is impossible for intellectual beings to be brought into coalition and intercourse without a certain mode of conduct, adapted to their nature and connection, immediately becoming a duty incumbent on the parties concerned. Men would never have associated if they had not imagined that, in consequence of that association, they would mutually conduce

¹ Right. conduce to the advantage and happiness of each other. This is the real purpose, the genuine basis, of their intercourse; and, as far as this purpose is answered, so far does society answer the end of its institution. There is only one postulate more that is necessary to bring us to a conclusive mode of reasoning upon this subject. Whatever is meant by the term *right*, there can neither be opposite rights, nor rights and duties hostile to each other. The rights of one man cannot clash with or be destructive of the rights of another: for this, instead of rendering the subject an important branch of truth and morality, as the advocates of the rights of man certainly understand it to be, would be to reduce it to a heap of unintelligible jargon and inconsistency. If one man have a right to be free, another man cannot have a right to make him a slave; if one man have a right to inflict chastisement upon me, I cannot have a right to withdraw myself from chastisement; if my neighbour have a right to a sum of money in my possession, I cannot have a right to retain it in my pocket. It cannot be less incontrovertible, that I have no right to omit what my duty prescribes. From hence it inevitably follows that men have no rights.

"It is commonly said, 'that a man has a right to the disposal of his fortune, a right to the employment of his time, a right to the uncontrolled choice of his profession or pursuits.' But this, can never be consistently affirmed till it can be shown that he has no duties, prescribing and limiting his mode of proceeding in all these respects.

"In reality, nothing can appear more wonderful to a careful inquirer, than that two ideas so incompatible as *man* and *rights* should ever have been associated together. Certain it is, that one of them must be utterly exclusive and annihilatory of the other. Before we ascribe rights to man, we must conceive of him as a being endowed with intellect, and capable of discerning the differences and tendencies of things. But a being endowed with intellect, and capable of discerning the differences and tendencies of things, instantly becomes a moral being, and has duties incumbent on him to discharge: and duties and rights, as has already been shown, are absolutely exclusive of each other.

"It has been affirmed by the zealous advocates of liberty, 'that princes and magistrates have no rights;' and no position can be more incontrovertible. There is no situation of their lives that has not its corresponding duties. There is no power intrusted to them that they are not bound to exercise exclusively for the public good. It is strange, that persons adopting this principle did not go a step farther, and perceive that the same restrictions were applicable to subjects and citizens."

³ Real and This reasoning is unanswerable; but it militates not against the *rights of man* in the usual acceptance of the words, which are never employed to denote discretionary power, but a just claim on the one hand, implying a corresponding obligation on the other. Whether the phrase be absolutely proper is not worth the debating: it is authorised by custom—the *jus et norma loquendi*—and is universally understood except by such as the demons of faction, in the form of paradoxical writers on political justice, have been able to mislead by sophistical reasonings.

⁴ Various. *Rights*, in the common acceptance of the word,

are of various kinds: they are *natural or adventitious, alienable or unalienable, perfect or imperfect, particular or general*. See the article LIBERTY.

⁵ Natural rights are those which a man has to his life, limbs, and liberty; to the produce of his personal labour; to the use, in common with others, of air, light, and water, &c. That every man has a natural right or just claim to these things, is evident from their being absolutely necessary to enable him to answer that purpose, whatever it may be, for which he was made a living and a rational being. This shows undeniably, that the Author of his nature designed that he should have the use of them, and that the man who should wantonly deprive him of any one of them, would be guilty of a breach of the divine law, as well as act inconsistently with the fitness of things in every sense in which that phrase can possibly be understood.

⁶ Adventitious rights are those which a king has over his subjects, a general over his soldiers, a husband to the person and affections of his wife, and which every man has to the greater part of his property. That the rights of the king and the general are adventitious, is universally admitted. The rights of property have been considered elsewhere (see PROPERTY); and though the human constitution shows sufficiently that men and women have a natural right to the use of each other, yet it is evident that the *exclusive* right of any one man to any one woman, and *vice versa*, must be an adventitious right: But the important question is, How are adventitious rights acquired?

⁷ How acquired. In answer to this question, the moralist who deduces the laws of virtue from the will of God, observes, that as God appears from his works to be a benevolent Being, who wills the happiness of all his creatures (see METAPHYSICS, N^o 312.), he must of course will every thing which naturally tends to promote that happiness. But the existence of civil society evidently contributes in a great degree to promote the sum of human happiness (see SOCIETY); and therefore whatever is necessary for the support of civil society in general, or for the conduct of particular societies already established, must be agreeable to the will of God: But the allegiance of subjects to their sovereign, the obedience of soldiers to their leader, the protection of private property, and the fulfilling of contracts, are all absolutely necessary to the support of society: and hence the rights of kings, generals, husbands, and wives, &c. though adventitious, and immediately derived from human appointments, are not less sacred than natural rights, since they may all be ultimately traced to the same source. The same conclusion may easily be drawn by the philosopher, who rests moral obligation on the fitness of things or on a moral sense; only it must in each of these cases partake of the instability of its foundation.

⁸ Objections. To the sacredness of the rights of marriage, an author already quoted has lately urged some declamatory objections. "It is absurd (says he) to expect, that the inclinations and wishes of two human beings should coincide through any long period of time. To oblige them to act and to live together, is to subject them to some inevitable portion of thwarting, bickering, and unhappiness. This cannot be otherwise, so long as man has failed to reach the standard of absolute perfection. The supposition that I must have a companion,

Right.

for life, is the result of a complication of vices. It is the dictate of cowardice, and not of fortitude. It flows from the desire of being loved and esteemed for something that is not desert.

“But the evil of marriage, as it is practised in European countries, lies deeper than this. The habit is, for a thoughtless and romantic youth of each sex to come together, to see each other for a few times, and under circumstances full of delusion, and then to vow to each other eternal attachment. What is the consequence of this? In almost every instance they find themselves deceived. They are reduced to make the best of an irretrievable mistake. They are presented with the strongest imaginable temptation to become the dupes of falsehood. They are led to conceive it their wisest policy to shut their eyes upon realities; happy if by any perversion of intellect they can persuade themselves that they were right in their first crude opinion of their companion.

“So long as two human beings are forbidden by positive institution to follow the dictates of their own mind, prejudice is alive and vigorous. So long as I seek to engross one woman to myself, and to prohibit my neighbour from proving his superior desert and reaping the fruits of it, I am guilty of the most odious of all monopolies. Over this imaginary prize men watch with perpetual jealousy; and one man will find his desires and his capacity to circumvent as much excited, as the other is excited to traverse his projects and frustrate his hopes. As long as this state of society continues, philanthropy will be crossed and checked in a thousand ways, and the still augmenting stream of abuse will continue to flow.

“The abolition of marriage will be attended with no evils. The intercourse of the sexes will fall under the same system as any other species of friendship. Exclusively of all groundless and obstinate attachments, it will be impossible for me to live in the world without finding one man of a worth superior to that of any other whom I have an opportunity of observing. To this man I shall feel a kindness in exact proportion to my apprehension of his worth. The case will be precisely the same with respect to the female sex; I shall assiduously cultivate the intercourse of that woman whose accomplishments shall strike me in the most powerful manner. ‘But it may happen that other men will feel for her the same preference that I do.’ This will create no difficulty. We may all enjoy her conversation; and we shall all be wise enough to consider the sensual intercourse as a very trivial object. This, like every other affair in which two persons are concerned, must be regulated in each successive instance by the unforced consent of either party. It is a mark of the extreme depravity of our present habits, that we are inclined to suppose the sensual intercourse anywise material to the advantages arising from the purest affection. Reasonable men now eat and drink, not from the love of pleasure, but because eating and drinking are essential to our healthful existence. Reasonable men then will propagate their species, not because a certain sensible pleasure is annexed to this action, but because it is right the species should be propagated; and the manner in which they exercise this function will be regulated by the dictates of reason and duty.”

Obviated.

It is right then, according to this political innovator,

Right.

that the species should be propagated, and reasonable men in his Utopian commonwealth would be incited by reason and duty to propagate them: but the way to fulfil this duty, experience, which is seldom at one with speculative reformation, has already demonstrated, not to consist in the promiscuous intercourse of several men with one woman, but in the fidelity of individuals of the two sexes to each other. Common prostitutes among us seldom prove with child; and the society of *Arreoyis* in Otahete, who have completely divested themselves of what our author calls *prejudice*, and are by no means guilty of his *most odious of all monopolies*, are for the most part childless (see OTAHEITE). He seems to think that a state of equal property would necessarily destroy our relish for luxury, decrease our inordinate appetites of every kind, and lead us universally to prefer the pleasures of intellect to the pleasures of sense. But here again experience is against him. The *Arreoyis*, who have a property in their women perfectly equal, are the most luxurious and sensual wretches on the face of the earth; sensual indeed to a degree of which the most libidinous European can hardly form a conception.

By admitting it to be a duty to propagate the species, our author must necessarily grant that every thing is right which is requisite to the fulfilling of that duty, and the contrary wrong. If so, promiscuous concubinage is wrong, since we have seen, that by a law of nature it is incompatible with the duty; whence it follows on his own principles, that the sexual union by pairs must be right. The only question therefore to be decided between him and his opponents is, “Whether should that union be temporary or permanent?” And we think the following observations by Mr Paley sufficient to decide it to the conviction of every person not blinded by the rage of innovation.

“A lawgiver, whose counsels were directed by views of general utility, and obstructed by no local impediments, would make the marriage-contract indissoluble during the joint lives of the parties, for the sake of the following advantages: Such an union tends to preserve peace and concord between married persons, by perpetuating their common interest, and by inducing a necessity of mutual compliance. An earlier termination of it would produce a separate interest. The wife would naturally look forward to the dissolution of the partnership, and endeavour to draw to herself a fund against the time when she was no longer to have access to the same resources. This would beget peculation on one side, and mistrust on the other; evils which at present very little disturb the confidence of married life. The second effect of making the union determinable only by death, is not less beneficial. It necessarily happens, that adverse tempers, habits, and tastes, oftentimes meet in marriage. In which case, each party must take pains to give up what offends, and practice what may gratify, the other. A man and woman in love with each other do this insensibly: but love is neither general nor durable; and where that is wanting, no lessons of duty, no delicacy of sentiment, will go half so far with the generality of mankind and womankind as this one intelligible reflection, that they must each make the best of their bargain; and that seeing they must either both be miserable or both share in the same happiness, neither can find their own comfort but in promoting the pleasure of the other. These compliances, though at first extorted by necessity, become in time easy and mutual;

Right. mutual; and though less endearing than assiduities which take their rise from affection, generally procure to the married pair a repose and satisfaction sufficient for their happiness."

So differently from our author does this judicious writer reason concerning the effects of a permanent union on the tempers of the married pair. Instead of subjecting them to some inevitable portion of thwarting, bickering, and unhappiness, it lays them, in his opinion, under the necessity of curbing their unruly passions, and acquiring habits of gentleness, forbearance, and peace. To this we may add, that both believing the children propagated during their marriage to be their own (a belief unattainable by the father in a state of promiscuous concubinage), they come by a natural process of the human passions (see PASSION) to love each other through the medium of their offspring. But if it be the duty of man to acquire a spirit first pure, then peaceable, gentle, and easy to be intreated, it must be agreeable to the will of God, and a branch of the fitness of things, that the sexual union last during the joint lives of the parties; and therefore the exclusive right of marriage, though adventitious, must be equally sacred with those which are natural.

10
Rights alienable and unalienable;

But to return from this digression, into which the importance of the subject led us, *rights*, besides being natural or adventitious, are likewise *alienable* or *unalienable*. Every man, when he becomes the member of a civil community, alienates a part of his natural rights. In a state of nature, no man has a superior on earth, and each has a right to defend his life, liberty, and property by all the means which nature has put in his power. In civil society, however, these rights are all transferred to the laws and the magistrate, except in cases of such extreme urgency as leave not time for legal interposition. This single consideration is sufficient to show, that the right to civil liberty is alienable; though, in the vehemence of men's zeal for it, and in the language of some political remonstrances, it has often been pronounced to be an unalienable right. "The true reason (says Mr Paley) why mankind hold in detestation the memory of those who have sold their liberty to a tyrant is, that, together with their own, they sold commonly or endangered the liberty of others; of which they had certainly no right to dispose." The rights of a prince over his people, and of a husband over his wife, are generally and naturally unalienable.

11
perfect and imperfect.

Another division of rights is into those which are perfect and those which are imperfect. Perfect rights are such as may be precisely ascertained and asserted by force or in civil society by the course of law. To imperfect rights neither force nor law is applicable. A man's rights to his life, person, and property, are all perfect; for if any of these be attacked, he may repel the attack by instant violence, punish the aggressor by the course of law, or compel the author of the injury to make restitution or satisfaction. A woman's right to her honour is likewise perfect; for if she cannot otherwise escape, she may kill the ravisher. Every poor man has undoubted right to relief from the rich: but his right is imperfect, for if the relief be not voluntarily given, he cannot compel it either by law or by violence. There is no duty upon which the Christian religion puts a greater value than alms-giving; and every preacher of the gospel has an undoubted right to inculcate the practice of it upon

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his audience: but even this right is imperfect, for he cannot refuse the communion to a man merely on account of his illiberality to the poor, as he can to another for the neglect of any duty comprehended under the term justice. In elections or appointments to offices, where the qualifications are prescribed, the best qualified candidate has unquestionably a right to success; yet if he be rejected, he can neither seize the office by force, nor obtain redress at law. His right, therefore, is imperfect.

Right.

Here a question naturally offers itself to our consideration: "How comes a person to have a right to a thing, and yet have no right to use the means necessary to obtain it?" The answer is, That in such cases the object or the circumstances of the right are so indeterminate, that the permission of force, even where the right is real and certain, would lead to force in other cases where there exists no right at all. Thus, though the poor man has a right to relief, who shall ascertain the mode, season, and quantum of it, or the person by whom it shall be administered? These things must be ascertained before the right to relief can be enforced by law; but to allow them to be ascertained by the poor themselves, would be to expose property to endless claims. In like manner, the comparative qualifications of the candidate must be ascertained, before he can enforce his right to the office; but to allow him to ascertain his qualifications himself, would be to make him judge in his own cause between himself and his neighbour.

Wherever the right is imperfect on one side, the corresponding obligation on the other must be imperfect likewise. The violation of it, however, is often not less criminal in a moral and religious view than of a perfect obligation. It is well observed by Mr Paley, that greater guilt is incurred by disappointing a worthy candidate of a place upon which perhaps his livelihood depends, and in which he could eminently serve the public, than by filching a book out of a library, or picking a pocket of a handkerchief. The same sentiment has been expressed by Mr Godwin, but in terms by much too strong, and such as show that he was not at the time complete master of his subject. "My neighbour (says he) has just as much right to put an end to my existence with dagger or poison, as to deny me that pecuniary assistance without which I must starve, or as to deny me that assistance without which my intellectual attainments, or my moral exertions, will be materially injured. He has just as much right to amuse himself with burning my house, or torturing my children upon the rack, as to shut himself up in a cell, careless about his fellow men, and to hide 'his talent in a napkin.'"

12
Imperfect rights equally sacred with those which are perfect.

It is certainly true, that the man who should suffer another to starve for want of that relief which he *knew* that he *alone* could afford him, would be guilty of murder, and murder of the cruellest kind; but there is an immense difference between depriving society of one of its members, and with-holding from that member what might be necessary to enable him to make the greatest possible intellectual attainments. Newton might have been useful and happy though he had never been acquainted with the elements of mathematics; and the late celebrated Mr Ferguson might have been a valuable member of society, though he had never emerged from his original condition of a shepherd. The remainder of the paragraph is too absurd to require a formal confutation.

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Right,
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Had our author, burying his talent in a napkin, shut himself up seven years ago in a cell, careless about his fellow men and *political justice*, he would have deprived the public of what he doubtless believes to be much useful instruction; but had he at that period amused himself with burning his neighbour's house, and torturing on the rack two or three children, he would have cut off, for any thing he could know, two or three future Newtons, and have himself been cut off by the insulted laws of his country. Now, without supposing the value of ten Newtons to be equal to that of one Godwin, we are warranted to say, that however great his merits may be, they are not infinite, and that the addition of those of one Newton to them would undoubtedly increase their sum.

13
Rights par-
ticular and
general.

Rights are particular or general. Particular rights are such as belong to certain individuals or orders of men, and not to others. The rights of kings, of masters, of husbands, of wives, and, in short, all the rights which originate in society, are particular. General rights are those which belong to the species collectively. Such are our rights to the vegetable produce of the earth, and to the flesh of animals for food, though about the origin of this latter right there has been much diversity of opinion, which we have noticed in another place. (See THEOLOGY, Part I. sect. 2d). If the vegetable produce of the earth be included under the general rights of mankind, it is plain that he is guilty of wrong who leaves any considerable portion of land waste merely for his own amusement: he is lessening the common stock of provision which Providence intended to distribute among the species. On this principle it would not be easy to vindicate certain regulations respecting game, as well as some other monopolies which are protected by the municipal laws of most countries. Mr Paley, by just reasoning, has established this conclusion, "that nothing ought to be made exclusive property which can be conveniently enjoyed in common." An equal division of land, however, the dream of some visionary reformers, would be injurious to the general rights of mankind, as it may be demonstrated, that it would lessen the common stock of provisions, by laying every man under the necessity of being his own weaver, tailor, shoemaker, smith, and carpenter, as well as ploughman, miller, and baker. Among the general rights of mankind is the right of *necessity*; by which a man may use or destroy his neighbour's property when it is absolutely necessary for his own preservation. It is on this principle that goods are thrown overboard to save the ship, and houses pulled down to stop the progress of a fire. In such cases, however, at least in the last, restitution ought to be made when it is in our power; but this restitution will not extend to the original value of the property destroyed, but only to what it was worth at the time of destroying it, which, considering its danger, might be very little.

14
Rights of
necessity.

RIGHTEOUSNESS, means justice, honesty, virtue, goodness, and amongst Christians is of exactly the same import with holiness, without which, we are told, no man shall see the Lord. The doctrine of the fall, and of redemption through Jesus Christ, has occasioned much dispute, and given rise to many singular notions in the world. The haughty philosopher, dissatisfied with mysteries, and with the humiliating doctrine of atonement by a crucified Saviour, has made a religion

for himself, which he calls *rational Christianity*; and the enthused, by extracting doctrines from Scripture which are not contained in it, and which are repugnant to its spirit, has given too much countenance to this presumption. The doctrine of imputed righteousness, by which the merit of Christ is said to be imputed to us, appears to be of this number; and though it has been held by many good, and by some learned men, it is certainly in general unfriendly to virtue, as will be readily allowed by all who have conversed with the more ignorant sort of Methodists in England or Seceders in Scotland. That it does not follow from the doctrine of the atonement, and consequently that it has no foundation in Scripture, will appear elsewhere. See THEOLOGY.

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Rigoll.

Bill of RIGHTS, in *Law*, is a declaration delivered by the lords and commons to the prince and princess of Orange, 13th February 1688; and afterwards enacted in parliament, when they became king and queen. It sets forth, that King James did, by the assistance of divers evil counsellors, endeavour to subvert the laws and liberties of this kingdom, by exercising a power of dispensing with and suspending of laws; by levying money for the use of the crown by pretence of prerogative without consent of parliament; by prosecuting those who petitioned the king, and discouraging petitions; by raising and keeping a standing army in time of peace; by violating the freedom of election of members to serve in parliament; by violent prosecutions in the court of king's bench; and causing partial and corrupt jurors to be returned on trials, excessive bail to be taken, excessive fines to be imposed, and cruel punishments inflicted; all which were declared to be illegal. And the declaration concludes in these remarkable words: "And they do claim, demand, and insist upon, all and singular the premises, as their undoubted rights and liberties." And the act of parliament itself (1 W. and M. stat. 2. cap. 2.) recognizes "all and singular the rights and liberties, asserted and claimed in the said declaration, to be the true, ancient, indubitable rights of the people of this kingdom." See LIBERTY.

RIGIDITY, in *Physics*, denotes a brittle hardness. It is opposed to ductility, malleability, and softness.

RIGOLL, or REGALS, a kind of musical instrument, consisting of several sticks bound together, only separated by beads. It is tolerably harmonious, being well struck with a ball at the end of a stick. Such is the account which Grassineau gives of this instrument. Skinner, upon the authority of an old English dictionary, represents it as a clavichord, or claricord; possibly founding his opinion on the nature of the office of the tuner of the regals, who still subsists in the establishment of the king's chapel at St James's, and whose business is to keep the organ of the chapel royal in tune; and not knowing that such wind instruments as the organ need frequent tuning, as well as the clavichord and other stringed instruments. Sir Henry Spelman derives the word *rigoll* from the Italian *rigabello*, a musical instrument, anciently used in churches instead of the organ. Walther, in his description of the regal, makes it to be a reed-work in an organ, with metal and also wooden pipes and bellows adapted to it. And he adds, that the name of it is supposed to be owing to its having been presented by the inventor to some king.—From an account

Rigoll
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Rings.

count of the regal used in Germany, and other parts of Europe, it appears to consist of pipes and keys on one side, and the bellows and wind-chest on the other. We may add, that Lord Bacon (Nat. Hist. cent. ii. § 102.) distinguishes between the regal and organ, in a manner which shows them to be instruments of the same class. Upon the whole, there is reason to conclude, that the regal or rigoll was a pneumatic, and not a stringed instrument.

Merfennus relates, that the Flemings invented an instrument, *les regales de bois*, consisting of 17 cylindrical pieces of wood, decreasing gradually in length, so as to produce a succession of tones and semitones in the diatonic series, which had keys, and was played on as a spinnet; the hint of which, he says, was taken from an instrument, in use among the Turks, consisting of 12 wooden cylinders, of different lengths, strung together, which being suspended and struck with a stick, having a ball at the end, produced music. Hawkins's Hist. Mus. vol. ii. p. 449.

RIGOR, in *Medicine*, a convulsive shuddering from severe cold, an ague fit, or other disorder.

RIMINI, an ancient, populous, and handsome town of Italy, in Romagna, which is part of the territory of the church, with a bishop's see, an old castle, and a strong tower; as also many remains of antiquity, and very fine buildings. It is famous for a council in 1359, consisting of 400 bishops, who were all Arians except 20. It is seated in a fertile plain, at the mouth of the river Marecchia, on the gulf of Venice. E. Long. 12. 39. N. Lat. 44. 6.

RIND, the skin of any fruit that may be cut off or pared. Rind is also used for the inner bark of trees, or that whitish soft substance which adheres immediately to the wood. See PLANT.

RING, an ornament of gold and silver, of a circular figure, and usually worn on the finger.

The episcopal ring (which makes a part of the pontifical apparatus, and is esteemed a pledge of the spiritual marriage between the bishop and his church) is of very ancient standing. The fourth council of Toledo, held in 633, appoints, that a bishop condemned by one council, and found afterwards innocent by a second, shall be restored, by giving him the ring, staff, &c. From bishops, the custom of the ring has passed to cardinals, who are to pay a very great sum *pro jure annuli cardinalis*.

RING, in *Navigation* and *Astronomy*, an instrument made use of for taking an altitude of the sun, &c. It is commonly of brass, about nine inches in diameter, suspended by a small swivel, at the distance of 45° from the point of which there is a perforation, being the centre of a quadrant of 90° divided in the inner concave surface. It is to be held up by the swivel when used, and turned round to the sun, till his rays, falling through the hole, form a spot among the degrees, by which the required altitude is pointed out. This instrument is deemed preferable to the astrolabe, because the divisions are larger than on that instrument.

RINGS. The antiquity of rings is known from Scripture and profane authors. Judah left his ring or signet with Tamar (Gen. xxxviii. 18.). When Pharaoh committed the government of all Egypt to Joseph, he took his ring from his finger, and gave it to Joseph (Gen. xli. 42.). After the victory that the Israelites

obtained over the Midianites, they offered to the Lord the rings, the bracelets, and the golden necklaces, and the ear-rings, that they had taken from the enemy (Numb. xxxi. 50.). The Israelitish women wore rings not only on their fingers, but also in their nostrils and their ears. St James distinguishes a man of wealth and dignity by the ring of gold that he wore on his finger (James ii. 2.). At the return of the prodigal son, his father orders him to be dressed in a new suit of clothes, and to have a ring put upon his finger (Luke xv. 22.). When the Lord threatened King Jeconiah with the utmost effects of his anger, he tells him, that though he wore the signet or ring upon his finger, yet he should be torn off (Jer. xxii. 24.).

The ring was used chiefly to seal with; and the Scripture generally puts it in the hands of princes and great persons: as the king of Egypt, Joseph, Ahaz, Jezebel, King Ahasuerus, his favourite Haman, Mordecai, who succeeded Haman in his dignity, King Darius (1 Kings xxi. 8.; Esther iii. 10, &c.; Dan. vi. 17.). The patents and orders of these princes were sealed with their rings or signets; and it was this that secured to them their authority and respect. See the article SEAL.

RING-Bone. See FARRIERY Index.

RING-Ouzel, a species of TURDUS. See ORNITHOLOGY Index.

RIO-GRANDE, a river of Africa, which runs from east to west through Negroland, and falls into the Atlantic ocean, in 11 degrees of latitude. Some take it to be a branch of the Niger, of which there is not the least proof.

RIO DE JANEIRO, the name of one of the provinces into which Brazil, the Portuguese portion of South America, is divided, and by far the most important, in consequence of the discovery and improvement of the gold and diamond mines about 300 miles to the north-west. The diamond mines are the exclusive property of the crown, as well as a fifth part of the gold. The people have of late begun to manufacture many necessary articles for their own consumption. The soil is luxuriant, producing spontaneously most kinds of fruit; and the ground is covered with one continued forest of trees of perpetual verdure, which, from the exuberance of the soil, are so entangled with briars, thorns, and underwood, as to form a thicket absolutely impenetrable, except by some narrow foot paths, which the inhabitants have made for their own convenience. The woods are extremely fragrant, from the many aromatic trees and shrubs with which they abound; and the fruits and vegetables of every climate thrive here almost without culture, and are to be procured in great abundance. The water is excellent; and among the ordinary productions of this richest province of Brazil may be ranked cotton, sugar, coffee, cocoa, wheat, rice, pepper, and abundance of tobacco. Vines are here met with in great perfection, but the grapes are not pressed for the purpose of obtaining wine. Gold, silver, and precious stones, are annually exported by the Portuguese, whose indolence, especially with respect to investigation and research, has prevented them from giving to the world any satisfactory accounts concerning those remote regions which are subject to their authority.

RIO de Janeiro, or *St Sebastian*, an extensive city, the metropolis of the foregoing province of Brazil, and the see of a bishop. It has a very extensive and commodi-

Rings
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Rio de Janeiro.

Rio de Janeiro.

ous harbour, which is defended by a number of forts. The city is built upon ground which is rather low, and was at one period of a swampy nature; it is environed by hills which exclude in a great measure the advantages of fresh air, both from the land and the sea, on which account the summers are inimical to health, the heat being almost suffocating. The different mechanics carry on their respective branches in distinct parts of the town, particular trades having particular streets assigned to them. The viceroy's palace is erected on the side of an extensive square; and there are fountains in different other squares, to which an aqueduct of considerable length conveys water over valleys by a double row of arches. On the extreme point are a fort called Santa Cruz, built on a prodigious rock of granite, and a Benedictine convent, jutting into the harbour, opposite to which is Serpent island, where there are houses for magazines and naval stores, together with a dock-yard. The warehouses for the reception and preparation of slaves from Africa for sale, are in another part of the harbour, known by the name of *Val Longo*. The city of Rio Janeiro is situated near the mouth of a river of the same name in the Atlantic ocean. The streets of this city are in general well paved and straight. The houses in general are two stories high, covered with tiles, and have balconies of wood extending in front of the upper stories; but the best of them have that dull and heavy appearance which must necessarily be the case when latticed windows supply the want of glass. The rocks in its vicinity are granite, of a red, white, or deep blue colour, the last being of a compact and hard texture.

Females of rank and distinction are said to have fine dark eyes, countenances full of animation, and their heads only ornamented with their tresses, which are bound up with ribbons and flowers. There are numerous convents and monasteries, and labour is in general performed by slaves, 20,000 of which are said to be annually imported. * Rio de Janeiro is a city of very considerable extent, and the population, including slaves, has been estimated at 60,000; but according to Dr Morfe, at no fewer than 200,000, as we find in his *American Gazetteer*, published in 1798; yet it appears extraordinary, that in such a city there is neither inn, nor hotel, nor any sort of accommodation for the reception of strangers. Such accommodation, however, is scarcely necessary, the weak and jealous government being so inhospitable, as to prohibit strangers from remaining on shore after the going down of the sun, and from walking the streets during the day without military spies.

When Mr Barrow visited this place, he found only two booksellers shops in it, after a long search, and many inquiries; but they contained nothing useful or interesting to a native of Britain. A number of old volumes on the subjects of alchemy and medicine, many more on church history and theological controversy, with a few on the mighty deeds of the house of Braganza, were all their catalogues contained.

It is said that the inhabitants sometimes go in small parties to the Public Garden, where they take supper, walk, and enjoy themselves with music and fireworks to a very late hour of the night.

Rio de Janeiro may justly be regarded as the grand central point on the coast of the Brazils, from which every other part of it may be at any time overawed.

Its regular force is said to consist of two squadrons of cavalry, two regiments of artillery, six regiments of infantry, two battalions of disciplined militia, and 200 disciplined free negroes, making a sum total of more than 10,000 men; but Mr Barrow is of opinion that this estimate is much exaggerated, since during his stay in that city he could discover nothing to warrant such a conclusion; and he is inclined to think that the whole force of the Brazils united cannot exceed the number of 10,000 men. This place, which has for a time at least become the residence of the royal family and government of Portugal, will, no doubt, acquire additional importance, and may perhaps at some future period be the seat of a mighty empire.

RIO Janeiro, a river which rises in the western mountains of Brazil, and running east through that country, falls into the Atlantic ocean at St Sebastian.

RIOM, an ancient town of France, in the department of Puy de Dome; seated on a hill, in so agreeable a country, that it is called the *garden of Auvergne*. E. Long. 3. 12. N. Lat. 45. 51.

RIOT, in *Law*. The riotous assembling of 12 persons, or more, and not dispersing upon proclamation, was first made high treason by statute 3 and 4 Edw. VI. c. 5. when the king was a minor, and a change of religion to be effected: but that statute was repealed by statute 1 Mar. c. 1. among the other treasons created since the 25 Edw. III.; though the prohibition was in substance re-enacted, with an inferior degree of punishment, by statute 1 Mar. st. 2. c. 12. which made the same offence a single felony. These statutes specified and particularized the nature of the riots they were meant to suppress; as, for example, such as were set on foot with intention to offer violence to the privy-council, or to change the laws of the kingdom, or for certain other specific purposes; in which cases, if the persons were commanded by proclamation to disperse, and they did not, it was by the statute of Mary made felony, but within the benefit of clergy; and also the act indemnified the peace-officers and their assistants, if they killed any of the mob in endeavouring to suppress such riot. This was thought a necessary security in that sanguinary reign, when popery was intended to be re-established, which was like to produce great discontents: but at first it was made only for a year, and was afterwards continued for that queen's life. And, by statute 1 Eliz. c. 16. when a reformation in religion was to be once more attempted, it was revived and continued during her life also; and then expired. From the accession of James I. to the death of Queen Anne, it was never once thought expedient to revive it; but, in the first year of George I. it was judged necessary, in order to support the execution of the act of settlement, to renew it, and at one stroke to make it perpetual, with large additions. For, whereas the former acts expressly defined and specified what should be accounted a riot, the statute 1 Geo. I. c. 5. enacts, generally, that if any 12 persons are unlawfully assembled to the disturbance of the peace, and any one justice of the peace, sheriff, under-sheriff, or mayor of a town, shall think proper to command them by proclamation to disperse, if they contemn his orders and continue together for one hour afterwards, such contempt shall be felony without benefit of clergy. And farther, if the reading of the proclamation be by force opposed, or the reader be in any manner

Rio de Janeiro
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Riot.

Riot,
Ripen.

manner wilfully hindered from the reading of it, such opposers and hinderers are felons without benefit of clergy; and all persons to whom such proclamation *ought to have been made*, and knowing of such hindrance, and not dispersing, are felons without benefit of clergy. There is the like indemnifying clause, in case any of the mob be unfortunately killed in the endeavour to disperse them; being copied from the act of Queen Mary. And by a subsequent clause of the new act, if any person, so riotously assembled, begin even before proclamation to pull down any church, chapel, meeting-house, dwelling-house, or out-houses, they shall be felons without benefit of clergy.

Riots, routs, and unlawful assemblies, must have three persons at least to constitute them. An *unlawful assembly* is, when three, or more, do assemble themselves together to do an unlawful act, as to pull down inclosures, to destroy a warren or the game therein; and part without doing it, or making any motion towards it. A *rout* is where three or more meet to do an unlawful act upon a common quarrel, as forcibly breaking down fences upon a right claimed of common, or of way, and make some advances towards it. A *riot* is where three or more actually do an unlawful act of violence, either with or without a common cause or quarrel; as if they beat a man; or hunt and kill game in another's park, chase, warren, or liberty; or do any other unlawful act with force and violence; or even do a lawful act, as removing a nuisance, in a violent and tumultuous manner. The punishment of unlawful assemblies, if to the number of 12, we have just now seen, may be capital, according to the circumstances that attend it; but, from the number of three to eleven, is by fine and imprisonment only. The same is the case in riots and routs by the common law; to which the pillory in very enormous cases has been sometimes superadded. And by the statute 13 Hen. IV. c. 7. any two justices, together with the sheriff or under-sheriff of the county, may come with the *posse comitatus*, if need be, and suppress any such riot, assembly, or rout, arrest the rioters, and record upon the spot the nature and circumstances of the whole transaction; which record alone shall be a sufficient conviction of the offenders. In the interpretation of which statute it hath been holden, that all persons, noblemen and others, except women, clergymen, persons decrepit, and infants under 15, are bound to attend the justices in suppressing a riot, upon pain of fine and imprisonment; and that any battery, wounding, or killing the rioters, that may happen in suppressing the riot, is justifiable. So that our ancient law, previous to the modern riot-act, seems pretty well to have guarded against any violent breach of the public peace; especially as any riotous assembly on a public or general account, as to redress grievances or pull down all inclosures, and also resisting the king's forces if sent to keep the peace, may amount to overt acts of high treason, by levying war against the king.

RIPEN, a sea-port town of Denmark, in North Jutland, and capital of a diocese of the same name, with a bishop's see, a good harbour, a castle, two colleges, and a public library. The tombs of several of the kings of Denmark are in the cathedral church, which is a very handsome structure. The harbour, which has contributed greatly to the prosperity of this place, is at a small distance, being seated at the mouth of the river

Nipsaa, in a country which supplies the best beeves in Denmark. It is 45 miles north-west of Sleswick and 25 south-by-west of Wiburg. E. Long. 8. 94. N. Lat. 55. 25. The diocese is bounded on the north by those of Wiburg and Athuys, on the south by the duchy of Sleswick, and on the east and west by the sea.

RIPENING of *Grain*, means its arriving to maturity. The following paper, which appeared in the first volume of the Transactions of the Royal Society of Edinburgh, may be worthy the attention of farmers in this country; where it frequently happens, from continued rains, that the corn is quite green when the frost sets in; in consequence of which, the farmers cut it down, without thinking it can possibly arrive at further maturity.

"Summer 1782 having been remarkably cold and unfavourable, the harvest was very late, and much of the grain, especially oats, was green even in October. In the beginning of October the cold was so great, that, in one night, there was produced on ponds near Kinneil, in the neighbourhood of Borrowstounness, ice three quarters of an inch thick. It was apprehended by many farmers, that such a degree of cold would effectually prevent the further filling and ripening of their corn. In order to ascertain this point, Dr Roebuck selected several stalks of oats, of nearly equal fulness, and immediately cut those which, on the most attentive comparison, appeared the best, and marked the others, but allowed them to remain in the field 14 days longer; at the end of which time they, too, were cut, and kept in a dry room for 10 days. The grains of each parcel were then weighed; when 11 of the grains which had been left standing in the field were found to be equal in weight to 30 of the grains which had been cut a fortnight sooner, though even the best of the grains were far from being ripe. During that fortnight (viz. from October 7th to October 21st) the average heat, according to Fahrenheit's thermometer, which was observed every day at eight o'clock in the morning and six in the evening, was a little above 43. Dr Roebuck observes, that this ripening and filling of corn in so low a temperature should be the less surprising to us, when we reflect, that seed-corn will vegetate in the same degree of heat; and he draws an important inference from his observations, viz. That farmers should be cautious of cutting down their unripe corn, on the supposition that in a cold autumn it could fill no more."

A writer in the Scots Magazine for June 1792, under the signature of *Agricola*, when speaking on this subject, adds the following piece of information, viz. "That grain cut down before it is quite ripe will grow or spring equally well as ripe and plump grain, provided it is properly preserved. I relate this from a fact, and also on the authority of one of the most judicious and experienced farmers in this island, William Craik of Arbigland, Esq. near Dumfries, who was taught by such a lesson as this threatens to prove. This being the case, every wise economical farmer will preserve his ripe and plump grain for bread, and sow the green and seemingly shrivelled grain, with a perfect conviction that the plants proceeding from such seed will yield as strong and thriving corn as what grows from plump seed. By this means the farmer will enjoy the double advantage of having the corn most productive in flour for bread, and his light shrivelled grain will go much farther in seed than

Ripen,
Ripening
of Grain.

Riphæan
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Risible.

than the plump grain would do. I saw the experiment made on wheat which was so shrivelled that it was thought scarcely worth giving to fowls, and yet produced heavy large ears."

RIPHOEAN MOUNTAINS, are a chain of high mountains in Russia, to the north-east of the river Oby, where there are said to be the finest fables of the whole empire.

RIPHATH, or RIPHAT, second son of Gomer, and grandson of Japhet (Gen. x. 3. רִפְתָּ Riphath). In most copies he is called *Diphath* in the Chronicles (1 Chr. i. 6. דִּפְתָּ Diphath). The resemblance of the two Hebrew letters ר *Resh* and ד *Daleth* is so much, that they are very often confounded. But, to the credit of the translators of our English version be it said, that in this instance, as well as in many others, they have restored the original reading, and rendered it Riphath. The learned are not agreed about the country that was peopled by the descendants of Riphath. The Chaldee and Arabic take it for France; Eusebius for the country of the Sauromatæ; the Chronicon Alexandrinum for that of the Garamantæ; Josephus for Paphlagonia. Mela assures us, that anciently the people of this province were called *Riphathæi*, or Riphaces; and in Bithynia, bordering upon Paphlagonia, may be found the river Rhebeus, a people called *Rhebantes*, and a canton of the same name. These reasons have prevailed with Bochart to believe, that Riphath peopled Paphlagonia. Others think he peopled the Montes Riphei; and this opinion seems the most reasonable to us, because the other sons of Gomer peopled the northern countries towards Scythia, and beyond the Euxine sea.

RISIBLE, any thing capable of exciting laughter.

Ludicrous is a general term, signifying, as may appear from its derivation, what is playfome, sportive, or jocular. *Ludicrous* therefore seems the genus, of which *risible* is a species, limited as above to what makes us laugh.

However easy it may be, concerning any particular object, to say whether it be risible or not, it seems difficult, if at all practicable, to establish any general character, by which objects of that kind may be distinguished from others. Nor is that a singular case; for, upon a review, we find the same difficulty in most of the articles already handled. There is nothing more easy, viewing a particular object, than to pronounce that it is beautiful or ugly, grand or little: but were we to attempt general rules for ranging objects under different classes according to these qualities, we should be much gravelled. A separate cause increases the difficulty of distinguishing risible objects by a general character: all men are not equally affected by risible objects, nor the same man at all times; for in high spirits a thing will make him laugh outright, which will scarcely provoke a smile in a grave mood. Risible objects, however, are circumscribed within certain limits. No object is risible but what appears slight, little, or trivial; for we laugh at nothing that is of importance to our own interest or to that of others. A real distress raises pity, and therefore cannot be risible; but a slight or imaginary distress, which moves not pity, is risible. The adventure of the fulling-mills in Don Quixote, is extremely risible; so is the scene where Sancho, in a dark night, tumbling into a pit, and attaching himself

to the side by hand and foot, hangs there in terrible dismay till the morning, when he discovers himself to be within a foot of the bottom. A nose remarkably long or short, is risible; but to want it altogether, so far from provoking laughter, raises horror in the spectator. With respect to works both of nature and art, none of them are risible but what are out of rule; some remarkable defect or excess, a very long visage, for example, or a very short one. Hence nothing just, proper, decent, beautiful, proportioned, or grand, is risible.

Even from this slight sketch it will be readily conjectured, that the emotion raised by a risible object is of a nature so singular, as scarcely to find place while the mind is occupied with any other passion or emotion; and the conjecture is verified by experience; for we scarce ever find that emotion blended with any other. One emotion we must except; and that is, contempt raised by certain improprieties: every improper act inspires us with some degree of contempt for the author; and if an improper act be at the same time risible to provoke laughter, of which blunders and absurdities are noted instances, the two emotions of contempt and of laughter unite intimately in the mind, and produce externally what is termed a *laugh of derision* or *of scorn*. Hence objects that cause laughter may be distinguished into two kinds: they are either *risible* or *ridiculous*. A risible object is mirthful only; a ridiculous object is both mirthful and contemptible. The first raises an emotion of laughter that is altogether pleasant: the pleasant emotion of laughter raised by the other, is blended with the painful emotion of contempt; and the mixed emotion is termed *the emotion of ridicule*. The pain a ridiculous object gives me, is repented and punished by a laugh of derision. A risible object, on the other hand, gives me no pain: it is altogether pleasant by a certain sort of titillation, which is expressed externally by mirthful laughter. See RIDICULE.

Risible objects are so common, and so well understood, that it is unnecessary to consume paper or time upon them. Take the few following examples:

Falstaff. I do remember him at Clement's inn, like a man made after supper of a cheese-paring. When he was naked, he was for all the world like a forked radish, with a head fantastically carved upon it with a knife.
Second Part, Henry IV. act iii. sc. 5.

The foregoing is of disproportion. The following examples are of slight or imaginary misfortunes.

Falstaff. Go fetch me a quart of sack, put a toast in't. Have I liv'd to be carried in a basket, like a barrow of butcher's offal, and to be thrown into the Thames! Well, if I be served such another trick, I'll have my brains ta'en out and butter'd, and give them to a dog for a new-year's gift. The rogues slighted me into the river with as little remorse as they would have drown'd a bitch's blind puppies, fifteen i'th' litter; and you may know by my size that I have a kind of alacrity in sinking; if the bottom were as deep as hell, I should down. I had been drown'd, but that the shore was shelvy and shallow; a death that I abhor: for the water swells a man; and what a thing should I have been when I had been swell'd? I should have been a mountain of mummy.

Merry Wives of Windsor, act iii. sc. 15.
Falstaff.

Risible.

Riffle,
Rite.

Falstaff. Nay, you shall hear, Master Brook, what I have suffer'd to bring this woman to evil for your good. Being thus cramm'd in the basket, a couple of Ford's knaves, his hinds, were call'd forth by their mistress, to carry me in the name of foul clothes to Datchet-lane. They took me on their shoulders, met the jealous knave their master in the door, who ask'd them once or twice what they had in their basket. I quak'd for fear, lest the lunatic knave would have search'd it; but Fate, ordaining he should be a cuckold, held his hand. Well, on went he for a search, and away went I for foul clothes. But mark the sequel, Master Brook. I suffer'd the pangs of three egregious deaths: first, an intolerable fright, to be detected by a jealous rotten bell-weather; next, to be compass'd like a good bilbo, in the circumference of a peck, hilt to point, heel to head; and then to be stopt in, like a strong distillation, with stinking clothes that fretted in their own greafe. Think of that, a man of my kidney; think of that, that am as subject to heat as butter; a man of continual dissolution and thaw; it was a miracle to scape suffocation. And in the height of this bath, when I was more than half stew'd in greafe, like a Dutch dill, to be thrown into the Thames, and cool'd glowing hot, in that surge, like a horse shoe; think of that; hissing hot; think of that, Mr Brook.

Merry Wives of Windsor, act iii. sc. 17.

RITE, among divines, denotes the particular man-

ner of celebrating divine service in this or that country.

RITORNELLO, or REPEAT, in *Musick*, the burden of a song, or the repetition of the first or other verses of a song at the end of each couplet.

RITTERHUSIUS, CONRAD, a learned German civilian, born at Brunswick in 1560. He was professor of civil law at Altdorf, and published a variety of works, particularly as a civilian; together with an edition of Oppian in Greek and Latin: he was moreover an excellent critic; his notes upon many eminent authors having been inserted in the best editions of them. He died in 1613.

RITUAL, a book directing the order and manner to be observed in performing divine service in a particular church, diocese, or the like. The ancient heathens had also their rituals, which contained their rites and ceremonies to be observed in building a city, consecrating a temple or altar, in sacrificing, and deifying, in dividing the curias, tribes, centuries, and, in general, in all their religious ceremonies. There are several passages in Cato's books, *De re Rustica*, which may give us some idea of the rituals of the ancients.

RIVAL, a term applied to two or more persons who have the same pretensions; and which is properly applied to a competitor in love, and figuratively to an antagonist in any other pursuit.

Ritornello
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Rival.

R I V E R,

¹
Definition.

IS a current of fresh water, flowing in a BED or CHANNEL from its source to the sea.

The term is appropriated to a considerable collection of waters, formed by the conflux of two or more BROOKS, which deliver into its channel the united streams of several RIVULETS, which have collected the supplies of many RILLS trickling down from numberless springs, and the torrents which carry off from the sloping grounds the surplus of every shower.

²
Utility of rivers.

Rivers form one of the chief features of the surface of this globe, serving as voiders of all that is immediately redundant in our rains and springs, and also as boundaries and barriers, and even as highways, and in many countries as plentiful storehouses. They also fertilize our soil by laying upon our warm fields the richest mould, brought from the high mountains, where it would have remained useless for want of genial heat.

³
Origin of their names.

Being such interesting objects of attention, every branch acquires a proper name, and the whole acquires a sort of personal identity, of which it is frequently difficult to find the principle; for the name of the great body of waters which discharges itself into the sea is traced backwards to one of the sources, while all the contributing streams are lost, although their waters form the chief part of the collection. And sometimes the feeder in which the name is preserved is smaller than others which are united to the current, and which like a rich but ignoble alliance lose their name in that of the more illustrious family. Some rivers in-

deed are respectable even at their birth, coming at once in force from some great lake. Such is the Rio de la Plata, the river St Laurence, and the mighty streams which issue in all directions from the Baical lake. But, like the sons of Adam, they are all of equal descent, and should take their name from one of the feeders of these lakes. This is indeed the case with a few, such as the Rhone, the Rhine, the Nile. These, after having mixed their waters with those of the lake, resume their appearance and their name at its outlet.

But in general their origin and progress, and even the features of their character, bear some resemblance (as has been prettily observed by Pliny) to the life of man. The river springs from the earth; but its origin is in heaven. Its beginnings are insignificant, and its infancy is frivolous; it plays among the flowers of a meadow; it waters a garden, or turns a little mill. Gathering strength in its youth, it becomes wild and impetuous. Impatient of the restraints which it still meets with in the hollows among the mountains, it is restless and fretful; quick in its turnings, and unsteady in its course. Now it is a roaring cataract, tearing up and overturning whatever opposes its progress, and it shoots headlong down from a rock; then it becomes a fullen and gloomy pool, buried in the bottom of a glin. Recovering breath by repose, it again dashes along, till tired of the uproar and mischief, it quits all that it has swept along, and leaves the opening of the valley strewd with the rejected waste. Now, quitting its retirement, it comes abroad into the world, journeying

⁴
Origin and progress similar to the life of man.

History.

neying with more prudence and discretion, through cultivated fields, yielding to circumstances, and winding round what would trouble it to overwhelm or remove. It passes through the populous cities and all the busy haunts of man, tendering its services on every side, and becomes the support and ornament of the country. Now increased by numerous alliances, and advanced in its course of existence, it becomes grave and stately in its motions, loves peace and quiet; and in majestic silence rolls on its mighty waters, till it is laid to rest in the vast abyss.

5
The religious respect for rivers.

The philosopher, the real lover of wisdom, sees much to admire in the economy and mechanism of running waters; and there are few operations of nature which give him more opportunities of remarking the nice adjustment of the most simple means for attaining many purposes of most extensive beneficence. All mankind seems to have felt this. The heart of man is ever open (unless perverted by the habits of selfish indulgence and arrogant self-conceit) to impressions of gratitude and love. He who ascribes the religious principle (debased though it be by the humbling abuses of superstition) to the workings of fear alone, may betray the slavish meanness of his own mind, but gives a very unfair and a false picture of the hearts of his neighbours. Lucretius was but half a philosopher when he penned his often quoted apophthegm. Indeed his own invocation shows how much the animal was blended with the fage.

6
The effect of gratitude and affection.

We apprehend, that whoever will read with an honest and candid mind, unbiassed by licentious wishes, the accounts of the ancient superstitions, will acknowledge that the amiable emotions of the human soul have had their share in creating the numerous divinities whose worship filled up their kalendars. The sun and the host of heaven have in all ages and nations been the objects of a sincere worship. Next to them, the rivers seem to have attracted the grateful acknowledgments of the inhabitants of the adjacent countries. They have everywhere been considered as a sort of tutelar divinities; and each little district, every retired valley, had its river god, who was preferred to all others with a partial fondness. The expostulation of Naaman the Syrian, who was offended with the prophet for enjoining him to wash in the river Jordan, was the natural effusion of this attachment. "What! (said he), are not Abana and Pharpar, rivers of Damascus, more excellent than all the waters of Judæa? Might I not wash in them and be clean? So he went away wroth."

In those countries particularly, where the rural labours, and the hopes of the shepherd and the husbandman, were not so immediately connected with the approach and recess of the sun, and depended rather on what happened in a far distant country by the falls of periodical rains or the melting of collected snows, the Nile, the Ganges, the Indus, the river of Pegu, were the sensible agents of nature in procuring to the inhabitants of their fertile banks all their abundance, and they became the objects of grateful veneration. Their sources were fought out with anxious care even by conquering princes; and when found, were universally worshipped with the most affectionate devotion. These remarkable rivers, so eminently and so palpably beneficent, preserve to this day, amidst every change of ha-

bit, and every increase of civilization and improvement, the fond adoration of the inhabitants of those fruitful countries through which they hold their stately course, and their waters are still held sacred. No progress of artificial refinement, not all the corruption of luxurious sensuality, has been able to eradicate this plant of native growth from the heart of man. The sentiment is congenial to his nature, and therefore it is universal; and we could almost appeal to the feelings of every reader, whether he does not perceive it in his own breast. Perhaps we may be mistaken in our opinion in the case of the corrupted inhabitants of the populous and busy cities, who are habituated to the fond contemplation of their own individual exertions as the sources of all their hopes. Give the shoemaker but leather and a few tools, and he defies the powers of nature to disappoint him; but the simpler inhabitants of the country, the most worthy and the most respectable part of every nation, after equal, perhaps greater exertion both of skill and of industry, are more accustomed to resign themselves to the great ministers of Providence, and to look up to heaven for the "early and the latter rains," without which all their labours are fruitless.

-----*extrema per illos*
Numenque excedens terris vestigia fecit.

And among the husbandmen and the shepherds of all nations and ages, we find the same fond attachment to their springs and rivulets.

Fortunate senex, hic inter flumina nota
Et fontes sacros frigus captabis opacum,

was the mournful ejaculation of poor Melibæus. We hardly know a river of any note in our own country whose source is not looked on with some respect.

We repeat our assertion, that this worship was the offspring of affection and gratitude, and that it is giving a very unfair and false picture of the human mind to ascribe these superstitions to the working of fear alone. These would have represented the river gods as seated on ruins, brandishing rooted-up trees, with angry looks, pouring out their sweeping torrents. But no such thing. The lively imagination of the Greeks felt, and expressed with an energy unknown to all other nations, every emotion of the human soul. They figured the Naiads as beautiful nymphs, patterns of gentleness and of elegance. These are represented as partially attached to the children of men; and their interference in human affairs is always in acts of kind assistance and protection. They resemble, in this respect, the rural deities of the northern nations, the fairies, but without their caprices and resentments. And if we attend to the descriptions and representations of their RIVER-GODS, beings armed with power, an attribute which slavish fear never fails to couple with cruelty and vengeance, we shall find the same expression of affectionate trust and confidence in their kind dispositions. They are generally called by the respectable but endearing name of *father*. "*Da Tyberi pater*," says Virgil. Mr Bruce says that the Nile at its source is called the *abay* or "father." We observe this word, or its radix, blended with many names of rivers of the east; and think it probable that when our traveller got this name from the inhabitants of the neighbourhood, they applied to the stream what is meant to express the tutelar or presiding

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History. preſiding ſpirit. The river gods are always repreſented as venerable old men, to indicate their being coeval with the world. But it is always a *cruda viridiſque ſeneſtus*, and they are never repreſented as oppreſſed with age and decrepitude. Their beards are long and flowing, their looks placid, their attitude eaſy, reclined on a bank, covered, as they are crowned, with never-fading ſedges and bulruſhes, and leaning on their urns, from which they pour out their plentiful and fertilizing ſtreams. —Mr Bruce's deſcription of the ſources of the Nile, and of the reſpect paid to the ſacred waters, has not a frowning feature; and the hospitable old man, with his fair daughter Irepone, and the gentle prieſthood which peopled the little village of Geeth, form a contraſt with the neighbouring Galla (among whom a military leader was called the *lamb*, becauſe he did not murder pregnant women), which very clearly paints the inſpiring principle of this ſuperſtition. Pliny ſays (lib. viii. 8.) that at the ſource of the Clitumnus there is an ancient temple highly reſpected. The preſence and the power of the divinity are expreſſed by the fates which ſtand in the veſtibule.—Around this temple are ſeveral little chapels, each of which covers a ſacred fountain; for the Clitumnus is the father of ſeveral little rivers which unite their ſtreams with him. At ſome diſtance below the temple is a bridge which divides the ſacred waters from thoſe which are open to common uſe. No one muſt preſume to ſet his foot in the ſtreams above this bridge; and to ſtep over any of them is an indignity which renders a perſon infamous. They can only be viſited in a ſanctified boat. Below the bridge we are permitted to bathe, and the place is inceſſantly occupied by the neighbouring vil- lagers. (See alſo *Vibius Sequeſtr. Orbelini*, p. 101—103. and 221—223. alſo *Sueton. Caligula*, c. 43. *Virg. Georg.* ii. 146.

What is the cauſe of all this? The Clitumnus flows (near its ſource) through the richeſt paſtures, through which it was carefully diſtributed by numberleſ drains; and theſe nourished cattle of ſuch ſpotleſſ whiteness and extraordinary beauty, that they were fought for with eagerness over all Italy, as the moſt acceptable victims in their ſacrifices. Is not this ſuperſtition then an effuſion of gratitude?

Such are the dictates of kind-hearted nature in our breasts, before it has been vitiated by vanity and self-conceit, and we ſhould not be aſhamed of feeling the impreſſion. We hardly think of making any apology for dwelling a little on this incidental circumſtance of the ſuperſtitious veneration paid to rivers. We cannot think that our readers will be diſpleaſed at having agreeable ideas excited in their minds, being always of opinion that the torch of true philoſophy will not only enlighten the underſtanding, but alſo warm and cheriſh the affections of the heart.

With reſpect to the origin of rivers, we have very little to offer in this place. It is obvious to every perſon, that beſides the torrents which carry down into the rivers what part of the rains and melted ſnows is not abſorbed by the ſoil or taken up by the plants which cover the earth, they are fed either immediately or remotely by the ſprings. A few remarkable ſtreams ruſh at once out of the earth in force, and muſt be conſidered as the continuation of ſubterraneous rivers, whoſe origin we are therefore to ſeek out; and we do not

know any circumſtance in which their firſt beginnings differ from thoſe of other rivers, which are formed by the union of little ſtreams and rills, each of which has its own ſource in a ſpring or fountain. This queſtion, therefore, What is the proceſs of nature, and what are the ſupplies which fill our ſprings? will be treated of under the word SPRING.

Whatever be the ſource of rivers, it is to be met with in almoſt every part of the globe. The cruſt of earth with which the rocky framing of this globe is covered is generally ſtratiſied. Some of theſe ſtrata are extremely pervious to water, having but ſmall attraction for its particles, and being very porous. Such is the quality of gravelly ſtrata in an eminent degree. Other ſtrata are much more firm, or attract water more ſtrongly, and reſuſe it paſſage. This is the caſe with firm rock and with clay. When a ſtratum of the firſt kind has one of the other immediately under it, the water remains in the upper ſtratum, and burſts out wherever the ſloping ſides of the hills cut off the ſtrata, and this will be the form of a trickling ſpring, becauſe the water in the porous ſtratum is greatly obſtructed in its paſſage towards the outlet. As this irregular formation of the earth is very general, we muſt have ſprings, and of courſe rivers or rivulets, in every corner where there are high grounds.

Rivers flow from the higher to the low grounds. It is the arrangement of this elevation which diſtributes them over the ſurface of the earth. And this appears to be accompliſhed with conſiderable regularity; and, except the great deſert of Kobi on the confines of Chineſe Tartary, we do not remember any very extenſive tract of ground that is deprived of thoſe channels for voiding the ſuperfluous waters; and even there they are far from being redundant.

The courſes of rivers give us the beſt general method for judging of the elevation of a country. Thus it appears that Savoy and Switzerland are the higheſt grounds of Europe, from whence the ground ſlopes in every direction. From the Alps proceed the Danube and the Rhine, whoſe courſes mark the two great valleys, into which many lateral ſtreams deſcend. The Po alſo and the Rhone come from the ſame head, and with a ſteeper and ſhorter courſe find their way to the ſea through valleys of leſs breadth and length. On the weſt ſide of the valleys of the Rhine and the Rhone the ground riſes pretty faſt, ſo that few tributary ſtreams come into them from that ſide; and from this gentle elevation France ſlopes to the weſtward. If a line, nearly ſtraight, but bending a little to the northward be drawn from the head of Savoy and Switzerland all the way to Solikamſkoy in Siberia, it will nearly paſs through the moſt elevated part of Europe; for in this tract moſt of the rivers have their riſe. On the left go off the various feeders of the Elbe, the Oder, the Weſel, the Niemen, the Duna, the Neva, the Dwina, the Petzora. On the right, after paſſing the feeders of the Danube, we ſee the ſources of the Sereth and Pruth, the Dnieſter, the Bog, the Dnieper, the Don, and the mighty Volga. The elevation, however, is extremely moderate: and it appears from the levels taken with the barometer by the Abbé Chappé d'Auteroche, that the head of the Volga is not more than 470 feet above the ſurface of the ocean. And we may obſerve here by the bye, that its mouth, where

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8
They flow from the higher to the lower grounds.

9
Course of the rivers of Europe,

7
Origin of rivers.

History.

it discharges its waters into the Caspian sea, is undoubtedly lower by many feet, than the surface of the ocean. See PNEUMATICS, N^o 277. Spain and Finland, with Lapland, Norway, and Sweden, form two detached parts, which have little symmetry with the rest of Europe.

10
of Asia,

A chain of mountains begins in Nova Zembla, and stretches due south to near the Caspian sea, dividing Europe from Asia. About three or four degrees north of the Caspian sea it bends to the south-east, traverses western Tartary, and passing between the Tengis and Zaizan lakes, it then branches to the east and south. The eastern branch runs to the shores of Korea and Kamtschatka. The southern branch traverses Turkestan and Thibet, separating them from India, and at the head of the kingdom of Ava joins an arm stretching from the great eastern branch, and here forms the centre of a very singular radiation. Chains of mountains issue from it in every direction. Three or four of them keep very close together, dividing the continent into narrow slips, which have each a great river flowing in the middle, and reaching to the extreme points of Malacca, Cambodia, and Cochin-china. From the same central point proceeds another great ridge due east, and passes a little north of Canton in China. We called this a singular centre; for though it sends off so many branches, it is by no means the most elevated part of the continent. In the triangle which is included between the first southern ridge (which comes from between the lakes Tanges and Zaizan), the great eastern ridge, and its branch which almost unites with the southern ridge, lies the Boutan, and part of Thibet, and the many little rivers which occupy its surface flow southward and eastward, uniting a little to the north of the centre often mentioned, and then pass through a gorge eastward into China. And it is farther to be observed, that these great ridges do not appear to be seated on the highest parts of the country; for the rivers which correspond to them are at no great distance from them, and receive their chief supplies from the other sides. This is remarkably the case with the great Oby, which runs almost parallel to the ridge from the lakes to Nova Zembla. It receives its supplies from the east, and indeed it has its source far east. The highest grounds (if we except the ridges of mountains which are boundaries) of the continent seem to be in the country of the Calmucs, about 95° east from London, and latitude 43° or 45° north. It is represented as a fine though sandy country, having many little rivers which lose themselves in the sand, or end in little salt lakes. This elevation stretches north-east to a great distance; and in this tract we find the heads of the Irtysh, Selenga, and Tunguskaia (the great feeders of the Oby), the Olenitz, the Lena, the Yana, and some other rivers, which all go off to the north. On the other side we have the great river Amur, and many smaller rivers, whose names are not familiar. The Hoangho, the great river of China, rises on the south side of the great eastern ridge we have so often mentioned. This elevation, which is a continuation of the former, is somewhat of the same complexion, being very sandy, and at present is a desert of prodigious extent. It is described, however, as interspersed with vast tracts of rich pasture; and we know that it was formerly the residence of a great nation, who came south, by the name of *Turks*, and possessed

History. themselves of most of the richest kingdoms of Asia. In the south-western extremity of this country are found remains not only of barbaric magnificence, but even of cultivation and elegance. It was a profitable privilege granted by Peter the Great to some adventurers to search these sandy deserts for remains of former opulence, and many pieces of delicate workmanship (though not in a style which we would admire) in gold and silver were found. Vaults were found buried in the sand filled with written papers, in a character wholly unknown; and a wall was discovered extending several miles, built with hewn stone, and ornamented with cornice and battlements. But we are forgetting ourselves, and return to the consideration of the distribution of the rivers on the surface of the earth. A great ridge of mountains begins at the south-east corner of the Euxine sea, and proceeds eastward, ranging along the south side of the Caspian, and still advancing unites with the mountains first mentioned in Thibet, sending off some branches to the south, which divide Persia, India and Thibet. From the south side of this ridge flow the Euphrates, Tigris, Indus, Ganges, &c. and from the north the ancient Oxus and many unknown streams.

There is a remarkable circumstance in this quarter of the globe. Although it seems to be nearest to the greatest elevations, it seems also to have places of the greatest depression. We have already said that the Caspian sea is lower than the ocean. There is in its neighbourhood another great basin of salt water, the lake Aral, which receives the waters of the Oxus or Gihon, which were said to have formerly run into the Caspian sea. There cannot, therefore, be a great difference in the level of these two basins; neither have they any outlet, though they receive great rivers. There is another great lake in the very middle of Persia, the Zare or Zara, which receives the river Hindemend, of near 250 miles length, besides other streams. There is another such in Asia Minor. The sea of Sodom and Gomorrah is another instance. And in the high countries we mentioned, there are many small salt lakes, which receive little rivers, and have no outlet. The lake Zara in Persia, however, is the only one which indicates a considerable hollow of the country. It is now ascertained, by actual survey, that the sea of Sodom is considerably higher than the Mediterranean. This feature is not, however, peculiar to Asia. It obtains also in Africa, whose rivers we now proceed to mention.

Of them, however, we know very little. The Nile of Africa, indeed is perhaps better known than any river out of Europe; and of its source and progress we have given a full account in a separate article. See NILE.

By the register of the weather kept by Mr Bruce at Gondar in 1770 and 1771, it appears that the greatest rains are about the beginning of July. He says that at an average each month after June it doubles its rains. The calish or canal is opened at Cairo about the 9th of August, when the river has risen 14 peeks (each 21 inches), and the waters begin to decrease about the 10th of September. Hence we may form a conjecture concerning the time which the latter employs in coming from Abyssinia. Mr Bruce supposes it 9 days, which supposes a velocity not less than 14 feet in a second; a thing past belief, and inconsistent with all our notions. The general slope of the river is greatly diminished by several great cataracts; and Mr Bruce expressly says, that he

History. he might have come down from Sennaar to the cataracts of Syene in a boat, and that it is navigable for boats far above Sennaar. He came from Syene to Cairo by water. We apprehend that no boat would venture down a stream moving even six feet in a second, and none could row up if the velocity was three feet. As the waters begin to decrease about the 10th of September, we must conclude that the water then flowing past Cairo had left Abyssinia when the rains had greatly abated. Judging in this way, we must still allow the stream a velocity of more than six feet. Had the first swell at Cairo been noticed in 1770 or 1771, we might have guessed better. The year that Thevenot was in Egypt, the first swell of eight peeks was observed Jan. 28. The calish was opened for 14 peeks on August 14th, and the waters began to decrease on September 23d, having risen to 21½ peeks. We may suppose a similar progress at Cairo corresponding to Mr Bruce's observations at Gondar, and date every thing five days earlier.

We understand that some of our gentlemen stationed far up the Ganges have had the curiosity to take notes of the swellings of that river, and compare them with the overflowings at Calcutta, and that their observations are about to be made public. Such accounts are valuable additions to our practical knowledge, and we shall not neglect to insert the information in some kindred article of this work.

The same mountains which attract the tropical vapours, and produce the fertilizing inundations of the Nile, perform the same office to the famous Niger, whose existence has often been accounted fabulous, and with whose course we have very little acquaintance. The researches of the gentlemen of the African association render its existence no longer doubtful, and have greatly excited the public curiosity. For a farther account of its track, see NIGER.

From the great number, and the very moderate size, of the rivers which fall into the Atlantic ocean all the way south of the Gambia, we conclude that the western shore is the most elevated, and that the mountains are at no great distance inland. On the other hand, the rivers at Melinda and Sofala are of a magnitude which indicate a much longer course. But of all this we speak with much uncertainty.

The frame-work (so to call it) of America is better known, and is singular.

12
and of A-
merica.

A chain of mountains begins, or at least is found, in longitude 110° west of London, and latitude 40° north, on the northern confines of the kingdom of Mexico, and stretching southward through that kingdom, forms the ridge of the neck of land which separates North from South America, and keeping almost close to the shore, ranges along the whole western coast of South America, terminating at Cape Horn. In its course it sends off branches, which after separating from it for a few leagues, rejoin it again, inclosing valleys of great extent from north to south, and of prodigious elevation. In one of these, under the equatorial sun, stands the city of Quito, in the midst of extensive fields of barley, oats, wheat, and gardens, containing apples, pears, and gooseberries, and in short all the grains and fruits of the cooler parts of Europe; and although the vine is also there in perfection, the olive is wanting. Not a dozen miles from it, in the low countries, the sugar-cane, the indigo, and all the fruits of the torrid zone, find their

congenial heat, and the inhabitants swelter under a burning sun. At a small distance on the other hand tower aloft the pinnacles of Pichincha, Corambourou, and Chimboracao, crowned with never-melting snows.

The individual mountains of this stupendous range not only exceed in height all others in the world (if we except the Peak of Teneriffe, Mount Ætna, and Mont Blanc); but they are set down on a base incomparably more elevated than any other country. They cut off therefore all communication between the Pacific ocean and the inland continent; and no rivers are to be found on the west coast of South America which have any considerable length of course or body of waters. The country is drained, like Africa, in the opposite direction. Not 100 miles from the city of Lima, the capital of Peru, which lies almost on the sea shore, and just at the foot of the high Cordilleras, arises out of a small lake the Maragnon or Amazon's river, which, after running northward for about 100 miles, takes an easterly direction, and crosses nearly the broadest part of South America, and falls into the great western ocean at Para, after a course of not less than 3500 miles. In the first half of its descent it receives a few middle-sized rivers from the north, and from the south it receives the great river Combos, springing from another little lake not 50 miles distant from the head of the Maragnon, and inclosing between them a wide extent of country. Then it receives the Yuta, the Yuerva, the Cuchivara, and Parana Mire, each of which is equal to the Rhine; and then the Madeira, which has flowed above 1300 miles. At their junction the breadth is so great, that neither shore can be seen by a person standing up in a canoe: so that the united stream must be about six miles broad. In this majestic form it rolls along at a prodigious rate through a flat country, covered with impenetrable forests, and most of it as yet untrodden by human feet. Mr Condamine, who came down the stream, says, that all is silent as the desert, and the wild beasts and numberless birds crowd round the boat, eyeing it as some animal of which they did not seem afraid. The bed was cut deep through an equal and yielding soil, which seemed rich in every part, if he could judge by the vegetation, which was rank in the extreme. What an addition this to the possible population of this globe! A narrow slip along each bank of this mighty river would equal in surface the whole of Europe, and would probably exceed it in general fertility: and although the velocity in the main stream was great, he observed that it was extremely moderate, nay almost still, at the sides; so that in those parts where the country was inhabited by men, the Indians paddled up the river with perfect ease. Boats could go from Para to near the mouth of the Madeira in 38 days, which is near 1200 miles.

Mr Condamine made an observation during his passage down the Maragnon, which is extremely curious and instructive, although it puzzled him very much. He observed that the tide was sensible at a vast distance from the mouth: It was very considerable at the junction of the Madeira; and he supposes that it might have been observed much farther up. This appeared to him very surprising, because there could be no doubt but that the surface of the water there was higher by a great many feet than the surface of the flood of the Atlantic ocean at the mouth of the river. It was there-

History.

fore very natural for him to ascribe the tide in the Maragnon to the immediate action of the moon on its waters; and this explanation was the more reasonable, because the river extends in the direction of terrestrial longitude, which by the Newtonian theory is most favourable to the production of a tide. Journeying as he did in an Indian canoe, we cannot suppose that he had much leisure or conveniency for calculations, and therefore are not surpris'd that he did not see that even this circumstance was of little avail in so small or shallow a body of water. He carefully noted, however, the times of high and low water as he pass'd along. When arriv'd at Para, he found not only that the high water was later and later as we are farther from the mouth, but he found that at one and the same instant there were several points of high water between Para and the confluence of the Madeira, with points of low water intervening. This conclusion was easily drawn from his own observations, although he could not see at one instant the high waters in different places. He had only to compute the time of high water at a particular spot, on the day he observ'd it at another; allowing, as usual, for the moon's change of position. The result of his observations therefore was, that the surface of the river was not an inclined plane whose slope was lessened by the tide of flood at the mouth of the river, but that it was a waving line, and that the propagation of the tide up the river was nothing different from the propagation of any other wave. We may conceive it clearly, though imperfectly, in this way. Let the place be noted where the tide happens 12 hours later than at the mouth of the river. It is evident that there is also a tide at the very mouth at the same instant; and, since the ocean tide had withdrawn itself during the time that the former tide had proceeded so far up the river, and the tide of ebb is successively felt above as well as the tide of flood, there must be a low water between these two high waters.

Newton had pointed out this curious fact, and observ'd that the tide at London-Bridge, which is 43 feet above the sea, is not the same with that at Gravesend, but the preceding tide (See Phil. Transf. 67.). This will be more particularly insist'd on in another place.

Not far from the head of the Maragnon, the Cordilleras send off a branch to the north-east, which reaches and ranges along the shore of the Mexican gulf, and the Rio Grande de Sta Martha occupies the angle between the ridges.

Another ridge ranges with interruption along the east coast of Terra Firma, so that the whole waters of this country are collect'd into the Oroonoko. In like manner the north and east of Brasil are hemmed in by mountainous ridges, through which there is no considerable passage; and the ground sloping backwards, all the waters of this immense tract are collect'd from both sides by many considerable rivers into the great river Paraguay, or Rio de la Plata, which runs down the middle of this country for more than 1400 miles, and falls into the sea through a vast mouth in latitude 35°.

Thus the whole of South America seems as if it had been formerly surrounded by a mound, and been a great basin. The ground in the middle, where the Parama, the Madeira, and the Plata, take their rise, is an im-

menfe marsh, uninhabitable for its exhalations, and quite impervious in its present state.

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The manner in which the continent of North America is watered, or rather drained, has also some peculiarities. By looking at the map, one will observe first of all a general division of the whole of the best known part into two, by the valleys in which the beds of the rivers St Laurence and Mississippi are situated. The head of this is occupi'd by a singular series of fresh water seas or lakes, viz. the lakes Superior and Michigan, which empty themselves into lake Huron by two cataracts. This again runs into lake Erie by the river Detroit, and the Erie pours its waters into the Ontario by the famous fall of Niagara, and from the Ontario proceeds the great river St Laurence.

The ground to the south-west of the lakes Superior and Erie is somewhat lower, and the middle of the valley is occupi'd by the Mississippi and the Missouri, which receive on both sides a number of smaller streams, and having join'd proceed to the south, under the name Mississippi. In latitude 37, this river receives into its bed the Ohio, a river of equal magnitude, and the Cherokee river, which drains all the country lying at the back of the United States, separated from them by the ranges of the Apalachian mountains. The Mississippi is now one of the chief rivers on the globe, and proceeds due south, till it falls into the Mexican bay through several shifting mouths, which greatly resemble those of the Danube and the Nile, having run above 1200 miles.

The elevated country between this bed of the Mississippi and St Laurence and the Atlantic ocean is drain'd on the east side by a great number of rivers, some of which are very considerable, and of long course; because instead of being nearly at right angles to the coast, as in other countries, they are in a great measure parallel to it. This is more remarkably the case with Hudson's river, the Delaware, Patomack, Rapahanoc, &c. Indeed the whole of North America seems to consist of ribs or beams laid nearly parallel to each other from north to south, and the rivers occupy the interstices. All those which empty themselves into the bay of Mexico are parallel and almost perfectly straight, unlike what are seen in other parts of the world. The westernmost of them all, the North River, as it is named by the Spaniards, is nearly as long as the Mississippi.

We are very little inform'd as yet of the distribution of rivers on the north-west coast of America, or the course of those which run into Hudson's or Baffin's bay.

The Maragnon is undoubtedly the greatest river in the world, both as to length of run and the vast body of water which it rolls along. The other great rivers succeed nearly in the following order.

Maragnon,	Amur,
Senegal,	Oroonoko,
Nile,	Ganges,
St Laurence,	Euphrates,
Hoangho,	Danube,
Rio de la Plata,	Don,
Yenisey,	Indus,
Mississippi,	Dnieper,
Volga,	Duina,
Oby,	&c.

We

Theory.

We have been much assisted in this account of the course of rivers, and their distribution over the globe, by a beautiful planisphere or map of the world published by Mr Bode astronomer royal at Berlin. The ranges of mountains are there laid down with philosophical discernment and precision; and we recommend it to the notice of our geographers. We cannot divine what has caused Mr Buffon to say that the course of most rivers is from east to west or from west to east. No physical point of his system seems to require it, and it needs only

that we look at his own map to see its falsity. We should naturally expect to find the *general* course of rivers nearly perpendicular to the line of sea-coast; and we find it so; and the chief exceptions are in opposition to Mr Buffon's assertion. The structure of America is so particular, that *very few* of its rivers have their general course in this direction. We proceed now to consider the motion of rivers; a subject which naturally resolves itself into two parts, *theoretical* and *practical*.

Theory.

PART I. THEORY OF THE MOTION OF RIVERS AND CANALS.

14
Importance
of the doc-
trine of the
motion of
rivers and
canals.

THE importance of this subject needs no commentary. Every nation, every country, every city is interested in it. Neither our wants, our comforts, nor our pleasures, can dispense with an ignorance of it. We must conduct their waters to the centre of our dwellings; we must secure ourselves against their ravages; we must employ them to drive those machines which, by compensating for our personal weakness, make a few able to perform the work of thousands; we employ them to water and fertilize our fields, to decorate our mansions, to cleanse and embellish our cities, to preserve or extend our demesnes, to transport from county to county every thing which necessity, convenience, or luxury, has rendered precious to man: for these purposes we must confine and govern the mighty rivers, we must preserve or change the beds of the smaller streams, draw off from them what shall water our fields, drive our machines, or supply our houses. We must keep up their waters for the purposes of navigation, or supply their places by canals; we must drain our fens, and defend them when drained; we must understand their motions, and their mode of secret, slow, but unceasing action, that our bridges, our wharfs, our dikes, may not become heaps of ruins. Ignorant how to proceed in these daily recurring cases, how often do we see projects of high expectation and heavy expence fail of their object, leaving the state burdened with works not only useless but frequently hurtful?

This has long been a most interesting subject of study in Italy, where the fertility of their fields is not more indebted to their rich soil and happy climate, than to their numerous derivations from the rivers which traverse them: and in Holland and Flanders, where their very existence requires unceasing attention to the waters, which are every moment ready to swallow up the inhabitants; and where the inhabitants, having once subdued this formidable enemy, have made those very waters their indefatigable drudges, transporting through every corner of the country the materials of the most extensive commerce on the face of this globe.

Such having been our incessant occupations with moving waters, we should expect that while the operative artists are continually furnishing facts and experiments, the man of speculative and scientific curiosity, excited by the importance of the subject, would ere now have made considerable progress in the science; and that the professional engineer would be daily acting from established principle, and be seldom disappointed in his expectations. Unfortunately the reverse of this is nearly the true state of the case; each engineer is obliged

to collect the greatest part of his knowledge from his own experience, and by many dear-bought lessons, to direct his future operations, in which he still proceeds with anxiety and hesitation: for we have not yet acquired principles of theory, and experiments have not yet been collected and published by which an empirical practice might be safely formed. Many experiments of inestimable value are daily made; but they remain with their authors, who seldom have either leisure, ability, or generosity, to add them to the public stock.

The motion of waters has been really so little investigated as yet, that hydraulics may still be called a new study. We have merely skimmed over a few common notions concerning the motions of water; and the mathematicians of the first order seem to have contented themselves with such views as allowed them to entertain themselves with elegant applications of calculus. This, however, has not been their fault. They rarely had any opportunity of doing more, for want of a knowledge of facts. They have made excellent use of the few which have been given them; but it required much labour, great variety of opportunity, and great expence, to learn the multiplicity of things which are combined even in the simplest cases of water in motion. These are seldom the lot of the mathematician; and he is without blame when he enjoys the pleasures within his reach, and cultivates the science of geometry in its most abstracted form. Here he makes a progress which is the boast of human reason, being almost insured from error by the intellectual simplicity of his subject. But when we turn our attention to material objects, and, without knowing either the size and shape of the elementary particles, or the laws which nature has prescribed for their action, presume to foresee their effects, calculate their exertions, direct their actions, what must be the consequence? Nature shows her independence with respect to our notions, and, always faithful to the laws which are enjoined, and of which we are ignorant, she never fails to thwart our views, to disconcert our projects, and render useless all our efforts.

To wish to know the nature of the elements is vain, and our gross organs are insufficient for the study. To suppose what we do not know, and to fancy shapes and sizes at will; this is to raise phantoms, and will produce a system, but will not prove a foundation for any science. But to interrogate Nature herself, study the laws which she so faithfully observes, catch her, as we say, in the fact, and thus wrest from her the secret; this is the only way to become her master, and it is the only procedure consistent with good sense. And we see, that

15
This science
as yet in
its infancy.

16
Proper
mode of in-
vestigation.

Theory.

that soon after Kepler detected the laws of the planetary motions, when Galileo discovered the uniform acceleration of gravity, when Paschal discovered the pressure of the atmosphere, and Newton discovered the laws of attraction and the track of a ray of light; astronomy, mechanics, hydrostatics, chemistry, optics, quickly became bodies of sound doctrine; and the deductions from their respective theories were found fair representations of the phenomena of nature. Whenever a man has discovered a law of nature, he has laid the foundation of a science, and he has given us a new mean of subjecting to our service some element hitherto independent: and so long as groups of natural operations follow a route which appears to us whimsical, and will not admit our calculations, we may be assured that we are ignorant of the principle which connects them all, and regulates their procedure.

17
Our ignorance of the general laws of this motion,

This is remarkably the case with several phenomena in the motions of fluids, and particularly in the motion of water in a bed or conduit of any kind. Although the first geniuses of Europe have for this century past turned much of their attention to this subject, we are almost ignorant of the *general laws* which may be observed in their motions. We have been able to select very few points of resemblance, and every case remains nearly an individual. About 150 years ago we discovered, by experience only, the quantity and velocity of water issuing from a small orifice, and, after much labour, have extended this to any orifice; and this is almost the whole of our confidential knowledge. But as to the uniform course of the streams which water the face of the earth, and the maxims which will certainly regulate this agreeably to our wishes, we are in a manner totally ignorant. Who can pretend to say what is the velocity of a river of which you tell him the breadth, the depth, and the declivity? Who can say what swell will be produced in different parts of its course, if a dam or weir of given dimensions be made in it, or a bridge be thrown across it? or how much its waters will be raised by turning another stream into it, or sunk by taking off a branch to drive a mill? Who can say with confidence what must be the dimensions or slope of this branch, in order to furnish the water that is wanted, or the dimensions and slope of a canal which shall effectually drain a fenny district? Who can say what form will cause or will prevent the undermining of banks, the forming of elbows, the pooling of the bed, or the deposition of sands? Yet these are the most important questions.

18
and the causes of it.

The causes of this ignorance are the want or uncertainty of our principles; the falsity of our only theory, which is belied by experience; and the small number of proper observations or experiments, and difficulty of making such as shall be serviceable. We have, it is true, made a few experiments on the efflux of water from small orifices, and from them we have deduced a sort of theory, dependant on the fall of heavy bodies and the laws of hydrostatic pressure. Hydrostatics is indeed founded on very simple principles, which give a very good account of the laws of the quiescent equilibrium of fluids, in consequence of gravity and perfect fluidity. But by what train of reasoning can we connect these with the phenomena of the uniform motion of the waters of a river or open stream, which can derive its mo-

Theory.

tion only from the slope of its surface, and the modifications of this motion or its velocity only from the width and depth of the stream? These are the only circumstances which can distinguish a portion of a river from a vessel of the same size and shape, in which, however, the water is at rest. In both, gravity is the sole cause of pressure and motion; but there must be some circumstance peculiar to running waters which modifies the exertions of this active principle, and which, when discovered, must be the basis of hydraulics, and must oblige us to reject every theory founded on fancied hypotheses, and which can only lead to absurd conclusions: and surely absurd consequences, when legitimately drawn, are complete evidence of improper principles.

When it was discovered experimentally, that the velocities of water issuing from orifices at various depths under the surface were as the square roots of those depths, and the fact was verified by repeated experiments, this principle was immediately and without modification applied to every motion of water. Mariotte, Varignon, Guglielmini, made it the basis of complete systems of hydraulics, which prevail to this day, after having received various amendments and modifications. The same reasoning obtains through them all, though frequently obscured by other circumstances, which are more perspicuously expressed by Guglielmini in his *Fundamental Theorems*.

19
Principle on which the systems of hydraulics depend.

He considers every point P (fig. 1.) in a mass of fluid as an orifice in the side of a vessel, and conceives the particle as having a tendency to move with the same velocity with which it would issue from the orifice. Therefore, if a vertical line ΔPC be drawn through that point, and if this be made the axis of a parabolic ADE, of which A at the surface of the fluid is the vertex, and AB (four times the height through which a heavy body would fall in a second) is the parameter, the velocity of this particle will be represented by the ordinate PD of this parabola; that is, PD is the space which it would uniformly describe in a second.

Plate
CCCLXII
Fig. 1.

From this principle is derived the following theory of running waters.

20
Theory derived from it.
Fig. 2.

Let DC (fig. 2.) be the horizontal bottom of a reservoir, to which is joined a sloping channel CK of uniform breadth, and let AB be the surface of the standing water in the reservoir. Suppose the vertical plane BC pierced with an infinity of holes, through each of which the water issues. The velocity of each filament will be that which is acquired by falling from the surface AB*. The filament C, issuing with this velocity, will then glide down the inclined plane like any other heavy body; and (by the common doctrine of the motion down an inclined plane) when it has arrived at F, it will have the same velocity which it would have acquired by falling through the height OF, the point O being in the horizontal plane AB produced. The same may be said of its velocity when it arrives at H or K. The filament immediately above C will also issue with a velocity which is in the subduplicate ratio of its depth, and will then glide down above the first filament. The same may be affirmed of all the filaments; and of the superficial filament, which will occupy the surface of the descending stream.

21
The consequences drawn from this theory.

From this account of the genesis of a running stream of water, we may fairly draw the following consequences.

Theory.

1. The velocity of any particle R, in any part of the stream, is that acquired by falling from the horizontal plane AN.

2. The velocity at the bottom of the stream is everywhere greater than anywhere above it, and is least of all at the surface.

3. The velocity of the stream increases continually as the stream recedes from its source.

4. The depths EF, GH, &c. in different parts of the stream, will be nearly in the inverse subduplicate ratio of the depths under the surface AN: for since the same quantity of water is running through every section EF and GH, and the channel is supposed of uniform breadth, the depth of each section must be inversely as the velocity of the water passing through it. This velocity is indeed different in different filaments of the section; but the mean velocity in each section is in the subduplicate ratio of the depth of the filament under the surface AB. Therefore the stream becomes more shallow as it recedes from the source; and in consequence of this the difference between LH and MG continually diminishes, and the velocities at the bottom and surface of the stream continually approach to equality, and at a great distance from the source they differ insensibly.

5. If the breadth of the stream be contracted in any part, the depth of the running water will be increased in that part, because the same quantity must still pass through; but the velocity at the bottom will remain the same, and that at the surface will be less than it was before; and the area of the section will be increased on the whole.

6. Should a sluice be put across the stream, dipping a little into the water, the water must immediately rise on the upper side of the sluice till it rises above the level of the reservoir, and the smallest immersion of the sluice will produce this effect. For by lowering the sluice, the area of the section is diminished, and the velocity cannot be increased till the water heap up to a greater height than the surface of the reservoir, and this acquires a pressure which will produce a greater velocity of efflux through the orifice left below the sluice.

7. An additional quantity of water coming into this channel will increase the depth of the stream, and the quantity of water which it conveys; but it will not increase the velocity of the bottom filaments, unless it comes from a higher source.

22
are all contrary to experience.

All these consequences are contrary to experience, and show the imperfection, at least, of the explanation.

The third consequence is of all the most contrary to experience. If any one will but take the trouble of following a single brook from its source to the sea, he will find it most rapid in its beginnings among the mountains, gradually slackening its pace as it winds among the hills and gentler declivities, and at last creeping slowly along through the flat grounds, till it is checked and brought to rest by the tides of the ocean.

Nor is the second consequence more agreeable to observation. It is universally found, that the velocity of the surface in the middle of the stream is the greatest of all, and that it gradually diminishes from thence to the bottom and sides.

And the first consequence, if true, would render the running waters on the surface of this earth the instru-

ments of immediate ruin and devastation. If the waters of our rivers, in the cultivated parts of a country, which are two, three, and four hundred feet lower than their sources, ran with the velocity due to that height, they would in a few minutes lay the earth bare to the very bones.

Theory.

The velocities of our rivers, brooks, and rills, being so greatly inferior to what this theory assigns to them, the other consequences are equally contrary to experience. When a stream has its section diminished by narrowing the channel, the current increases in depth, and this is always accompanied by an increase of velocity through the whole of the section, and most of all at the surface; and the area of the section does not increase, but diminishes, all the phenomena, thus contradicting in every circumstance the deduction from the theory; and when the section has been diminished by a sluice let down into the stream, the water gradually heaps up on the upper side of the sluice, and, by its pressure, produces an acceleration of the stream below the sluice, in the same way as if it were the beginning of a stream, as explained in the theory. The velocity now is composed of the velocity preserved from the source and the velocity produced by this subordinate accumulation; and this accumulation and velocity continually increase, till they become such that the whole supply is again discharged through this contracted section: any additional water not only increases the quantity carried along the stream, but also increases the velocity, and therefore the section does not increase in the proportion of the quantity.

It is surprising that a theory really founded on a conceit, and which in every the most familiar and obvious circumstances is contradicted by facts, should have met with so much attention. That Varignon should immediately catch at this notion of Guglielmini, and make it the subject of many elaborate analytical memoirs, is not to be wondered at. This author only wanted *donner prise au calcul*; and it was a usual joke among the academicians of Paris, when any new theorem was invented, *donnons le à Varignon à generaliser*. But his numerous theorems and corollaries were adopted by all, and still make the substance of the present systems of hydraulics. Gravefande, Muschenbroek, and all the elementary treatises of natural philosophy, deliver no other doctrines; and Belidor, who has been considered as the first of all the scientific engineers, details the same theory in his great work the *Architecture Hydraulique*.

Guglielmini was, however, not altogether the dupe of his own ingenuity. He was not only a pretty good mathematician, but an assiduous and sagacious observer. He had applied his theory to some important cases, which occurred in the course of his profession as inspector of the rivers and canals in the Milanese, and attempted to the course of the Danube; and could not but perceive that great corrections were necessary for making the theory quadrate in some tolerable manner with observation; and he immediately saw that the motion was greatly obstructed by inequalities of the canal, which gave to the contiguous filaments of the stream transverse motions, which thwarted and confused the regular progress of the rest of the stream, and thus checked its general progress. These obstructions, he observed, were most effectual in the beginning of its course, while yet a small rill, running among stones, and in a very unequal

23
The theory, however, has been generally followed by the writers on the sub-

24
though some of the more ingenious saw its defects, and attempted to supply them.

Theory.

unequal bed. The whole stream being small, the inequalities bore a great proportion to it, and thus the general effect was great. He also saw that the same causes (these transverse motions produced by the unequal bottom) chiefly affected the contiguous filaments, and were the reasons why the velocity at the sides and bottom was so much diminished as to be less than the superficial velocity, and that even this might come to be diminished by the same cause. For he observed, that the general stream of a river is frequently composed of a sort of boiling or tumbling motion, by which masses of water are brought up to the surface and again descend. Every person must recollect such appearances in the freshes of a muddy river; and in this way Guglielmini was enabled to account in some measure for the disagreement of his theory with observation.

Mariotte had observed the same obstruction even in the smoothest glass pipes. Here it could not be ascribed to the checks occasioned by transverse motions. He therefore ascribed it to friction, which he supposed to diminish the motion of fluid bodies in the same manner as of solids: and he thence concludes, that the filaments which immediately rub on the sides of the tube have their velocity gradually diminished; and that the filaments immediately adjoining to these, being thus obliged to pass over them or outstrip them, rub upon them, and have their own velocity diminished in like manner, but in a smaller degree; and that the succeeding filaments towards the axis of the tube suffer similar but smaller diminutions. By this means the whole stream may come to have a smaller velocity; and at any rate the medium velocity by which the quantity discharged is determined, is smaller than it would have been independent of friction.

Guglielmini adopted this opinion of Mariotte, and in his next work on the Motion of Rivers, considered this as the chief cause of the retardation; and he added a third circumstance, which he considered as of no less consequence, the viscosity or tenacity of water. He observes that syrup, oil, and other fluids, where this viscosity is more remarkable, have their motions prodigiously retarded by it, and supposes that water differs from them only in the degree in which it possesses this quality: and he says, that by this means not only the particles which are moving more rapidly have their motions diminished by those in their neighbourhood which move slower, but that the filaments also which would have moved more slowly are accelerated by their more active neighbours; and that in this manner the superficial and inferior velocities are brought nearer to an equality. But this will never account for the universal fact, that the superficial particles are the swiftest of all. The superficial particles, says he, acquire by this means a greater velocity than the parabolic law allows them; the medium velocity is often in the middle of the depth; the numerous obstacles continually multiplied and repeated, cause the current to lose the velocity acquired by the fall; the slope of the bottom then diminishes, and often becomes very small, so that the force remaining is hardly able to overcome the obstacles which are still repeated, and the river is reduced almost to a state of stagnation. He observes, that the Rheno, a river of the Milanese, has near its mouth a slope of no more than 5", which he considers as quite inadequate to the

task; and here he introduces another principle, which he considers as an essential part of the theory of open currents. This is, that there arises from the very depth of the stream a propelling force which restores a part of the lost velocity. He offers nothing in proof of this principle, but uses it to account for and explain the motion of waters in horizontal canals. The principle has been adopted by the numerous Italian writers on hydraulics, and, by various contrivances, interwoven with the parabolic theory, as it is called, of Guglielmini. Our readers may see it in various modifications in the *Idrostatica e Idraulica* of P. Lecchi, and in the *Sperienze Idrauliche* of Michelotti. It is by no means distinct either in its origin or in the manner of its application to the explanation of phenomena, and seems only to serve for giving something like consistency to the vague and obscure discussions which have been published on this subject in Italy. We have already remarked, that in that country the subject is particularly interesting, and has been much commented upon. But the writers of England, France, and Germany, have not paid so much attention to it, and have more generally occupied themselves with the motion of water in close conduits, which seem to admit of a more precise application of mathematical reasoning.

Some of those have considered with more attention the effects of friction and viscosity. Sir Isaac Newton, with his usual penetration, had seen distinctly the manner in which it behoved these circumstances to operate. He had occasion, in his researches into the mechanics of the celestial motions, to examine the famous hypothesis of Descartes, that the planets were carried round the sun by fluid vortices, and saw that there would be no end to uncertainty and dispute till the *modus operandi* of these vortices were mechanically considered. He therefore employed himself in the investigation of the manner in which the acknowledged powers of natural bodies, acting according to the received laws of mechanics, could produce and preserve these vortices, and restore that motion which was expended in carrying the planets round the sun. He therefore, in the second book of the Principles of Natural Philosophy, gives a series of beautiful propositions, viz, 51, 52, &c. with their corollaries, showing how the rotation of a cylinder or sphere round its axis in the midst of a fluid will excite a vortical motion in this fluid; and he ascertains with mathematical precision the motion of every filament of this vortex.

He sets out from the supposition that this motion is excited in the surrounding stratum of fluid in consequence of a want of perfect lubricity, and assumes as an hypothesis, that the initial resistance (or diminution of the motion of the cylinder) which arises from this want of lubricity, is proportional to the velocity with which the surface of the cylinder is separated from the contiguous surface of the surrounding fluid, and that the whole resistance is proportional to the velocity with which the parts of the fluid are mutually separated from each other. From this, and the equality of action and re-action, it evidently follows, that the velocity of any stratum of the vortex is the arithmetical medium between the velocities of the strata immediately within and without it. For the intermediate stratum cannot be in equilibrio, unless it is as much pressed forward by

Theory.

25
Sir Isaac
Newton's
observations
on this sub-
ject,

Theory. the superior motion of the stratum within it, as it is kept back by the slower motion of the stratum without it.

This beautiful investigation applies in the most perfect manner to every change produced in the motion of a fluid filament, in consequence of the viscosity and friction of the adjoining filaments; and a filament proceeding along a tube at some small distance from the sides has, in like manner, a velocity which is the medium between those of the filaments immediately surrounding it. It is therefore a problem of no very difficult solution to assign the law by which the velocity will gradually diminish as the filament recedes from the axis of a cylindrical tube. It is somewhat surprising that so neat a problem has never occupied the attention of the mathematicians during the time that these subjects were so assiduously studied; but so it is, that nothing precise has been published on the subject. The only approach to a discussion of this kind, is a Memoir of Mr Pitot, read to the academy of Paris in 1726, where he considers the velocity of efflux through a pipe. Here, by attending to the comparative superiority of the *quantity of motion* in large pipes, he affirms, that the total diminutions arising from friction will be (*ceteris paribus*) in the inverse ratio of the diameters. This was thankfully received by other writers, and is now a part of our hydraulic theories. It has not, however, been attended to by those who write on the motion of rivers, though it is evident that it is applicable to these with equal propriety; and had it been introduced, it would at once have solved all their difficulties, and particularly would have shown how an almost imperceptible declivity would produce the gentle motion of a great river, without having recourse to the unintelligible principle of Guglielmini.

Mr Couplet made some experiments on the motion of the water in the great main pipes of Versailles, in order to obtain some notions of the retardations occasioned by friction. They were found prodigious; but were so irregular, and unsusceptible of reduction to any general principle, (and the experiments were indeed so few that they were unfit for this reduction), that he could establish no theory.—What Mr Belidor established on them, and makes a sort of system to direct future engineers, is quite unworthy of attention.

Upon the whole, this branch of hydraulics, although of much greater practical importance than the conduct of water in pipes, has never yet obtained more than a vague, and, we may call it, slovenly attention from the mathematicians; and we ascribe it to their not having taken the pains to settle its first principles with the same precision as had been done in the other branch. They were, from the beginning, satisfied with a sort of applicability of mathematical principles, without ever making the application. Were it not that some would accuse us of national partiality, we would ascribe it to this, that Newton had not pointed out the way in this as in the other branch. For any intelligent reader of the performances on the motions of fluids in close vessels, will see that there has not a principle, nay hardly a step of investigation, been added to those which were used or pointed out by Sir Isaac Newton. He has nowhere touched this question, the motion of water in an open canal. In his theories of the tides, and of the propagation of waves, he had an excellent opportunity

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for giving at once the fundamental principles of motion in a free fluid whose surface was not horizontal. But, by means of some of those happy and shrewd guesses, in which, as Daniel Bernoulli says, he excelled all men, he saw the undoubted consequences of some palpable phenomenon which would answer all his present purposes, and therefore entered no farther into the investigation.

The original theory of Guglielmini, or the principle adopted by him, that each particle of the vertical section of a running stream has a tendency to move as if it were issuing from an orifice at that depth under the surface, is false; and that it really does so in the face of a dam when the flood-gate is taken away, is no less so; and if it did, the subsequent motions would hardly have any resemblance to those which he assigns them. Were this the case, the exterior form of the cascade would be something like what is sketched in fig. 3. with an abrupt angle at B, and a concave surface BEG. This will be evident to every one who combines the greater velocity of the lower filaments with the slower motion of those which must slide down above them. But this greater advance of the lower filaments cannot take place without an expenditure of the water under the surface AB. The surface therefore sinks, and B instantly ceases to retain its place in the horizontal plane. The water does not successively flow forward from A to B, and then tumble over the precipice; but immediately upon opening the flood-gate, the water wastes from the space immediately behind it, and the whole puts on the form represented in fig. 4. consisting of the curve A a P c EG, convex from A to c, and concave from thence forward. The superficial water begins to accelerate all the way from A; and the particles may be supposed (for the present) to have acquired the velocity corresponding to their depth under the horizontal surface. This must be understood as nothing more than a vague sketch of the motions. It requires a very critical and intricate investigation to determine either the form of the upper curve or the motions of the different filaments. The place A, where the curvature begins, is of equally difficult determination, and is various according to the differences of depth and of inclination of the succeeding canal.

We have given this sort of history of the progress which had been made in this part of hydraulics, that our readers might form some opinion of the many dissertations which have been written on the motion of rivers, and of the state of the arts depending on it. Much of the business of the civil engineer is intimately connected with it: and we may therefore believe, that since there was so little principle in the theories, there could be but very little certainty in the practical operations. The fact has been, that no engineer could pretend to say, with any precision, what would be the effect of his operations. One whose business had given him many opportunities, and who kept accurate and judicious registers of his own works, could pronounce, with some probability, how much water would be brought off by a drain of certain dimensions and a given slope, when the circumstances of the case happened to tally with some former work in which he had succeeded or failed; but out of the pale of his own experience he could only make a sagacious guess. A remarkable instance of this occurred not long ago. A small aqueduct was lately carried into

G

Paris.

26
Scarce at
all improved
since
his time.

Theory.

Theory.

Paris. It had been conducted on a plan presented to the academy, who had corrected it, and gave a report of what its performance would be. When executed in the most accurate manner, it was deficient in the proportion of five to nine. When the celebrated Desaguliers was employed by the city of Edinburgh to superintend the bringing in the water for the supply of the city, he gave a report on the plan which was to be followed. It was executed to his complete satisfaction; and the quantity of water delivered was about one-sixth of the quantity which he promised, and about one-eleventh of the quantity which the no less celebrated M'Laurin calculated from the same plan.

²⁸
Necessity
of multiply-
ing experi-
ments.

Such being the state of our theoretical knowledge (if it can be called by this name), naturalists began to be persuaded that it was but losing time to make any use of a theory so incongruous with observation, and that the only safe method of proceeding was to multiply experiments in every variety of circumstances, and to make a series of experiments in every important case, which should comprehend all the practical modifications of that case. Perhaps circumstances of resemblance might occur, which would enable us to connect many of them together, and at last discover the principles which occasioned this connection; by which means a theory founded on science might be obtained. And if this point should not be gained, we might perhaps find a few general facts, which are modified in all these particular cases, in such a manner that we can still trace the general facts, and see the part of the particular case which depends on it. This would be the acquisition of what may be called an empirical theory, by which every phenomenon would be explained, in so far as the explanation of a phenomenon is nothing more than the pointing out the general fact or law under which it is comprehended; and this theory would answer every practical purpose, because we should confidently foresee what consequences would result from such and such premises; or if we should fail even in this, we should still have a series of experiments so comprehensive, that we could tell what place in the series would correspond to any particular case which might be proposed.

²⁹
Labours of
Michelotti
and Bossut
in this way,

There are two gentlemen, whose labours in this respect deserve very particular notice, Professor Michelotti at Turin, and Abbé Bossut at Paris. The first made a prodigious number of experiments both on the motion of water through pipes and in open canals. They were performed at the expence of the sovereign, and no expence was spared. A tower was built of the finest masonry, to serve as a vessel from which the water was to issue through holes of various sizes, under pressures from 5 to 22 feet. The water was received into basons constructed of masonry and nicely lined with stucco, from whence it was conveyed in canals of brick-work lined with stucco, and of various forms and declivities. The experiments on the expence of water through pipes are of all that have yet been made the most numerous and exact, and may be appealed to on every occasion. Those made in open canals are still more numerous, and are no doubt equally accurate; but they have not been so contrived as to be so generally useful, being in general very unlike the important cases which will occur in practice, and they seem to have been contrived chiefly with the view of establishing or overturning certain points of hydraulic doctrine which were pro-

bably prevalent at the time among the practical hydraulicists.

Theory.

The experiments of Bossut are also of both kinds; and though on a much smaller scale than those of Michelotti, seem to deserve equal confidence. As far as they follow the same track, they perfectly coincide in their results, which should procure confidence in the other; and they are made in situations much more analogous to the usual practical cases. This makes them doubly valuable. They are to be found in his two volumes intitled *Hydrodynamique*. He has opened this path of procedure in a manner so new and so judicious, that he has in some measure the merit of such as shall follow him in the same path.

This has been most candidly and liberally allowed him by the chevalier de Buat, who has taken up this matter where the abbé Bossut left it, and has prosecuted his experiments with great assiduity; and we must now add with singular success. By a very judicious consideration of the subject, he hit on a particular view of it, which saved him the trouble of a minute consideration of the small internal motions, and enabled him to proceed from a very general and evident proposition, which may be received as the key to a complete system of practical hydraulics. We shall follow this ingenious author in what we have farther to say on the subject; and we doubt not but that our readers will think we do a service to the public by making these discussions of the chevalier de Buat more generally known in this country. It must not however be expected that we shall give more than a synoptical view of them, connected by such familiar reasoning as shall be either comprehended or confided in by persons not deeply versed in mathematical science.

³⁰
and the
progressive
experi-
ments of
De Buat.

SECT. I. *Theory of Rivers.*

IT is certain that the motion of open streams must, in some respects, resemble that of bodies sliding down inclined planes perfectly polished; and that they would accelerate continually, were they not obstructed: but they are obstructed, and frequently move uniformly. This can only arise from an equilibrium between the forces which promote their descent and those which oppose it. Mr Buat, therefore, assumes the leading proposition, that,

³¹
His leading
proposition.

When water flows uniformly on any channel or bed, the accelerating force which obliges it to move is equal to the sum of all the resistances which it meets with, whether arising from its own viscosity, or from the friction of its bed.

This law is as old as the formation of rivers, and should be the key of hydraulic science. Its evidence is clear; and it is, at any rate, the basis of all uniform motion. And since it is so, there must be some considerable analogy between the motion in pipes and in open channels. Both owe their origin to an inequality of pressure, both would accelerate continually, if nothing hindered; and both are reduced to uniformity by the viscosity of the fluid and the friction of the channel.

It will therefore be convenient to examine the phenomena of water moving in pipes by the action of its weight only along the sloping channel. But previous to this, we must take some notice of the obstruction to the entry of water into a channel of any kind, arising from the deflection

³²
The subject
of the fol-
lowing dis-
cussion pro-
posed.

Theory. deflection of the many different filaments which press into the channel from the reservoir from every side. Then we shall be able to separate this diminution of motion from the sum total that is observed, and ascertain what part remains as produced by the subsequent obstructions.

We then shall consider the principle of uniform motion, the equilibrium between the power and the resistance. The power is the relative height of the column of fluid which tends to move along the inclined plane of its bed; the resistance is the friction of the bed, the viscosity of the fluid, and its adhesion to the sides. Here are necessarily combined a number of circumstances which must be gradually detached that we may see the effect of each, viz. the extent of the bed, its perimeter, and its slope. By examining the effects produced by variations of each of these separately, we discover what share each has in the general effect; and having thus analysed the complicated phenomenon, we shall be able to combine those its elements, and frame a formula which shall comprehend every circumstance, from the greatest velocity to the extinction of all motion, and from the extent of a river to the narrow dimensions of a quill. We shall compare this formula with a series of experiments in all this variety of circumstances, partly made by Mr Buat, and partly collected from other authors; and we shall leave the reader to judge of the agreement.

Confident that this agreement will be found most satisfactory, we shall then proceed to consider very cursorily the chief varieties which nature or art may introduce into these beds, the different velocities of the same stream, the intensity of the resistance produced by the inertia of the materials of the channel, and the force of the current by which it continually acts on this channel, tending to change either its dimensions or its form. We shall endeavour to trace the origin of these great rivers which spread like the branches of a vigorous tree, and occupy the surface even of a vast continent. We shall follow them in their course, unfold all their windings, study their train and regimen, and point out the law of its stability; and we shall investigate the causes of their deviations and wanderings.

The study of these natural laws pleases the mind: but it answers a still greater purpose; it enables us to assist nature, and to hasten her operations, which our wants and our impatience often find too slow. It enables us to command the elements, and to force them to administer to our wants and our pleasures.

We shall therefore, in the next place, apply the knowledge which we may acquire to the solution of the most important hydraulic questions which occur in the practice of the civil engineer.

We shall consider the effects produced by a permanent addition to any river or stream by the union of another, and the opposite effect produced by any draught or offset, showing the elevation or depression produced up the stream, and the change made in the depth and velocity below the addition or offset.

We shall pay a similar attention to the temporary swells produced by freshes.

We shall ascertain the effects of straightening the course of a stream, which, by increasing its slope, must increase its velocity, and therefore sink the waters above the place where the curvature was removed, and diminish

the tendency to overflow, while the same immediate consequence must expose the places farther down to the risk of floods from which they would otherwise have been free.

The effects of dams or weirs, and of bars, must then be considered; the gorge or swell which they produce up the stream must be determined for every distance from the weir or bar. This will furnish us with rules for rendering navigable or floatable such waters as have too little depth or too great slope. And it will appear that immense advantages may be thus derived, with a moderate expence, even from trifling brooks, if we will relinquish all prejudices, and not imagine that such conveyance is impossible, because it cannot be carried on by such boats and small craft as we have been accustomed to look at.

The effects of canals of derivation, the rules or maxims of draining, and the general maxims of embankment, come in the next place; and our discussions will conclude with remarks on the most proper forms for the entry to canals, locks, docks, harbours, and mouths of rivers, the best shape for the starlings of bridges and of boats for inland navigations, and such like subordinate but interesting particulars, which will be suggested by the general thread of discussion.

It is considered, as physically demonstrated (see *HYDRODYNAMICS*), that water issuing from a small orifice in the bottom or side of a very large vessel, almost instantly acquires and maintains the velocity which a heavy body would acquire by falling to the orifice from the horizontal surface of the stagnant water. This we shall call its **NATURAL VELOCITY**. Therefore, if we multiply the area of the orifice by this velocity, the product will be the bulk or quantity of the water which is discharged. This we may call the **NATURAL EXPENCE** of water, or the **NATURAL DISCHARGE**.

Let O represent the area or section of the orifice expressed in some known measure, and h its depth under the surface. Let g express the velocity acquired by a heavy body during a second by falling. Let V be the medium velocity of the water's motion, Q the quantity of water discharged during a second, and N the natural expence.

We know that V is equal to $\sqrt{2g} \times \sqrt{h}$. Therefore $N = O \cdot \sqrt{2g} \sqrt{h}$.

If these dimensions be all taken in English feet, we have $\sqrt{2g}$ very nearly equal to 8; and therefore $V = 8\sqrt{h}$, and $N = O \cdot 8\sqrt{h}$.

But in our present business it is much more convenient to measure every thing by inches. Therefore since a body acquires the velocity of 32 feet 2 inches in a second, we have $2g = 64$ feet 4 inches or 772 inches, and $\sqrt{2g} = 27.78$ inches, nearly $27\frac{1}{2}$ inches.

Therefore $V = \sqrt{772} \sqrt{h} = 27.78 \sqrt{h}$, and $N = O \cdot \sqrt{772} \sqrt{h} = O \cdot 27.78 \sqrt{h}$.

But it is also well known, that if we were to calculate the expence or discharge for every orifice by this simple rule, we should in every instance find it much greater than nature really gives us.

When water issues through a hole in a thin plate, the lateral columns, pressing into the hole from all sides, cause the issuing filaments to converge to the axis of the jet, and contract its dimensions at a little distance from the hole. And it is in this place of greatest contraction

Theory. traction that the water acquires that velocity which we observe in our experiments, and which we assume as equal to that acquired by falling from the surface. Therefore, that our computed discharge may best agree with observation, it must be calculated on the supposition that the orifice is diminished to the size of this smallest section. But the contraction is subject to variations, and the dimensions of this smallest section are at all times difficult to ascertain with precision. It is therefore much more convenient to compute from the real dimensions of the orifice, and to correct this computed discharge, by means of an actual comparison of the computed and effective discharges in a series of experiments made in situations resembling those cases which most frequently occur in practice. This correction or its cause, in the mechanism of those internal motions, is generally called **CONTRACTION** by the writers on hydraulics; and it is not confined to a hole in a thin plate: it happens in some degree in all cases where fluids are made to pass through narrow places. It happens in the entry into all pipes, canals, and sluices; nay even in the passage of water over the edge of a board, such as is usually set up on the head of a dam or weir, and even when this is immersed in water on both sides, as in a bar or keep, frequently employed for raising the waters of the level streams in Flanders, in order to render them navigable. We mentioned an observation* of Mr Buat to this effect, when he saw a gooseberry rise up from the bottom of the canal along the face of the bar, and then rapidly fly over its top. We have attempted to represent this motion of the filaments in these different situations.

34
Contraction.

* See *Resistance of Fluids*, n° 67.

35
Motion of filaments in various particular situations, Fig. 5.

Fig. 5. A shows the motion through a thin plate.

P. shows the motion when a tube of about two diameters long is added, and when the water flows with a full mouth. This does not always happen in so short a pipe (and never in one that is shorter), but the water frequently detaches itself from the sides of the pipe, and flows with a contracted jet.

C shows the motion when the pipe projects into the inside of the vessel. In this case it is difficult to make it flow full.

D represents a mouth-piece fitted to the hole, and formed agreeably to that shape which a jet would assume of itself. In this case all contraction is avoided, because the mouth of this pipe may be considered as the real orifice, and nothing now diminishes the discharge but a trifling friction of the sides.

E shows the motion of water over a dam or weir, where the fall is free or unobstructed; the surface of the lower stream being lower than the edge or sole of the waste-board.

F is a similar representation of the motion of water over what we would call a *bar* or *keep*.

It was one great aim of the experiments of Michelotti and Bossut to determine the effects of contraction in these cases. Michelotti, after carefully observing the form and dimensions of the natural jet, made various mouth-pieces resembling it, till he obtained one which produced the smallest diminution of the computed discharge, or till the discharge computed for the area of its smaller end approached the nearest to the effective discharge. And he at last obtained one which gave a discharge of 983, when the natural discharge would have

36
and the effects of contraction determined.

been 1000. This piece was formed by the revolution of a trochoid round the axis of the jet, and the dimensions were as follow:

Diameter of the outer orifice	=	36
inner orifice	=	46
Length of the axis	=	96

Theory.

The results of the experiments of the Abbé Bossut and of Michelotti scarcely differ, and they are expressed in the following table:

N or the natural expence	10000	=	0.27.78	√ <i>h</i>
Q for the thin plate fig. A } almost at the surface	6526	0.18.13	√ <i>h</i>	
Q for ditto at the depth of 8 feet	6195	0.17.21	√ <i>h</i>	
Q for ditto at the depth of 16 feet	6173	0.17.15	√ <i>h</i>	
Q for a tube 2 diameters long, } fig. B.	8125	0.22.57	√ <i>h</i>	
Q for ditto projecting inwards } and flowing full	6814	0.18.93	√ <i>h</i>	
Q for ditto with a contracted } jet, fig. C.	5137	0.14.27	√ <i>h</i>	
Q for the mouth-piece, fig. D.	9831	0.27.31	√ <i>h</i>	
Q for a weir, fig. E.	9536	0.26.49	√ <i>h</i>	
Q for a bar, fig. F.	9730	0.27.03	√ <i>h</i>	

The numbers in the last column of this little table are the cubical inches of water discharged in a second when the height *h* is one inch.

It must be observed that the discharges assigned here for the weir and bar relate only to the contractions occasioned by the passage over the edge of the board. The weir may also suffer a diminution by the contractions at its two ends, if it should be narrower than the stream, which is generally the case, because the two ends are commonly of square masonry or wood-work. The contraction there is nearly the same with that at the edge of a thin plate. But this could not be introduced into this table, because its effect on the expence is the same in quantity whatever is the length of the waste-board of the weir.

In like manner, the diminution of discharge through a sluice could not be expressed here. When a sluice is drawn up, but its lower edge still remains under water, the discharge is contracted both above and at the sides, and the diminution of discharge by each is in proportion to its extent. It is not easy to reduce either of these contractions to computation, but they may be very easily observed. We frequently can observe the water, at coming out of a sluice into a mill course, quit the edge of the aperture, and show a part of the bottom quite dry. This is always the case when the velocity of efflux is considerable. When it is very moderate, this place is occupied by an eddy water almost stagnant. When the head of water is 8 or 10 inches, and runs off freely, the space left between it and the sides is about 1½ inches. If the sides of the entry have a slope, this void space can never appear; but there is always this tendency to convergence, which diminishes the quantity of the discharge.

37
Diminution of discharge through a sluice, &c.

It will frequently abridge computation very much to consider the water discharged in these different situations as moving with a common velocity, which we conceive as produced not by a fall from the surface of the fluid (which is exact only when the expence is equal to the natural expence), but by a fall *h* accommodated to the discharge:

Theory. charge: or it is convenient to know the height which would produce that very velocity which the water issues with in these situations.

And also, when the water is observed to be actually moving with a velocity V , and we know whether it is coming through a thin plate, through a tube, over a dam, &c. it is necessary to know the pressure or HEAD OF WATER h which has actually produced this velocity. It is convenient therefore to have the following numbers in readiness.

$$\begin{aligned}
 h \text{ for the natural expence} &= \frac{V^2}{77^2} \\
 h \text{ for a thin plate} &= \frac{296}{V^2} \\
 h \text{ for a tube 2 diam. long} &= \frac{505}{V^2} \\
 h \text{ for a dam or weir} &= \frac{726}{V^2} \\
 h \text{ for a bar} &= \frac{746}{V^2}
 \end{aligned}$$

It was necessary to premise these FACTS in hydraulics, that we may be able in every case to distinguish between the force expended in the entry of the water into the conduit or canal, and the force employed in overcoming the resistances along the canal, and in preserving or accelerating its motion in it.

38
The motion of rivers depends on the slope of the surface.

Fig. 6.

The motion of running water is produced by two causes: 1. The action of gravity; and, 2. The mobility of the particles, which makes them assume a level in confined vessels, or determines them to move to that side where there is a defect of pressure. When the surface is level, every particle is at rest, being equally pressed in all directions; but if the surface is not level, not only does a particle on the very surface tend by its own weight towards the lower side, as a body would slide along an inclined plane, but there is a force, external to itself, arising from a superiority of pressure on the upper end of the surface, which pushes this superficial particle towards the lower end; and this is not peculiar to the superficial particles, but affects every particle within the mass of water. In the vessel ACDE (fig. 6.), containing water with an inclined surface AE, if we suppose all frozen but the extreme columns AKHB, FGLE, and a connecting portion HKCDLG, it is evident, from hydrostatical laws, that the water on this connecting part will be pushed in the direction CD; and if the frozen mass BHGF were moveable, it would also be pushed along. Giving it fluidity will make no change in this respect; and it is indifferent what is the situation and shape of the connecting column or columns. The propelling force (MNF being horizontal) is the weight of the column AMNB. The same thing will obtain wherever we select the vertical columns. There will always be a force tending to push every particle of water in the direction of the declivity. The consequence will be, that the water will sink at one end and rise at the other, and its surface will rest in the horizontal position $a O e$, cutting the former in its middle O. This cannot be unless there be not only a motion of perpendicular descent and ascent of the vertical columns, but also a real motion of translation from K towards L. It perhaps exceeds our mathematical skill to tell what will be the motion of each particle. Newton

did not attempt it in his investigation of the motion of waves, nor is it at all necessary here. We may, however, acquire a very distinct notion of its general effect. Let OPQ be a vertical plane passing through the middle point O. It is evident that every particle in PQ, such as P, is pressed in the direction QD, with a force equal to the weight of a single row of particles, whose length is the difference between the columns BH and FG. The force acting on the particle Q is, in like manner, the weight of a row of particles = AC—ED. Now if OQ, OA, OE, be divided in the same ratio, so that all the figures ACDE, BHGF, &c. may be similar, we see that the force arising solely from the declivity, and acting on each particle on the plane OQ, is proportional to its depth under the surface, and that the row of particles ACQDE, BHPGF, &c. which is to be moved by it, is in the same proportion. Hence it unquestionably follows, that the accelerating force on each particle of the row is the same in all. Therefore the whole plane OQ tends to advance forward together with the same velocity; and in the instant immediately succeeding, all these particles would be found again in a vertical plane indefinitely near to OQ; and if we sum up the forces, we shall find them the same as if OQ were the opening of a sluice, having the water on the side of D standing level with O, and the water on the other side standing at the height AC. This result is extremely different from that of the hasty theory of Guglielmini. He considers each particle in OQ as urged by an accelerating force proportional to its depth, it is true; but he makes it equal to the weight of the row OP, and never recollects that the greatest part of it is balanced by an opposite pressure, nor perceives that the force which is not balanced must be distributed among a row of particles which varies in the same proportion with itself. When these two circumstances are neglected, the result must be incompatible with observation. When the balanced forces are taken into the account of pressure, it is evident that the surface may be supposed horizontal, and that motion should obtain in this case as well as in the case of a sloping surface: and indeed this is Guglielmini's professed theory, and what he highly values himself on. He announces this discovery of a new principle, which he calls the energy of deep waters, as an important addition to hydraulics. It is owing to this, says he, that the great rivers are not stagnant at their mouths, where they have no perceptible declivity of surface, but, on the contrary, have greater energy and velocity than farther up, where they are shallower. This principle is the basis of his improved theory of rivers, and is insisted on at great length by all the subsequent writers. Buffon, in his theory of the earth, makes much use of it. We cannot but wonder that it has been allowed a place in the theory of rivers given in the great *Encyclopédie* of Paris, and in an article having the signature (O) of D'Alembert. We have been very anxious to show the falsity of this principle, because we consider it as a mere subterfuge of Guglielmini, by which he was able to patch up the mathematical theory which he had so hastily taken from Newton or Galileo; and we think that we have secured our readers from being misled by it, when we show that this energy must be equally operative when the surface is on a dead level. The absurdity of this is evident. We shall see by and by, that deep waters, when

Theory.

Theory. in actual motion, have an energy not to be found in shallow running waters, by which they are enabled to continue that motion: but this is not a moving principle; and it will be fully explained, as an immediate result of principles, not vaguely conceived and indistinctly expressed, like this of Guglielmini, but easily understood, and appreciable with the greatest precision. It is an energy common to all great bodies. Although they lose as much momentum in surmounting any obstacle as small ones, they lose but a small portion of their velocity. At present, employed only in considering the progressive motion of an open stream, whose surface is not level, it is quite enough that we see that such a motion must obtain, and that we see that there are propelling forces; and that those forces arise *solely* from the want of a level surface, or from the slope of the surface; and that, with respect to any one particle, the force acting on it is proportional to the difference of level between each of the two columns (one on each side of the particle) which produce it. Were the surface level, there would be no motion; if it is not level, there will be motion; and this motion will be proportional to the want of level or the declivity of the surface: it is of no consequence whether the bottom be level or not, or what is its shape.

Hence we draw a fundamental principle, that *the motion of rivers depends entirely on the slope of the surface.*

The **SLOPE** or declivity of any inclined plane is not properly expressed by the difference of height alone of its extremities; we must also consider its length: and the measure of the slope must be such that it may be the same while the declivity is the same. It must therefore be the same over the whole of any one inclined plane. We shall answer these conditions exactly, if we take for the measure of a slope the fraction which expresses the elevation of one extremity above the other divided by the length of the plane. Thus $\frac{AM}{AF}$ will express the declivity of the plane AF.

39
When it is uniform the resistance is equal to the accelerating force.

If the water met with no resistance from the bed in which it runs, if it had no adhesion to its sides and bottom, and if its fluidity were perfect, its gravity would accelerate its course continually, and the earth and its inhabitants would be deprived of all the advantages which they derive from its numberless streams. They would run off so quickly, that our fields, dried up as soon as watered, would be barren and useless. No soil could resist the impetuosity of the torrents; and their accelerating force would render them a destroying scourge, were it not that, by kind Providence, the resistance of the bed, and the viscosity of the fluid, become a check which reins them in and sets bounds to their rapidity. In this manner the friction on the sides, which, by the viscosity of the water, is communicated to the whole mass, and the very adhesion of the particles to each other, and to the sides of the channel, are the causes which make the resistances bear a relation to the velocity; so that the resistances augmenting with the velocities, come at last to balance the accelerating force. Then the velocity now acquired is preserved, and the motion becomes uniform, without being able to acquire new increase, unless some change succeeds either in the slope or in the capacity of the channel. Hence arises the second maxim in the motion of rivers,

2

that *when a stream moves uniformly, the resistance is equal to the accelerating force.*

Theory.

As in the efflux of water through orifices, we pass over the very beginnings of the accelerated motion, which is a matter of speculative curiosity, and consider the motion in a state of permanency, depending on the head of water, the area of the orifice, the velocity, and the expence; so, in the theory of the uniform motion of rivers, we consider the slope, the transverse section or area of the stream, the uniform velocity, and the expence. It will be convenient to affix precise meanings to the terms which we shall employ.

The **SECTION** of a stream is the area of a plane perpendicular to the direction of the general motion. 40
Terms precisely explained.

The resistances arise ultimately from the action of the water on the internal surface of the channel, and must be proportional (*ceteris paribus*) to the extent of the action. Therefore if we unfold the whole edge of this section, which is rubbed as it were by the passing water, we shall have a measure of the extent of this action. In a pipe, circular or prismatical, the whole circumference is acted on; but in a river or canal ACDQ (fig. 6.) the horizontal line *a O e*, which makes the upper boundary of the section *a C D e*, is free from all action. The action is confined to the three lines *a C*, *CD*, *D e*. We shall call this line *a C D e* the **BORDER** of the section.

The **MEAN VELOCITY** is that with which the whole section, moving equally, would generate a solid equal to the expence of the stream. This velocity is to be found perhaps but in one filament of the stream, and we do not know in which filament it is to be found.

Since we are attempting to establish an empirical theory of the motion of rivers, founded entirely on experiments and palpable deductions from them; and since it is extremely difficult to make experiments on open streams which shall have a precision sufficient for such an important purpose—it would be a most desirable thing to demonstrate an exact analogy between the mutual balancing of the acceleration and resistance in pipes and in rivers; for in those we can not only make experiments with all the desired accuracy, and admitting precise measures, but we can make them in a number of cases that are almost impracticable in rivers. We can increase the slope of a pipe from nothing to the vertical position, and we can employ every desired degree of pressure, so as to ascertain its effect on the velocity in degrees which open streams will not admit. The Chevalier de Buat has most happily succeeded in this demonstration; and it is here that his good fortune and his penetration have done so much service to practical science.

Let AB (fig. 7.) be a horizontal tube, through which the water is impelled by the pressure or **HEAD** DA. This head is the moving power; and it may be conceived as consisting of two parts, performing two distinct offices. One of them is employed in impressing on the water that velocity with which it *actually* moves in the tube. Were there no obstructions to this motion, no greater head would be wanted; but there are obstructions arising from friction, adhesion, and viscosity. This requires force. Let this be the office of the rest of the head of water in the reservoir. There is but one allotment, appropriation, or repartition, of the whole head which will answer. Suppose E to be the 41
The acceleration and resistance of water in an horizontal tube, Fig. 7.

Theory.

the point of partition, so that DE is the head necessary for impressing the actual velocity on the water (a head or pressure which has a relation to the form or circumstance of the entry, and the contraction which takes place there). The rest EA is wholly employed in overcoming the simultaneous resistances which take place along the whole tube AB, and is in equilibrio with this resistance. Therefore if we apply at E a tube EC of the same length and diameter with AB, and having the same degree of polish or roughness; and if this tube be inclined in such a manner that the axis of its extremity may coincide with the axis of AB in the point C—we affirm that the velocity will be the same in both pipes, and that they will have the same expence; for the moving force in the sloping pipe EC is composed of the whole weight of the column DE and the relative weight of the column EC; but this relative weight, by which alone it descends along the inclined pipe EC, is precisely equal to the weight of a vertical column EA of the same diameter. Every thing therefore is equal in the two pipes, viz. the lengths, the diameters, the moving forces, and the resistances; therefore the velocities and discharges will also be equal.

This is not only the case on the whole, but also in every part of it. The relative weight of any part of it EK is precisely in equilibrio with the resistances along that part of the pipe; for it has the same proportion to the whole relative weight that the resistance has to the whole resistance. Therefore (*and this is the most important circumstance, and the basis of the whole theory*) the pipe EC may be cut shorter, or may be lengthened to infinity, without making any change in the velocity or expence, so long as the propelling head DE remains the same.

Leaving the whole head DA, as it is, if we lengthen the horizontal pipe AB to G, it is evident that we increase the resistance without any addition of force to overcome it. The velocity must therefore be diminished; and it will now be a velocity which is produced by a smaller head than DE: therefore if we were to put in a pipe of equal length at E, terminating in the horizontal line AG, the water will not run equally in both pipes. In order that it may, we must discover the diminished velocity with which the water now actually runs along AG, and we must make a head DI capable of impressing this velocity at the entry of the pipe, and then insert at I a pipe IH of the same length with AG. The expence and velocity of both pipes will now be the same (A).

What has now been said of a horizontal pipe AB would have been equally true of any inclined pipe AB, A'B (fig. 8.). Drawing the horizontal line CB, we see that DC is the whole head or propelling pressure for either pipe AB or A'B; and if DE is the head necessary for the actual velocity, EC is the head necessary for balancing the resistances; and the pipe EF of the same length with AB, and terminating in the same horizontal line, will have the same velocity; and its inclination being thus determined, it will have the same velocity and expence whatever be its length.

Thus we see that the motion in any pipe, horizontal or sloping, may be referred to or substituted for the motion in another inclined pipe, whose head of water, above the place of entry, is that productive of the actual velocity of the water in the pipe. Now, in this case, the accelerating force is equal to the resistance: we may therefore consider this last pipe as a river, of which the bed and the slope are uniform or constant, and the current in a state of permanency; and we now may clearly draw this important conclusion, that pipes and open streams, when in a state of permanency, perfectly resemble each other in the circumstances which are the immediate causes of this permanency. The equilibrium between the accelerating force obtains not only in general, but takes place through the whole length of the pipe or stream, and is predicable of every individual transverse section of either. To make this more palpably evident if possible, let us consider a sloping cylindrical pipe, the current of which is in a state of permanency. We can conceive it as consisting of two half cylinders, an upper and a lower. These are running together at an equal pace; and the filaments of each immediately contiguous to the separating plane and to each other, are not rubbing on each other, nor affecting each others motions in the smallest degree. It is true that the upper half is pressing on the lower, but in a direction perpendicular to the motion, and therefore not affecting the velocity; and we shall see presently, that although the lower side of the pipe bears somewhat more pressure than the other, the resistances are not changed. (Indeed this odds of pressure is accompanied with a difference of motion, which need not be considered at present; and we may suppose the pipe so small or so far below the surface, that this shall be insensible). Now let us suppose, that in an instant the upper half cylinder is annihilated: We then have an open stream; and every circumstance of accelerating force and of resistance remains precisely as it was. The motion must therefore continue as it did;

Theory.

42
or in an inclined pipe.
Fig. 8.

43

Analogy between these pipes and rivers demonstrated by De Buat.

(A) We recommend it to the reader to make this distribution or allotment of the different portions of the pressure very familiar to his mind. It is of the most extensive influence in every question of hydraulics, and will on every occasion give him distinct conceptions of the internal procedure. Obvious as the thought seems to be, it has escaped the attention of all the writers on the subject. Lecchi, in his *Hydraulics* published in 1766, ascribes something like it to Daniel Bernoulli; but Bernoulli, in the passage quoted, only speaks of the partition of pressure in the instant of opening an orifice. Part of it, says he, is employed in accelerating the quiescent water, and producing the velocity of efflux, and the remainder produces the pressure (now diminished) on the sides of the vessel. Bernoulli, Bossut, and all the good writers, make this distribution in express terms in their explanation of the motion of water through successive orifices; and it is surprising that no one before the Chevalier de Buat saw that the resistance arising from friction required a similar partition of the pressure; but though we should call this good fortune, we must ascribe to his great sagacity and justness of conception the beautiful use that he has made of it: "*suum cuique.*"

Theory.

44
Consequence.

did; and in this state the only accelerating force is the slope of the surface. The demonstration therefore is complete.

From these observations and reasonings we draw a general and important conclusion, "That the same pipe will be susceptible of different velocities, which it will preserve uniform to any distance, according as it has different inclinations; and each inclination of a pipe of given diameter has a certain velocity peculiar to itself, which will be maintained uniform to any distance whatever; and this velocity increases continually, according to some law, to be discovered by theory or experiment, as the position of the pipe changes, from being horizontal till it becomes vertical; in which position it has the greatest uniform velocity possible relative to its inclination, or depending on inclination alone.

45
Measure of the resistance to the motion with a given velocity.

Let this velocity be called the TRAIN, or the RATE of each pipe.

It is evident that this principle is of the utmost consequence in the theory of hydraulics; for by experiment we can find the train of any pipe. It is in train when an increase of length makes no change in the velocity. If lengthening the pipe increases the velocity, the slope of the pipe is too great, and *vice versa*. And having discovered the train of a pipe, and observed its velocity, and computed the head productive of this velocity with the contraction at the entry, the remainder of the head, that is the slope (for this is equivalent to EA), is the measure of the resistance. Thus we obtain the measure of the resistance to the motion with a given velocity in a pipe of given diameter. If we change only the velocity, we get the measure of the new resistance relative to the velocity; and thus discover the law of relation between the resistance and velocity. Then, changing only the diameter of the pipe, we get the measure of the resistance relative to the diameter. This is the aim of a prodigious number of experiments made and collected by Buat, and which we shall not repeat, but only give the results of the different parts of his investigation.

46
Results of De Buat's investigation on this subject.

We may express the slope of a pipe by the symbol $\frac{I}{s}$, I being an inch for instance, and s being the slant length of a pipe which is one inch more elevated at one end than at the other. Thus a river which has a declivity of an inch and a half in 120 fathoms or 8640 inches, has its slope = $\frac{1\frac{1}{2}}{8640}$, or $\frac{I}{5760}$. But in order to obtain the hydraulic slope of a conduit pipe, the heights of the reservoir and place of discharge being given, we must subtract from the difference of elevation the height or head of water necessary for propelling the water into any pipe with the velocity V , which it is supposed actually to have. This is $\frac{V^2}{505}$. The remainder d is to be considered as the height of the declivity, which is to be distributed equally over the whole length l of the pipe, and the slope is then $\frac{d}{l} = \frac{I}{s}$.

There is another important view to be taken of the slope, which the reader should make very familiar to his thoughts. It expresses the proportion between the weight of the whole column which is in motion and the weight which is employed in overcoming the resistance; and

the resistance to the motion of any column of water is equal to the weight of that column multiplied by the fraction $\frac{I}{s}$, which expresses its slope.

Theory.

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Of the resistances which bring the motions to a state of uniformity.

WE come now to consider more particularly the resistances which in this manner bring the motion to a state of uniformity. If we consider the resistances which arise from a cause analogous to friction, we see that they must depend entirely on the inertia of the water. What we call the resistance is the diminution of a motion which *would* have obtained but for these resistances; and the best way we have of measuring them is by the force which we must employ in order to keep up or restore this motion. We estimate this motion by a progressive velocity, which we measure by the expence of water in a given time. We judge the velocity to diminish, when the quantity discharged diminishes; yet it may be otherwise, and probably is otherwise. The absolute velocity of many, if not all, of the particles, may even be increased; but many of the motions, being transverse to the general direction, the quantity of motion in this direction may be less, while the sum of the absolute motions of all the particles may be greater. When we increase the general velocity, it is not unreasonable to suppose that the impulses on all the inequalities are increased in this proportion; and the number of particles thus impelling and deflected at the same time will increase in the same proportion. The whole quantity therefore of these useless and lost motions will increase in the duplicate ratio of the velocities, and the force necessary for keeping up the motion will do so also; that is, the resistances should increase as the squares of the velocities.

Or if we consider the resistances as arising merely from the curvature of the imperceptible internal motions occasioned by the inequalities of the sides of the pipe, and as measured by the forces necessary for producing these curvilinear motions; then, because the curves will be the same whatever are the velocities, the deflecting forces will be as the squares of the velocities; but these deflecting forces are pressures, propagated from the parts urged on pressed by the external force, and are proportional to these external pressures by the principles of hydrostatics. Therefore the pressures or forces necessary for keeping up the velocities are as the squares of these velocities; and they are our only measures of the resistances which must be considered as following the same ratio. Whatever view therefore we take of the nature of these resistances, we are led to consider them as proportional to the squares of the velocities.

We may therefore express the resistances by the symbol $\frac{V^2}{m}$, m being some number to be discovered by experiment. Thus, in a particular pipe, the diminution of the motion or the resistance may be the 1000th part of the square of the velocity, and $R = \frac{V^2}{1000}$.

Now if g be the accelerating power of gravity on any particle, $\frac{g}{s}$ will be its accelerating power, by which it would urge it down the pipe whose slope is $\frac{I}{s}$. Therefore,

Theory. fore, by the principle of uniform motion, the equality of the accelerating force, and the resistance, we shall have $\frac{V^2}{m} = \frac{g}{s}$, and $V \sqrt{s} = \sqrt{mg}$; that is, the product of the velocity, and the reciprocal of the square root of the slope, or the quotient of the velocity divided by the slope, is a constant quantity \sqrt{mg} for any given pipe; and the primary formula for all the uniform velocities of one pipe is $V = \frac{\sqrt{mg}}{\sqrt{s}}$.

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Experi-
ments and
reasoning
of De Buat,
respecting
these resist-
ances, &c.

Mr Buat therefore examined this by experiment, but found, that even with respect to a pipe or channel which was uniform throughout, this was not true. We could give at once the final formula which he found to express the velocity in every case whatever; but this would be too empirical. The chief steps of his very sagacious investigation are instructive. We shall therefore mention them briefly, at least as far as they tend to give us any collateral information; and let it always be noted, that the instruction which they convey is not abstract speculation, but experimental truths, which must ever remain as an addition to our stock of knowledge, although Mr Buat's deductions from them should prove false.

He found, in the first place, that in the same channel the product of V and \sqrt{s} increased as \sqrt{s} increased; that is, the velocities increased faster than the square roots of the slope, or the resistances did not increase as fast as the squares of the velocities. We beg leave to refer our readers to what we said on the resistance of pipes to the motion of fluids through them, in the article PNEUMATICS, when speaking of bellows. They will there see very valid reasons (we apprehend) for thinking that the resistances must increase more slowly than the squares of the velocities.

It being found, then, that $V \sqrt{s}$ is not equal to a constant quantity \sqrt{mg} , it becomes necessary to investigate some quantity depending on \sqrt{s} , or, as it is called, some function of \sqrt{s} , which shall render $\frac{\sqrt{mg}}{X}$ a constant quantity. Let X be this function of \sqrt{s} , so that we shall always have VX equal to the constant quantity \sqrt{mg} , or $\frac{\sqrt{mg}}{X}$ equal to the actual velocity V of a pipe or channel which is in train.

Mr Buat, after many trials and reflections, the chief of which will be mentioned by and by, found a value of X which corresponded with a vast variety of slopes and velocities, from motions almost imperceptible, in a bed nearly horizontal, to the greatest velocities which could be produced by gravity alone in a vertical pipe; and when he compared them together, he found a very discernible relation between the resistances and the magnitude of the section: that is, that in two channels which had the same slope, and the same propelling force, the velocity was greatest in the channel which had the greatest section relative to its border. This may reasonably be expected. The resistances arise from the mutual action of the water and this border. The water immediately contiguous to it is retarded, and this retards the next, and so on. It is to be expected, therefore, that if the border, and the velocity, and the slope, be the same, the diminution of this velo-

city will be so much the less as it is to be shared among a greater number of particles; that is, as the area of the section is greater in proportion to the extent of its border. The diminution of the general or medium velocity must be less in a cylindrical pipe than in a square one of the same area, because the border of its section is less.

It appears evident, that the resistance of each particle is in the direct proportion of the whole resistance, and the inverse proportion of the number of particles which receive equal shares of it. It is therefore directly as the border, and inversely as the section. Therefore in the expression $\frac{V^2}{m}$ which we have given for the resistance, the quantity m cannot be constant, except in the same channel; and in different channels it must vary along with the relation of the section to its border, because the resistances diminish in proportion as this relation increases.

Without attempting to discover this relation by theoretical examination of the particular motions of the various filaments, Mr Buat endeavoured to discover it by a comparison of experiments. But this required some manner of stating this proportion between the augmentation of the section and the augmentation of its border.

His statement is this: He reduces every section to a rectangular parallelogram of the same area, and having its base equal to the border unfolded into a straight line. The product of this base by the height of the rectangle will be equal to the area of the section. Therefore this height will be a representative of this variable ratio of the section to its border (we do not mean that there is any ratio between a surface and a line: but the ratio of section to section is different from that of border to border; and it is the ratio of these ratios which is thus expressed by the height of this rectangle). If S be the section, and B the border, $\frac{S}{B}$ is evidently a line equal to the height of this rectangle. Every section being in this manner reduced to a rectangle, the perpendicular height of it may be called the HYDRAULIC MEAN DEPTH of the section, and may be expressed by the symbol d . (Buat calls it the mean radius). If the channel be a cylindrical pipe, or an open half cylinder, it is evident that d is half the radius. If the section is a rectangle, whose width is w , and height h , the mean depth is $\frac{wh}{b+2h}$, &c. In general, if q represent the proportion of the breadth of a rectangular canal to its depth, that is, if q be made $= \frac{w}{h}$, we shall have $d = \frac{w}{q+2}$, or $d = \frac{qh}{q+2}$.

Now, since the resistances must augment as the proportion of the border to the section augments, m in the formulas $\frac{V^2}{m} = \frac{g}{s}$ and $V \sqrt{s} = \sqrt{mg}$ must follow the proportions of d , and the quantity \sqrt{mg} must be proportional to \sqrt{d} for different channels, and $\frac{\sqrt{mg}}{\sqrt{d}}$ should be a constant quantity in every case.

H

Our

Theory.
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A specious objection

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obviated by an experiment on the oscillation of water in syphons.

Fig. 9.

Our author was aware, however, of a very specious objection to the close dependence of the resistance on the extent of the border; and that it might be said that a double border did not occasion a double resistance, unless the pressure on all the parts was the same. For it may be naturally (and it is generally) supposed, that the resistance will be greater when the pressure is greater. The friction or resistance analogous to friction may therefore be greater on an inch of the bottom than on an inch of the sides; but M. d'Alembert and many others have demonstrated, that the paths of the filaments will be the same whatever be the pressures. This might serve to justify our ingenious author; but he was determined to rest every thing on experiment. He therefore made an experiment on the oscillation of water in syphons, which we have repeated in the following form, which is affected by the same circumstances, and is susceptible of much greater precision, and of more extensive and important application.

The two vessels ABCD, *abcd* (fig. 9.) were connected by the syphon EFG *gfe*, which turned round in the short tubes E and e, without allowing any water to escape; the axes of these tubes being in one straight line. The vessels were about 10 inches deep, and the branches FG, *fg* of the syphon were about five feet long. The vessels were set on two tables of equal height, and (the hole e being stopped) the vessel ABCD, and the whole syphon, were filled with water, and water was poured into the vessel *abcd* till it stood at a certain height LM. The syphon was then turned into a horizontal position, and the plug drawn out of e, and the time carefully noted which the water employed in rising to the level HK *kh* in both vessels. The whole apparatus was now inclined, so that the water ran back into ABCD. The syphon was now put in a vertical position, and the experiment was repeated.—No sensible or regular difference was observed in the time. Yet in this experiment the pressure on the part Gg of the syphon was more than six times greater than before. As it was thought that the friction on this small part (only six inches) was too small a portion of the whole obstruction, various additional obstructions were put into this part of the syphon, and it was even lengthened to nine feet; but still no remarkable difference was observed. It was even thought that the times were less when the syphon was vertical.

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The resistance depends chiefly on the relation between the section and its border.

Thus M. De Buat's opinion is completely justified; and he may be allowed to assert, that the resistance depends chiefly on the relation between the section and its border; and that $\frac{\sqrt{mg}}{\sqrt{d}}$ should be a constant quantity.

To ascertain this point was the object of the next series of experiments: to see whether this quantity was really constant, and, if not, to discover the law of its variation, and the physical circumstances which accompanied the variations, and may therefore be considered as their causes. A careful comparison of a very great number of experiments, made with the same slope, and with very different channels and velocities, showed that \sqrt{mg} did not follow the proportion of \sqrt{d} , nor of any power of \sqrt{d} . This quantity \sqrt{mg} increased by smaller degrees in proportion as \sqrt{d} was greater.

Theory.

In very great beds \sqrt{mg} was nearly proportional to \sqrt{d} , but in smaller channels, the velocities diminished much more than \sqrt{d} did. Casting about for some way of accommodation, Mr Buat considered, that some approximation at least would be had by taking off from \sqrt{d} some constant small quantity. This is evident: For such a diminution will have but a trifling effect when \sqrt{d} is great, and its effect will increase rapidly when \sqrt{d} is very small. He therefore tried various values for this subtraction, and compared the results with the former experiments; and he found, that if in every case \sqrt{d} be diminished by one-tenth of an inch, the calculated discharges would agree very exactly with the experiment. Therefore, instead of \sqrt{d} , he makes use of $\sqrt{d}-0.1$, and finds this quantity always proportional to \sqrt{mg} , or finds that $\frac{\sqrt{mg}}{\sqrt{d}-0.1}$ is a constant quantity, or very nearly so. It varied from 297 to 287 in all sections from that of a very small pipe to that of a little canal. In the large sections of canals and rivers it diminished still more, but never was less than 256.

It varied from 297 to 287 in all sections from that of a very small pipe to that of a little canal. In the large sections of canals and rivers it diminished still more, but never was less than 256.

This result is very agreeable to the most distinct notions that we can form of the mutual actions of the water and its bed. We see, that when the motion of water is obstructed by a solid body, which deflects the passing filaments, the disturbance does not extend to any considerable distance on the two sides of the body. In like manner, the small disturbances, and imperceptible curvilinear motions, which are occasioned by the infinitesimal inequalities of the channel, must extend to a very small distance indeed from the sides and bottom of the channel. We know, too, that the mutual adhesion or attraction of water for the solid bodies which are moistened by it, extends to a very small distance; which is probably the same, or nearly so, in all cases. Mr Buat observed, that a surface of 23 square inches, applied to the surface of stagnant water, lifted 1601 grains; another of 5 $\frac{1}{2}$ square inches lifted 365: this was at the rate of 65 grains per inch nearly, making a column of about one-sixth of an inch high. Now this effect is very much analogous to a real contraction of the capacity of the channel. The water may be conceived as nearly stagnant to this small distance from the border of the section. Or, to speak more accurately, the diminution of the progressive velocity occasioned by the friction and adhesion of the sides, decreases very rapidly as we recede from the sides, and ceases to be sensible at a very small distance.

The writer of this article verified this by a very simple and instructive experiment. He was making experiments on the production of vortices, in the manner suggested by Sir Isaac Newton, by whirling a very accurate and smoothly polished cylinder in water; and he found that the rapid motion of the surrounding water was confined to an exceeding small distance from the cylinder, and it was not till after many revolutions that it was sensible even at the distance of half an inch. We may, by the way, suggest this as the best form of experiments for examining the resistances of pipes. The motion excited by the whirling cylinder in the stagnant water is equal and opposite to the motion lost by water passing along a surface

Theory. surface equal to that of the cylinder with the same velocity. Be this as it may, we are justified in considering, with Mr Buat, the section of the stream as thus diminished by cutting off a narrow border all round the touching parts, and supposing that the motion and discharge is the same as if the root of the mean depth of the section were diminished by a small quantity, nearly constant. We see, too, that the effect of this must be insensible in great canals and rivers; so that, fortunately, its quantity is best ascertained by experiments made with small pipes. This is attended with another convenience, in the opinion of Mr Buat, namely, that the effect of viscosity is most sensible in great masses of water in slow motion, and is almost insensible in small pipes, so as not to disturb these experiments. We may therefore assume 297 as the general value of $\frac{\sqrt{mg}}{\sqrt{d-0.1}}$.

Since we have $\frac{\sqrt{mg}}{\sqrt{d-0.1}} = 297$, we have also

$$m = \frac{297^2 \sqrt{d-0.1}^2}{g} = \frac{88209}{362} (\sqrt{d-0.1})^2 = 243.7 (\sqrt{d-0.1})^2.$$

This we may express by $n (\sqrt{d-0.1})^2$. And thus, when we have expressed the effect of friction by $\frac{V^2}{m}$, the quantity m is variable, and its general value is $\frac{V^2}{n(\sqrt{d-0.1})^2}$, in which

n is an invariable abstract number equal to 243.7, given by the nature of the resistance which water sustains from its bed, and which indicates its intensity.

And, lastly, since $m = n (\sqrt{d-0.1})^2$, we have $\sqrt{mg} = \sqrt{ng} (\sqrt{d-0.1})$, and the expression of the velocity V , which water acquires and maintains along any channel whatever, now becomes $V = \frac{\sqrt{ng} (\sqrt{d-0.1})}{X}$, or $\frac{297 (\sqrt{d-0.1})}{X}$, in which

X is also a variable quantity, depending on the slope of the surface or channel, and expressing the accelerating force which, in the case of water in train, is in equilibrium with the resistances expressed by the numerator of the fraction.

⁵⁴ Law of acceleration investigated. Having so happily succeeded in ascertaining the variations of resistance, let us accompany M. Buat in his investigation of the law of acceleration, expressed by the value of X .

Experience, in perfect agreement with any distinct opinions that we can form on this subject, had already showed him, that the resistances increased in a slower ratio than that of the squares of the velocities, or that the velocities increased slower than \sqrt{s} . Therefore,

in the formula $V = \frac{\sqrt{ng} (\sqrt{d-0.1})}{X}$ which, for one

channel, we may express thus, $V = \frac{A}{X}$, we must admit

that X is sensibly equal to \sqrt{s} when the slope is very small or s very great. But, that we may accurately express the velocity in proportion as the slope augments, we must have X greater than \sqrt{s} ; and moreover,

$\frac{\sqrt{s}}{X}$ must increase as \sqrt{s} diminishes. These conditions are necessary, that our values of V , deduced from the formula $V = \frac{A}{X}$, may agree with the experiment.

In order to comprehend every degree of slope, we must particularly attend to the motion through pipes, because open canals will not furnish us with instances of exact TRAINS with great slopes and velocities. We can make pipes vertical. In this case $\frac{1}{s}$ is $\frac{1}{1}$, and the velocity is the greatest possible for a train by the action of gravity: But we can give greater velocities than this by increasing the head of water beyond what produces the velocity of the train.

Let AB (fig. 10.) be a vertical tube, and let CA be the head competent to the velocity in the tube, which we suppose to be in train. The slope is 1, and the full weight of the column in motion is the precise measure of the resistance. The value of $\frac{1}{s}$, considered

as a slope, is now a maximum; but, considered as expressing the proportion of the weight of the column in motion to the weight which is in equilibrium with the resistance, it may not be a maximum; it may surpass unity, and s may be less than 1. For if the vessel be filled to E , the head of water is increased, and will produce a greater velocity, and this will produce a greater resistance. The velocity being now greater, the head EF which imparts it must be greater than CA . But it will not be equal to EA , because the uniform velocities are found to increase faster than the square roots of the pressures. This is the general fact. Therefore F is above A , and the weight of the column FB , now employed to overcome the resistance, is greater than the weight of the column AB in motion. In such cases, therefore, $\frac{1}{s}$, greater than unity, is a sort of fictitious slope, and only represents the proportion of the resistance to the weight of the moving column. This proportion may surpass unity.

But it cannot be infinite: For supposing the head of water infinite; if this produce a finite velocity, and we deduct from the whole height the height corresponding to this finite velocity, there will remain an infinite head, the measure of an infinite resistance produced by a finite velocity. This does not accord with the observed law of the velocities, where the resistances actually do not increase as fast as the squares of the velocities. Therefore an infinite head would have produced an infinite velocity, in opposition to the resistances: taking off the head of the tube, competent to this velocity, at the entry of the tube, which head would also be infinite, the remainder would in all probability be finite, balancing a finite resistance.

Therefore the value of s may remain finite, although the velocity be infinite; and this is agreeable to all our clearest notions of the resistances.

Adopting this principle, we must find a value of X which will answer all these conditions. 2. It must be sensibly proportional to \sqrt{s} , while s is great. It must always be less than \sqrt{s} . 3. It must deviate from the proportion of \sqrt{s} , so much the more as \sqrt{s} is smaller.

Theory.

Fig. 10.

- Theory. 4. It must not vanish when the velocity is infinite.
5. It must agree with a range of experiments with every variety of channel and of slope.

We shall understand the nature of this quantity X better by representing by lines the quantities concerned in forming it.

Fig. 11. If the velocities were exactly as the square roots of the slopes, the equilateral hyperbola NKS (fig. 11.) between its asymptotes MA , AB , would represent the equation $V = \frac{A}{\sqrt{s}}$. The values of \sqrt{s} would be represented by the abscissæ, and the velocities by the ordinates, and $V\sqrt{s} = A$ would be the power of the hyperbola. But since these velocities are not sensibly equal to $\frac{A}{\sqrt{s}}$ except when \sqrt{s} is very great, and deviate the more from this quantity as \sqrt{s} is smaller; we may represent the velocities by the ordinates of another curve PGT , which approaches very near to the hyperbola, at a great distance from A along AB ; but separates from it when the abscissæ are smaller: so that if AQ represents that value of \sqrt{s} (which we have seen may become less than unity), which corresponds to an infinite velocity, the line QO may be the asymptote of the new curve. Its ordinates are equal to $\frac{A}{X}$ while those of the hyperbola are equal to $\frac{A}{\sqrt{s}}$. Therefore the ratio of these ordinates or $\frac{\sqrt{s}}{X}$ should be such that it shall be so much nearer to unity as \sqrt{s} is greater, and shall surpass it so much the more as \sqrt{s} is smaller.

To express X , therefore, as some function of \sqrt{s} so as to answer these conditions, we see in general that X must be less than \sqrt{s} . And it must not be equal to any power of \sqrt{s} whose index is less than unity, because then $\frac{\sqrt{s}}{X}$ would differ so much the more from unity as \sqrt{s} is greater. Nor must it be any multiple of \sqrt{s} such as $q\sqrt{s}$, for the same reason. If we make $X = \sqrt{s} - K$, K being a constant quantity, we may answer the first condition pretty well. But K must be very small, that X may not become equal to nothing, except in some exceedingly small value of \sqrt{s} . Now the experiments will not admit of this, because the ratio

$\frac{\sqrt{s}}{\sqrt{s} - K}$ does not increase sufficiently to correspond with the velocities which we observe in certain slopes, unless we make K greater than unity, which again is inconsistent with other experiments. We learn from such canvassing that it will not do to make K a constant quantity. If we should make it any fractionary power of \sqrt{s} , it would make $X = 0$, that is, nothing, when s is $= 1$, which is also contrary to experience. It would seem, therefore, that nothing will answer for K but some power of \sqrt{s} which has a variable index. The logarithm of \sqrt{s} has this property. We may therefore try to make $X = \sqrt{s} - \log. \sqrt{s}$. Accordingly if we try

the equation $V = \frac{A}{\sqrt{s} - \text{hyp. log. } \sqrt{s}}$, we shall find a

very great agreement with the experiments till the declivity becomes considerable, or about $\frac{1}{20}$, which is much greater than any river. But it will not agree with the velocities observed in some mill courses, and in pipes of a still greater declivity, and gives a velocity that is too small; and in vertical pipes the velocity is not above one half of the true one. We shall get rid of most of these incongruities if we make K consist of the hyperbolic logarithm of \sqrt{s} augmented by a small constant quantity, and by trying various values for this constant quantity, and comparing the results with experiment, we may hit on one sufficiently exact for all practical purposes.

M. de Buat, after repeated trials, found that he would have a very great conformity with experiment by making $K = \log. \sqrt{s} + 1.6$, and that the velocities exhibited in his experiments would be very well represented by the formula $V = \frac{297(\sqrt{d} - 0.1)}{\sqrt{s} - L\sqrt{s} + 1.6}$.

There is a circumstance which our author seems to have overlooked on this occasion, and which is undoubtedly of great effect in these motions, viz. the mutual adhesion of the particles of water. This causes the water which is descending (in a vertical pipe for example) to drag more water after it, and thus greatly increases its velocity. We have seen an experiment in which the water issued from the bottom of a reservoir through a long vertical pipe having a very gentle taper. It was 15 feet long, one inch diameter at the upper end, and two inches at the lower. The depth of the water in the reservoir was exactly one foot; in a minute there were discharged $2\frac{2}{5}$ cubic feet of water. It must therefore have issued through the hole in the bottom of the reservoir with the velocity of 8.85 feet per second. And yet we know that this head of water could not make it pass through the hole with a velocity greater than 6.56 feet per second. This increase must therefore have arisen from the cause we have mentioned, and is a proof of the great intensity of this force. We doubt not but that the discharge might have been much more increased by proper contrivances; and we know many instances in water pipes where this effect is produced in a very great degree.

The following case is very distinct: Water is brought into the town of Dunbar in the county of East Lothian from a spring at the distance of about 3200 yards. It is conveyed along the first 1100 yards in a pipe of two inches diameter, and the declivity is 12 feet 9 inches; from thence the water flows in a pipe of $1\frac{1}{2}$ diameter, with a declivity of 44 feet three inches, making in all 57 feet. When the work was carried as far as the two-inch pipe reached, the discharge was found to be 27 Scotch pints, of $103\frac{1}{2}$ cubic inches each in a minute. When it was brought into the town, the discharge was 28. Here it is plain that the descent along the second stretch of the pipe could derive no impulsion from the first. This was only able to supply 27 pints, and to deliver it into a pipe of equal bore. It was not equivalent to the forcing it into a smaller pipe, and almost doubling its velocity. It must therefore have been dragged into this smaller pipe by the weight of what was descending along it, and this water was exerting a force equivalent to a head of 16 inches, increasing the velocity from 14 to about 28.

Theory.

55 Mutual adhesion of the particles of water.

56 An actual case

Theory.

⁵⁷ proves that the smallest declivity will produce a current.

It must be observed, that if this formula be just, there can be no declivity so small that a current of water will not take place in it. And accordingly none has been observed in the surface of a stream when this did not happen. But it also should happen with respect to any declivity of bottom. Yet we know that water will hang on the sloping surface of a board without proceeding further. The cause of this seems to be the adhesion of the water combined with its viscosity. The viscosity of a fluid presents a certain force which must be overcome before any current can take place.

A series of important experiments were made by our author in order to ascertain the relation between the velocity at the surface of any stream and that at the bottom. These are curious and valuable on many accounts. One circumstance deserves our notice here, viz. that *the difference between the superficial and bottom velocities of any stream are proportional to the square roots of the superficial velocities.* From what has been already said on the gradual diminution of the velocities among the adjoining filaments, we must conclude that the same rule holds good with respect to the velocity of separation of two filaments immediately adjoining. Hence we learn that this velocity of separation is in all cases indefinitely small, and that we may, without danger of any sensible error, suppose it a constant quantity in all cases.

⁵⁸ A constant part of the accelerating force employed in overcoming the viscosity, &c.

We think, with our ingenious author, that on a review of these circumstances, there is a constant or invariable portion of the accelerating force employed in overcoming this viscosity and producing this mutual separation of the adjoining filaments. We may express

this part of the accelerating force by a part $\frac{1}{S}$ of that

slope which constitutes the whole of it. If it were not employed in overcoming this resistance, it would produce a velocity which (on account of this resistance)

is not produced, or is lost. This would be $\frac{A}{\sqrt{S-L}\sqrt{S}}$.

This must therefore be taken from the velocity exhibited by our general formula. When thus corrected, it

would become $V = (\sqrt{d} - 0.1) \left(\frac{\sqrt{mg}}{\sqrt{s-L}\sqrt{s+1.6}} - \frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}} \right)$. But as the term $\frac{\sqrt{ng}}{\sqrt{S-L}\sqrt{S}}$

is compounded only of constant quantities, we may express it by a single number. This has been collected from a scrupulous attention to the experiments (especially in canals and great bodies of water moving with very small velocities; in which case the effects of viscosity must become more remarkable), and it appears

that it may be valued at $\sqrt{\frac{\text{inch}}{0.09}}$ or 0.3 inches very nearly.

From the whole of the foregoing considerations, drawn from nature, supported by such reasoning as our most distinct notions of the internal motions will admit, and authorized by a very extensive comparison

with experiment, we are now in a condition to conclude a complete formula, expressive of the uniform motion of water, and involving every circumstance which appears to have any share in the operation.

Theory.

Therefore, let

V represent the mean velocity, in inches per second, of any current of water, running uniformly, or which is IN TRAIN, in a pipe or open channel, whose section, figure, and slope, are constant, but its length indefinite.

⁵⁹ Formula expressing the uniform motion of water.

d the hydraulic mean depth, that is, the quotient arising from dividing the section of the channel, in square inches, by its border, expressed in linear inches.

s The slope of the pipe, or of the surface of the current. It is the denominator of the fraction expressing this slope, the numerator being always unity; and is had by dividing the expanded length of the pipe or channel by the difference of height of its two extremities.

g The velocity (in inches per second) which a heavy body acquires by falling during one second.

n An abstract constant number, determined by experiment to be 243.7.

L The hyperbolic logarithm of the quantity to which it is prefixed, and is had by multiplying the common logarithm of that quantity by 2.3026.

We shall have in every instance

$$V = \frac{\sqrt{ng}(\sqrt{d}-0.1)}{\sqrt{s-L}\sqrt{s+1.6}} - 0.3(\sqrt{d}-0.1)$$

This, in numbers, and English measure, is

$$V = \frac{307(\sqrt{d}-0.1)}{\sqrt{s-L}\sqrt{s+1.6}} - 0.3(\sqrt{d}-0.1)$$

And in French measure

$$V = \frac{297(\sqrt{d}-0.1)}{\sqrt{s-L}\sqrt{s+1.6}} - 0.3(\sqrt{d}-0.1)$$

The following table contains the real experiments from which this formula was deduced, and the comparison of the real velocities with the velocities computed by the formula. It consists of two principal sets of experiments. The first are those made on the motion of water in pipes. The second are experiments made on open canals and rivers. In the first set, column 1st contains the number of the experiment; 2d, the length of the tube; 3d, the height of the reservoir; 4th, the values of S, deduced from column second and third; 5th gives the observed velocities; and 6th the velocities calculated by the formula.

In the second set, column 2d gives the area of the section of the channel; 3d, the border of the canal or circumference of the section, deducting the horizontal width, which sustains no friction; 4th, the square root \sqrt{d} of the hydraulic mean depth; 5th, the denominator S of the slope; 6th, the observed mean velocities; and 7th, the mean velocities by the formula. In the last ten experiments on large canals and a natural river the 6th column gives the observed velocities at the surface.

60
Table containing the experiments from which the formula is deduced.

SET I. Experiments on Pipes.

Experiments by Chevalier DE BUAT.

N ^o	Length of Pipe.	Height of Reservoir.	Values of s.	Velocities observed.	Velocities calculated.
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Vertical Tube $\frac{2}{7}$ of a Line in Diameter and $\sqrt{a}=0.117851$.

	Inch.	Inch.	Inch.	Inch.	Inch.
1	12	16.166	0.75636	11.704	12.006
2	12	13.125	0.9307	9.753	10.576

Vertical Pipe $1\frac{1}{2}$ Lines Diameter, and $\sqrt{a}=0.176776$ Inch.

3	34.166	42.166	0.9062	45.468	46.210
4	Do.	38.333	0.9951	43.156	43.721
5	Do.	36.666	1.0396	42.385	42.612
6	Do.	35.333	1.0781	41.614	41.714

The same Pipe Horizontal.

7	34.166	14.583	2.5838	26.202	25.523
8	Do.	9.292	4.0367	21.064	19.882
9	Do.	5.292	7.036	14.642	14.447
10	Do.	2.083	17.6378	7.320	2.351

Vertical Pipe 2 Lines Diameter, and $\sqrt{a}=0.204124$.

11	36.25	51.250	0.85451	67.373	64.945
12	Do.	45.250	0.96338	59.605	60.428
13	Do.	41.916	1.03808	57.220	57.838
14	Do.	38.750	1.12047	54.186	55.321

Same Pipe with a slope of $\frac{1}{1.3024}$.

15	36.25	33.500	1.29174	51.151	50.983
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Same Pipe horizontal.

16	36.25	15.292	2.7901	33.378	33.167
17	Do.	8.875	4.76076	25.430	24.553
18	Do.	5.292	7.89587	19.940	18.313
19	Do.	2.042	20.01637	10.620	10.492

Vertical Pipe $2\frac{2}{3}$ Lines Diameter, and $\sqrt{a}=0.245798$.

20	36.25	53.250	0.95235	85.769	85.201
21	Do.	50.250	1.00642	82.471	82.461
22	Do.	48.333	1.0444	81.646	80.698
23	Do.	48.333	1.0444	79.948	
24	Do.	47.916	1.0529	81.027	80.318
25	Do.	44.750	1.1241	76.079	77.318
26	Do.	41.250	1.2157	73.811	73.904

The same Pipe with the slope $\frac{1}{1.3024}$.

27	36.25	37.5	1.3323	70.822	70.138
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The same Pipe Horizontal.

N ^o	Length of Pipe.	Height of Reservoir.	Values of s.	Velocities observed.	Velocities calculated.
	Inch.	Inch.	Inch.	Inch.	Inch.
28	36.25	20.166	2.4303	51.956	50.140
29	Do.	9.083	5.2686	33.577	32.442
30	Do.	7.361	6.4504	28.658	28.801
31	Do.	5.	9.3573	23.401	23.195
32	Do.	4.916	9.5097	22.989	22.974
33	Do.	4.833	9.6652	22.679	22.754
34	Do.	3.708	12.4624	19.587	19.550
35	Do.	2.713	16.3135	16.631	16.324
36	Do.	2.083	21.6639	14.295	14.003
37	Do.	1.625	27.5102	12.680	12.115
38	Do.	0.833	52.3427	7.577	8.215

Pipes sensibly Horizontal $\sqrt{a}=0.5$, or 1 Inch Diameter.

39	117	36	5.6503	84.945	85.524
40	117	26.666	7.48	71.301	72.617
41	138.5	20.950	10.3215	58.808	60.034
42	117	18	10.7880	58.310	58.472
43	138.5	6	33.1962	29.341	29.663
44	737	23.7	33.6658	28.669	29.412
45	Do.	14.6	54.2634	21.856	22.056
46	Do.	13.7	57.7772	20.970	21.240
47	Do.	12.32	64.1573	19.991	19.950
48	Do.	8.96	87.8679	16.625	16.543
49	Do.	8.96		16.284	
50	Do.	7.780	101.0309	15.112	15.232
51	Do.	5.93	132.1617	13.315	13.005
52	Do.	4.2	186.0037	10.671	10.656
53	Do.	4.2		10.441	
54	138.5	0.7	257.8863	8.689	8.824
55	737	0.5	1540.75	3.623	3.218
56	737	0.15	5113.42	1.589	1.647

Experiments by the Abbe Bossut.

Horizontal Pipe 1 Inch Diameter $\sqrt{a}=0.5$.

57	600	12	54.5966	22.282	21.975
58	600	4	161.312	12.223	11.756

Horizontal Pipe $1\frac{1}{2}$ Inch Diameter $\sqrt{a}=0.5774$.

59	360	24	19.0781	48.534	49.515
60	720	24	33.6166	34.473	35.130
61	360	12	37.0828	33.160	33.106
62	1080	24	48.3542	28.075	28.211
63	1440	24	64.1806	24.004	24.023
64	720	12	66.3020	23.360	23.345
65	1800	24	78.0532	21.032	21.182
66	2160	24	92.9474	18.896	19.096
67	1080	12	95.8756	18.943	18.749
68	1440	12	125.6007	16.128	15.991
69	1800	12	155.4015	14.066	14.119
70	2160	12	185.2487	12.560	12.750

Horizontal

Theory.

Theory.

Horizontal Pipe 2.01 Inch Diameter $\sqrt{a}=0.708946$.

Rectangular Canal.

N ^o	Length of Pipe.	Height of Reservoir.	Values of s .	Velocities observed.	Velocities calculated.
71	360	24	21.4709	58.903	58.803
72	720	24	35.8082	43.	43.136
73	360	12	41.2759	40.322	39.587
74	1080	24	50.4119	35.765	35.096
75	1440	24	65.1448	30.896	30.096
76	720	12	70.1426	29.215	28.796
77	1800	24	79.8487	27.470	26.639
78	2160	24	94.7901	27.731	24.079
79	1080	12	99.4979	23.806	23.400
80	1440	12	129.0727	20.707	20.076
81	1800	12	158.7512	18.304	17.788
82	2160	12	188.5179	16.377	16.097

N ^o	Section of Canal.	Border of Canal.	Values of \sqrt{a} .	Values of s .	Mean Velocity observed	Mean Veloc. cal.
107	34.50	21.25	1.27418	4.58	20.24	18.66
108	86.25	27.25	1.77908	4.58	28.29	26.69
109	34.50	21.25	1.27418	9.29	13.56	11.53
110	35.22	21.33	1.28499	14.12	9.20	10.01
111	51.75	23.25	1.49191	14.12	12.10	11.76
112	76.19	26.08	1.70921	14.12	14.17	13.59
113	105.78	29.17	1.90427	14.12	15.55	15.24
114	69.	25.25	1.65308	9.288	4.59	4.56
115	155.25	35.25	2.09868	9.288	5.70	5.86

MR COUPLLET'S Experiments at Versailles.

Pipe 5 Inches Diameter $\sqrt{a}=1.11803$.

83	84240	25	3378.26	5.323	5.287
84	Do.	24	3518.98	5.213	5.168
85	Do.	21.083	4005.66	4.806	4.887
86	Do.	16.750	5041.61	4.127	4.225
87	Do.	11.333	7450.42	3.154	3.388
88	Do.	5.583	15119.96	2.011	2.254

Pipe 18 Inches Diameter $\sqrt{a}=2.12132$.

89	43200	145.083	304.973	39.159	40.510
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SET II. Experiments with a Wooden Canal.

N ^o	Section of Canal.	Border of Canal.	Values of \sqrt{a} .	Values of s .	Mean Velocity observed	Mean Veloc. calc.
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Trapezium Canal.

	Inch.	Inch.	Inch.	Inch.	Inch.	Inch.
90	18.84	13.06	1.20107	212	27.51	27.19
91	50.60	29.50	1.3096	212	28.92	29.88
92	83.43	26.	1.7913	412	27.14	28.55
93	27.20	15.31	1.3329	427	18.28	20.39
94	39.36	18.13	1.4734	427	20.30	22.71
95	50.44	20.37	1.5736	427	22.37	24.37
96	56.43	21.50	1.6201	427	23.54	25.14
97	98.74	28.25	1.8696	432	28.29	29.06
98	100.74	28.53	1.8791	432	28.52	29.23
99	119.58	31.06	1.9622	432	30.16	30.60
100	126.20	31.91	1.9887	432	31.58	31.03
101	130.71	32.47	1.0064	432	31.89	31.32
102	135.32	33.03	1.0241	432	32.32	31.61
103	20.83	13.62	1.2367	1728	8.94	8.58
104	34.37	17.	1.4219	1728	9.71	9.98
105	36.77	17.56	1.4471	1728	11.45	10.17
106	42.01	18.69	1.4992	1728	12.34	10.53

SET III. Experiments on the Canal of JARD.

N ^o	Section of Canal.	Border of Canal.	Values of \sqrt{a} .	Values of s .	Velocity obs. at Surface	Velocity calculated.
116	16252	402	6.3583	8919	17.42	18.77
117	11905	366	5.70320	11520	12.17	14.52
118	10475	360	5.3942	15360	15.74	11.61
119	7858	340	4.8074	21827	9.61	8.38
120	7376	337	4.6784	27648	7.79	7.07
121	6125	324	4.3475	27648	7.27	6.55

Experiments on the River Haine.

N ^o	Section of River.	Border of River.	Values of \sqrt{a} .	Values of s .	Velocity at Surface.	Velocity (mean) calcul.
122	31498	569	7.43974	6048	35.11	27.62
123	38838	601	8.03879	6413	31.77	28.76
124	30905	568	7.37632	32951	13.61	10.08
125	39639	604	8.10108	35723	15.96	10.53

The comparison must be acknowledged to be most satisfactory, and shows the great penetration and address of the author, in so successfully fitting and appreciating the share which each co-operating circumstance has had in producing the very intricate and complicated effect. It adds some weight to the principles on which he has proceeded in this analysis of the mechanism of hydraulic motion, and must give us great confidence in a theory so fairly established on a very copious induction. The author offers it only as a rational and well-founded probability. To this character it is certainly entitled; for the suppositions made in it are agreeable to the most distinct notions we can form of these internal motions. And it must always be remembered that the investigation of the formula, although it be rendered somewhat more perspicuous by thus having recourse to those notions, has no dependence on the truth of the principles. For it is, in fact, nothing but a classification of experiments, which are grouped together by some one circumstance of slope, velocity, form of section, &c. in order to discover the law of the changes which are induced by a variation of the

61
The theory
a well-
founded
probability,
and

Theory.

the circumstances which do not resemble. The procedure was precisely similar to that of the astronomer when he deduces the elements of an orbit from a multitude of observations. This was the task of M. de Buat; and he candidly and modestly informs us, that the finding out analytical forms of expression which would exhibit these changes was the work of Mr Benezech de St Honoré, a young officer of engineers, and his colleague in the experimental course. It does honour to his skill and address; and we think the whole both a pretty and instructive specimen of the method of discovering the laws of nature in the midst of complicated phenomena. Daniel Bernoulli first gave the rules of this method, and they have been greatly improved by Lambert, Condorcet, and De la Grange. Mr Coulomb has given some excellent examples of their application to the discovery of the laws of friction, of magnetical and electrical attraction, &c. But this present work is the most perspicuous and familiar of them all. It is the empirical method of generalising natural phenomena, and of deducing general rules, of which we can give no other demonstration but that they are faithful representations of matters of fact. We hope that others, encouraged by the success of M. de Buat, will follow this example, where public utility is preferred to a display of mathematical knowledge.

62
the experiments highly valuable.

Although the author may not have hit upon the precise *modus operandi*, we agree with him in thinking that nature seems to act in a way not unlike what is here supposed. At any rate, the range of experiments is so extensive, and so multifarious, that few cases can occur which are not included among them. The experiments will always retain their value (as we presume that they are faithfully narrated), whatever may become of the theory; and we are confident that the formula will give an answer to any question to which it may be applicable infinitely preferable to the vague guesses of the most sagacious and experienced engineer.

63
The velocity given by the formula too large for ordinary works.

We must however observe, that as the experiments on pipes were all made with scrupulous care in the contrivance and execution of the apparatus, excepting only those of Mr Couplet on the main pipes at Versailles, we may presume that the formula gives the greatest velocities which can be expected. In ordinary works, where joints are rough or leaky, where drops of solder hang in the inside, where cocks intervene with deficient water-ways, where pipes have awkward bendings, contractions, or enlargements, and where they may contain sand or air, we should reckon on a smaller velocity than what results from our calculation; and we presume that an undertaker may with confidence promise $\frac{4}{5}$ of this quantity without any risk of disappointing his employer. We imagine that the actual performance of canals will be much nearer to the formula.

We have made inquiry after works of this kind executed in Britain, that we might compare them with the formula. But all our canals are locked and without motion; and we have only learned by an accidental information from Mr Watt, that a canal in his neighbourhood, which is 18 feet wide at the surface, and seven feet at the bottom, and four feet deep, and has a slope of one inch in a quarter of a mile, runs with the velocity of 17 inches per second at the surface, 10 at the bottom, and 14 in the middle. If we compute

the motion of this canal by our formula, we shall find the mean velocity to be $13\frac{1}{2}$.

Theory.

No river in the world has had its motions so much scrutinized as the Po about the end of the last century. It had been a subject of 100 years continual litigation between the inhabitants of the Bolognese and the Ferrarese, whether the waters of the Rheno should be thrown into the Tronco de Venezia or Po Grande. This occasioned very numerous measures to be taken of its sections and declivity, and the quantities of water which it contained in its different states of fullness. But, unfortunately, the long established methods of measuring waters, which were in force in Lombardy, made no account of the velocity, and not all the treaties of Castelli, Grandi, and other moderns, could prevail on the visitors in this process to deviate from the established methods. We have therefore no minute accounts of its velocity, though there are many rough estimates to be met with in that valuable collection published at Florence in 1723, of the writings on the motion of rivers. From them we have extracted the *only precise observations* which are to be found in the whole work.

64
Observations on the velocity of the Po

The Po Grande receives no river from Stellata to the sea, and its slope in that interval is found most surprisingly uniform, namely six inches in the mile (reduced to English measure). The breadth in its great freshes is 759 feet at Lago Scuro, with a very uniform depth of 31 feet. In its lowest state (in which it is called *Po Magra*), its breadth is not less than 700, and its depth about $10\frac{1}{2}$.

The Rheno has a uniform declivity from the Ponte Emilio to Vigarano of 15 inches per mile. Its breadth in its greatest freshes is 189 feet, and its depth 9.

Signor Corrade in his report says, that in the state of the great freshes the velocity of the Rheno is most exactly $\frac{4}{5}$ of that of the Po.

Grandi says that a great fresh in the Rheno employs 12 hours (by many observations of his own) to come from Ponte Emilio to Vigarano, which is 30 miles. This is a velocity of 44 inches per second. And, by Corrade's proportion, the velocity of the Po Grande must be 55 inches per second.

Montanari's observation gives the Po Magra a velocity of 31 inches per second.

Let us compare these velocities with the velocities calculated by Buat's formula.

The hydraulic mean depths d and D of the Rheno and Po in the great freshes deduced from the above measures, are 98.6 and 344 inches; and their slopes s and S are $\frac{1}{4324}$ and $\frac{1}{10780}$. This will give

$$\frac{307(\sqrt{D}-0.1)}{\sqrt{S}-L\sqrt{S+1.6}} - 0.3(\sqrt{D}-0.1) = 52.176 \text{ inches}$$

$$\text{and } \frac{307(\sqrt{d}-0.1)}{\sqrt{s}-L\sqrt{s+1.6}} - 0.3(\sqrt{d}-0.1) = 46.727 \text{ inches.}$$

These results differ very little from the velocities above mentioned. And if the velocity corresponding to a depth of 31 feet be deduced from that observed by Montanari in the Po Magra 10 feet deep, on the supposition that they are in the proportion of \sqrt{d} , it will be found to be about $53\frac{1}{2}$ inches per second.

This comparison is therefore highly to the credit of the

Theory. the theory, and would have been very agreeable to M. de Buat, had he known it, as we hope it is to our readers.

65 Highly to the credit of the theory.

We have collected many accounts of water pipes, and made the comparisons, and we flatter ourselves that these have enabled us to improve the theory. They shall appear in their proper place; and we may just observe here, that the two-inch pipe, which we formerly spoke of as conveying the water to Dunbar, should have yielded only 25 2/3 Scotch pints per minute by the formula, instead of 27; a small error.

We have, therefore, no hesitation in saying that this single formula of the uniform motion of water is one of the most valuable presents which natural science and the arts have received during the course of this century.

We hoped to have made this fortunate investigation of the chevalier de Buat still more acceptable to our readers by another table, which should contain the values of

327 / (sqrt(s-L) * sqrt(s+1.6)) ready calculated for every de-

clivity that can occur in water pipes, canals, or rivers. Aided by this, which supercedes the only difficult part of the computation, a person could calculate the velocity for any proposed case in less than two minutes. But we have not been able to get it ready for its appearance in this article, but we shall not fail to give it when we resume the subject in the article WATER-Works; and we hope even to give its results on a scale which may be carried in the pocket, and will enable the unlearned practitioner to solve any question with accuracy in half a minute.

We have now established in some measure a THEORY OF HYDRAULICS, by exhibiting a general theorem which expresses the relation of the chief circumstances of all such motions as have attained a state of permanency, in so far as this depends on the magnitude, form, and slope of the channel. This permanency we have expressed by the term TRAIN, saying that the stream is in train.

We proceed to consider the subordinate circumstances contained in this theorem; such as, 1st, The forms which nature or art may give to the bed of a running stream, and the manner of expressing this form in our theorem. 2d, The gradations of the velocity, by which it decreases in the different filaments, from the axis or most rapid filament to the border; and the connection of this with the mean velocity, which is expressed by our formula. 3d, Having acquired some distinct notions of this, we shall be able to see the manner in which undisturbed nature works in forming the beds of our rivers, the forms which she affects, and which we must imitate in all their local modifications, if we would secure that permanency which is the evident aim of all her operations. We shall here learn the mutual action of the current and its bed, and the circumstances which ensure the stability of both. These we may call the regimen or the conservation of the stream, and may say that it is in regimen, or in conservation. This has a relation, not to the dimensions and the slope alone, or to the accelerating force and the resistance arising from mere inertia; it respects immediately the tenacity of the bed, and is different from the train.

66 Regimen of streams what.

4th, These pieces of information will explain the deviation of rivers from the rectilinear course; the resistance occasioned by these deviations; and the circumstances on which the regimen of a winding stream depends.

Theory.

§ 1. Of the Forms of the Channel.

THE numerator of the fraction which expresses the velocity of a river in train has sqrt(d) for one of its factors. That form, therefore, is most favourable to the motion which gives the greatest value to what we have called the hydraulic mean depth d. This is the prerogative of the semicircle, and here d is equal to half the radius; and all other figures of the same area are the more favourable, as they approach nearer to a semicircle. This is the form, therefore, of all conduit pipes, and should be taken for aqueducts which are built of masonry. Ease and accuracy of execution, however, have made engineers prefer a rectangular form; but neither of these will do for a channel formed out of the ground. We shall soon see that the semicircle is incompatible with a regimen; and, if we proceed through the regular polygons, we shall find that the half hexagon is the only one which has any pretensions to a regimen; yet experience shows us, that even its banks are too steep for almost any soil. A dry earthen bank, not bound together by grass roots, will hardly stand with a slope of 45 degrees; and a canal which conveys running waters will not stand with this slope. Banks whose base is to their height as four to three will stand very well in moist soils, and this is a slope very usually given. This form is even affected in the spontaneous operations of nature, in the channels which she digs for the rills and rivulets in the higher and steeper grounds.

67 The semicircular form most favourable to motion,

68 but incompatible with regimen.

69 Banks that stand best.

This form has some mathematical and mechanical properties which intitle it to some further notice. Let ABEC (fig. 12.) be such a trapezium, and AHGC the rectangle of equal width and depth. Bisect HB and EG by the verticals FD and KI, and draw the verticals b B, e E. Because AH : HB = 3 : 4, we have AB = 5, and BD = 2, and FD = 3, and BD + DF = BA. From these premisses it follows, that the trapezium ABEC has the same area with the rectangle; for HB being bisected in D, the triangles ACF, BCD are equal. Also the border ABEC, which is touched by the passing stream, is equal to FDIK. Therefore the mean depth, which is the quotient of the area divided by the border, is the same in both; and this is the case, whatever is the width BE at the bottom, or even though there be no rectangle such as b BE e interposed between the slant sides.

Fig. 12.

Of all rectangles, that whose breadth is twice the height, or which is half of a square, gives the greatest mean depth. If, therefore, FK be double of FD, the trapezium ABEC, which has the same area, will have the largest mean depth of any such trapezium, and will be the best form of a channel for conveying running waters. In this case, we have AC = 10, AH = 3, and BE = 2. Or we may say that the best form is a trapezium, whose bottom width is 2/3 of the depth, and whose extreme width is 10/3. This form approaches very near to that which the torrents in the hills naturally dig for themselves in uniform ground, where their action is not checked by stones which they lay bare, or which they deposit in their course. This shows us, and it will be fully confirmed by and by, that the channel of a river

70 Best form of a channel.

Theory. is not a fortuitous thing, but has a relation to the con-
ficiency of the soil and velocity of the stream.

A rectangle, whose breadth is $\frac{2}{3}$ of the depth of wa-
ter, will therefore have the same mean depth with a
triangle whose surface width is $\frac{2}{3}$ of its vertical depth;
for this is the dimensions when the rectangle $bBEe$ is
taken away.

Let A be the area of the section of any channel, w
its width (when rectangular), and h its depth of water.
Then what we have called its mean depth, or d , will be

$\frac{A}{w+2h} = \frac{wh}{w+2h}$. Or if q expresses the ratio of the
width to the depth of a rectangular bed; that is, if

$q = \frac{w}{h}$, we have a very simple and ready expression for
the mean depth, either from the width or depth. For

$$d = \frac{w}{q+2}, \text{ or } d = \frac{qh}{q+2}.$$

Therefore, if the depth were infinite, and the width
finite, we should have $d = \frac{w}{2}$; or if the width be infi-

nite, and the depth finite, we have $d = h$. And these
are the limits of the values of d ; and therefore in riv-
ers whose width is always great in comparison of the
depth, we may without much error take their real
depth for their hydraulic mean depth. Hence we de-
rive a rule of easy recollection, and which will at all
times give us a very near estimate of the velocity and
expende of a running stream, viz. that the velocities are
nearly as the square roots of the depths. We find this
confirmed by many experiments of Michelotti.

Also, when we are allowed to suppose this ratio of the
velocities and depths, that is, in a rectangular canal of
great breadth and small depth, we shall have the quan-
tities discharged nearly in the proportion of the cubes
of the velocities. For the quantity discharged d is as
the velocity and area jointly, that is, as the height and
velocity jointly, because when the width is the same the
area is as the height. Therefore, we have $d \propto hv$. —
But, by the above remark, $h \propto v^2$. Therefore, $d \propto v^3$;
and this is confirmed by the experiments of Bossut,
vol. ii. 236. Also, because d is as vh , when v is
constant, and by the above remark (allowable when
 w is very great in proportion to h) v is as \sqrt{h} , we
have d as $h\sqrt{h}$, or $h^{\frac{3}{2}}$, or the squares of the discharges
proportional to the cubes of the heights in rectangular
beds, and in their corresponding trapeziums.

71
Estimate
of the ex-
pende of a
running
stream.

72
Rules for
finding the
dimensions.

1. Knowing the mean depth and the proportion of
the width and real depth, we can determine the dimen-
sions of the bed, and we have $w = qd + 2d$, and $h = d$

$$+ \frac{2d}{q}.$$

2. If we know the area and mean depth, we can in
like manner find the dimensions, that is, w and h ; for
 $A = wh$, and $d = \frac{wh}{w+2h}$; therefore $w = \pm \frac{\sqrt{A^2 - 2A}}$

$$+ \frac{A}{2d}.$$

3. If d be known, and one of the dimensions be
given, we can find the other; for $d = \frac{wh}{w+2h}$ gives

$$w = \frac{2hd}{h-d}, \text{ and } h = \frac{wd}{w-2d}.$$

4. If the velocity V and the slope S for a river in
train be given, we can find the mean depth; for $V =$

$$\left(\frac{297}{\sqrt{S-L}\sqrt{S+1.6}} - 0.3 \right) (\sqrt{d} - 0.1). \text{ Whence mean depth,}$$

we deduce $\sqrt{d} - 0.1 = \frac{V}{\frac{297}{\sqrt{S-L}\sqrt{S+1.6}} - 0.3}$, and

$\sqrt{d} =$ to this quantity $+ 0.1$.

5. We can deduce the slope which will put in train slope.
a river whose channel has given dimensions. We make

$$\frac{297(\sqrt{d}-0.1)}{V+0.3(\sqrt{d}-0.1)} = \sqrt{S}. \text{ This should be } = \sqrt{S}$$

$-L\sqrt{S+1.6}$, which we correct by trials, which will
be exemplified when we apply these doctrines to prac-
tice.

Having thus established the relation between the dif-
ferent circumstances of the form of the channel to our
general formula, we proceed to consider,

§ 2. The Gradations of Velocity from the middle of the
Stream to the sides.

THE knowledge of this is necessary for understanding
the regimen of a river; for it is the velocity of the fila-
ments in contact with the bed which produces any
change in it, and occasions any preference of one to
another, in respect of regimen or stability. Did these
circumstances not operate, the water, true to the laws
of hydraulics, and confined within the bounds which
have been assigned them, would neither enlarge nor di-
minish the area of the channel. But this is all that we
can promise of waters perfectly clear, running in pipes
or hewn channels. But rivers, brooks, and smaller
streams, carry along waters loaded with mud or sand,
which they deposit wherever their velocity is checked;
and they tear up, on the other hand, the materials of
the channel wherever their velocity is sufficiently great.
Nature, indeed, aims continually at an equilibrium, and
works without ceasing to perpetuate her own perform-
ances, by establishing an equality of action and reac-
tion, and proportioning the forms and direction of the
motions to her agents, and to local circumstances. Her
work is slow but unceasing; and what she cannot ac-
complish in a year she will do in a century. The beds
of our rivers have acquired some stability, because they
are the labour of ages; and it is to time that we owe
those deep and wide valleys which receive and confine
our rivers in channels, which are now consolidated, and
with slopes which have been gradually moderated, so
that they no longer either ravage our habitations or
confound our boundaries. Art may imitate nature, and

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Nature to
be imitated
in making
artificial
streams.

by directing her operations (which she still carries on ac-
cording to her own imprescriptible laws) according to
our views, we can hasten her progress, and accomplish
our purpose, during the short period of human life.
But we can do this only by studying the unalterable laws
of mechanism. These are presented to us by spontane-
ous nature. Frequently we remain ignorant of their
foundation: but it is not necessary for the prosper-
ity of the subject that he have the talents of the sena-
tor; he can profit by the statute without understand-
ing its grounds. It is so in the present instance. We
have not as yet been able to infer the law of retardation
observed

Theory. observed in the filaments of a running stream from any found mechanical principle. The problem, however, does not appear beyond our powers, if we assume, with Sir Isaac Newton, that the velocity of any particular filament is the arithmetical mean between those of the filaments immediately adjoining. We may be assured, that the filament in the axis of an inclined cylindrical tube, of which the current is in train, moves the fastest, and that all those in the same circumference round it are those which glide along the pipe. We may affirm the same thing of the motions in a semi-cylindrical inclined channel conveying an open stream. But even in these we have not yet demonstrated the ratio between the extreme velocities, nor in the different circles. This must be decided experimentally.

And here we are under great obligations to Mr de Buat. He has compared the velocity in the axis of a prodigious number and variety of streams, differing in size, form, slope, and velocity, and has computed in them all the mean velocity, by measuring the quantities of water discharged in a given time. His method of measuring the bottom velocity was simple and just. He threw in a gooseberry, as nearly as possible of the same specific gravity with the water. It was carried along the bottom almost without touching it. See *RESISTANCE of Fluids*, n^o 67.

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Laws of the velocities of different portions of the stream.

He discovered the following laws: 1. In small velocities the velocity in the axis is to that at the bottom in a ratio of considerable inequality. 2. This ratio diminishes as the velocity increases, and in very great velocities approaches to the ratio of equality. 3. What was most remarkable was, that neither the magnitude of the channel, nor its slope, had any influence in changing this proportion, while the mean velocity remained the same. Nay, though the stream ran on a channel covered with pebbles or coarse sand, no difference worth minding was to be observed from the velocity over a polished channel. 4. And if the velocity in the axis is constant, the velocity at the bottom is also constant, and is not affected by the depth of water or magnitude of the stream. In some experiments the depth was thrice the width, and in others the width was thrice the depth. This changed the proportion of the magnitude of the section to the magnitude of the rubbing part, but made no change on the ratio of the velocities. This is a thing which no theory could point out.

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Mean velocity

Another most important fact was also the result of his observation, viz. that the mean velocity in any pipe or open stream is the arithmetical mean between the velocity in the axis and the velocity at the sides of a pipe or bottom of an open stream. We have already observed, that the ratio of the velocity in the axis to the velocity at the bottom diminished as the mean velocity increased. This variation he was enabled to express in a very simple manner, so as to be easily remembered, and to enable us to tell any one of them by observing another.

If we take unity from the square root of the superficial velocity, expressed in inches, the square of the remainder

is the velocity at the bottom; and the mean velocity is the half sum of these two. Thus, if the velocity in the middle of the stream be 25 inches per second, its square root is five; from which if we take unity, there remains four. The square of this, or 16, is the velocity at the bottom, and $\frac{25 + 16}{2}$, or $20\frac{1}{2}$, is the mean velocity.

Theory.

This is a very curious and most useful piece of information. The velocity in the middle of the stream is the easiest measured of all, by any light small body floating down it; and the mean velocity is the one which regulates the train, the discharge, the effect on machines, and all the most important consequences.

We may express this by a formula of most easy recollection. Let V be the mean velocity, v the velocity in the axis, and u the velocity at the bottom; we have $u = \sqrt{v-1}$, and $V = \frac{v+u}{2}$.

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expressed by a formula.

Also $v = (\sqrt{V-\frac{1}{2}} + \frac{1}{2})^2$, and $v = (\sqrt{u} + 1)^2$.
 $V = (\sqrt{v-\frac{1}{2}})^2 + \frac{1}{4}$, and $V = (\sqrt{u+\frac{1}{2}})^2 + \frac{1}{4}$.
 $u = (\sqrt{v-1})^2$ and $u = (\sqrt{V-\frac{1}{4}} - \frac{1}{2})^2$.

Also $v-u = 2\sqrt{V-\frac{1}{4}}$ and $v-V = V-u = \sqrt{V-\frac{1}{4}}$: that is, the difference between these velocities increases in the ratio of the square roots of the mean velocities diminished by a small constant quantity.

This may perhaps give the mathematicians some help in ascertaining the law of degradation from the axis to the sides. Thus, in a cylindrical pipe, we may conceive the current as consisting of an infinite number of cylindrical shells sliding within each other like the draw tubes of a spy-glass. Each of these is in equilibrio, or as much accelerated by the one within it as it is retarded by the one without; therefore as the momentum of each diminishes in the proportion of its diameter (the thickness being supposed the same in all), the velocity of separation must increase by a certain law from the sides to the axis. The magnitude of the small constant quantity here spoken of seems to fix this law.

The place of the mean velocity could not be discovered with any precision. In moderate velocities it was not more than one-fourth or one-fifth of the depth distant from the bottom. In very great velocities it was sensibly higher, but never in the middle of the depth.

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Place of the mean velocity not discovered.

The knowledge of these three velocities is of great importance. The superficial velocity is easily observed; hence the mean velocity is easily computed. This multiplied by the section gives the expence; and if we also measure the expanded border, and then obtain the mean depth (or \sqrt{d}), we can, by the formula of uniform motion, deduce the slope, or, knowing the slope, we can deduce any of the other circumstances.

The following table of these three velocities will save the trouble of calculation in one of the most frequent questions of hydraulics.

I 2 Velocity

Theory.
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Table of the three principal velocities.

Theory.

Velocity in Inches.			Velocity in inches.			Velocity in Inches.		
Sur- face.	Bottom.	Mean.	Sur- face	Bottom.	Mean.	Sur- face.	Bottom.	Mean.
1	0.000	0.5	34	23.339	28.660	67	51.639	59.319
2	0.172	1.081	35	24.167	29.583	68	52.505	60.252
3	0.537	1.768	36	25.	30.5	69	53.392	61.196
4	1.	2.5	37	25.827	31.413	70	54.273	62.136
5	1.526	3.263	38	26.667	32.338	71	55.145	63.072
6	2.1	4.050	39	27.51	33.255	72	56.025	64.012
7	2.709	4.854	40	28.345	34.172	73	56.862	64.932
8	3.342	5.67	41	29.192	35.096	74	57.790	65.895
9	4.	6.5	42	30.030	36.015	75	58.687	66.843
10	4.674	7.337	43	30.880	36.940	76	59.568	67.784
11	5.369	8.184	44	31.742	37.871	77	60.451	68.725
12	6.071	9.036	45	32.581	38.790	78	61.340	69.670
13	6.786	9.893	46	33.432	39.716	79	62.209	70.605
14	7.553	10.756	47	34.293	40.646	80	63.107	71.553
15	8.254	11.622	48	35.151	41.570	81	64.	72.5
16	9.	12.5	49	36.	42.5	82	64.883	73.441
17	9.753	13.376	50	36.857	43.428	83	65.780	74.390
18	10.463	14.231	51	37.712	44.356	84	66.651	75.325
19	11.283	15.141	52	38.564	45.282	85	67.568	76.284
20	12.055	16.027	53	39.438	46.219	86	68.459	77.229
21	12.674	16.837	54	40.284	47.142	87	69.339	78.169
22	13.616	17.808	55	41.165	48.082	88	70.224	79.112
23	14.402	18.701	56	42.016	49.008	89	71.132	80.066
24	15.194	19.597	57	42.968	49.984	90	72.012	81.006
25	16.	20.5	58	43.771	50.886	91	72.915	81.957
26	16.802	21.401	59	44.636	51.818	92	73.788	82.894
27	17.606	22.303	60	45.509	52.754	93	74.719	83.859
28	18.421	23.210	61	46.376	53.688	94	75.603	84.801
29	19.228	24.114	62	47.259	54.620	95	76.51	85.755
30	20.044	25.022	63	48.136	55.568	96	77.370	86.685
31	20.857	25.924	64	49.	56.5	97	78.305	87.652
32	21.678	26.839	65	49.872	57.436	98	79.192	88.596
33	22.506	27.753	66	50.751	58.376	99	80.120	89.56
						100	81.	90.5

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Operation of the stream on its bed,

The knowledge of the velocity at the bottom is of the greatest use for enabling us to judge of the action of the stream on its bed; and we shall now make some observations on this particular.

Every kind of soil has a certain velocity consistent with the stability of the channel. A greater velocity would enable the waters to tear it up, and a smaller velocity would permit the deposition of more moveable materials from above. It is not enough, then, for the stability of a river, that the accelerating forces are so adjusted to the size and figure of its channel that the current may be in train: it must also be in equilibrio with the tenacity of the channel.

We learn from observation, that a velocity of three inches per second at the bottom will just begin to work upon fine clay fit for pottery, and however firm and compact it may be, it will tear it up. Yet no beds are more stable than clay when the velocities do not exceed this: for the water soon takes away the impalpable particles of the superficial clay, leaving the particles of sand sticking by their lower half in the rest of the clay, which they now protect, making a very permanent bottom, if the stream does not bring down gravel or coarse sand, which will rub off this very thin crust, and allow

another layer to be worn off; a velocity of six inches will lift fine sand; eight inches will lift sand as coarse as linseed; 12 inches will sweep along fine gravel; 24 inches will roll along rounded pebbles an inch diameter; and it requires three feet per second at the bottom to sweep along shivery angular stones of the size of an egg.

The manner in which unwearied nature carries on how carried on. some of these operations is curious, and deserves to be noticed a little. All must recollect the narrow ridges or wrinkles which are left on the sand by a temporary fresh or stream. They are observed to lie across the stream, and each ridge consists of a steep face AD, BF (fig. 13.) which looks down the stream, and a gentler slope DB, FC, which connects this with the next ridge. As the stream comes over the first steep AD, it is directed almost perpendicularly against the point E immediately below D, and thus it gets hold of a particle of coarse sand, which it could not have detached from the rest had it been moving parallel to the surface of it. It easily rolls it up the gentle slope EB; arrived there, the particle tumbles over the ridge, and lies close at the bottom of it at F, where it is protected by the little eddy, which is formed in the very angle; other particles

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Fig. 13.

Theory. ticles lying about E are treated in the same way, and, tumbling over the ridge B, cover the first particle, and now protect it effectually from any further disturbance. The same operation is going on at the bottom of each ridge. The brow or steep of the ridge gradually advances down the stream, and the whole set change their places, as represented by the dotted line *adbf*; and after a certain time the particle which was deposited at F is found in an unprotected situation, as it was in E, and it now makes another step down the stream.

The Abbé Bossut found, that when the velocity of the stream was just sufficient for lifting the sand (and a small excess hindered the operation altogether) a ridge advanced about 20 feet in a day.

Since the current carries off the most moveable matters of the channel, it leaves the bottom covered with the remaining coarse sand, gravel, pebbles, and larger stones. To these are added many which come down the stream while it is more rapid, and also many which roll in from the sides as the banks wear away. All these form a bottom much more solid and immoveable than a bottom of the medium soil would have been. But this does not always maintain the channel in a permanent form; but frequently occasions great changes, by obliging the current, in the event of any sudden fresh or swell, to enlarge its bed, and even to change it altogether, by working to the right and to the left, since it cannot work downwards. It is generally from such accumulation of gravel and pebbles in the bottom of the bed that rivers change their channels.

It remains to ascertain, in absolute measures, the force which a current really exerts in attempting to drag along with it the materials of its channel; and which will produce this effect unless resisted by the inertia of these materials. It is therefore of practical importance to know this force.

Nor is it abstruse or difficult. For when a current is in train, the accelerating force is in equilibrio with the resistance, and is therefore its immediate measure. Now this accelerating force is precisely equal to the weight of the body of water in motion multiplied by the fraction which expresses the slope. The mean depth being equal to the quotient of the section divided by the border, the section is equal to the product of the mean depth multiplied by the border. Therefore, calling the border *b*, and the mean depth *d*, we have the section = *db*. The body of water in motion is therefore *db s* (because *s* was the slant length of a part whose difference of elevation is 1), and the accelerating forces is $db s \times \frac{1}{s}$, or *db*. But if we would only consider this resistance as corresponding to an unit of the length of the channel, we must divide the quantity *db* by *s*, and the resistance is then $\frac{db}{s}$. And if we would consider the resistance only for an unit of the border, we must divide this expression by *b*; and thus this resistance (taking an inch for the unit) will be expressed for one square inch of the bed by the weight of a bulk of water which has a square inch for its base, and $\frac{d}{s}$ for its height. And lastly, if E be taken for any given superficial extent of the channel or bed, and F the

obstruction, which we consider as a sort of friction, we shall have $F = \frac{Ed}{s}$. *Theory.*

Thus, let it be required to determine in pounds the resistance or friction on a square yard of a channel whose current is in train, which is 10 feet wide, four feet deep, and has a slope of one foot in a mile. Here E is nine feet. Ten feet width and four feet depth give a section of 40 feet. The border is 18 feet. Therefore $d = \frac{40}{18} = 2.1111$, and *s* is 5280. Therefore the friction is the weight of a column of water whose base is nine feet, and height $\frac{2.1111}{52.80}$, or nearly $3\frac{6}{100}$ ounces avoirdupois.

§ 3. Settlement of the Beds of Rivers.

HE who looks with a careless eye at a map of the world, is apt to consider the rivers which ramble over its surface as a chance-medley disposition of the drainers which carry off the waters. But it will afford a most agreeable object to a considerate and contemplative mind, to take it up in this very simple light; and having considered the many ways in which the drenched surface might have been cleared of the superfluous waters, to attend particularly to the very way which nature has followed. In following the troubled waters of a mountain torrent, or the pure streams which trickle from their bases, till he sees them swallowed up in the ocean, and in attending to the many varieties in their motions, he will be delighted with observing how the simple laws of mechanism are made so fruitful in good consequences, both by modifying the motions of the waters themselves, and also by inducing new forms on the surface of the earth, fitted for re-acting on the waters, and producing those very modifications of their motions which render them so beneficial. The permanent beds of rivers are by no means fortuitous gutters hastily scooped out by dashing torrents; but both they and the valleys through which they flow are the patient but unceasing labours of nature, prompted by goodness and directed by wisdom.

Whether we trace a river from the torrents which collect the superfluous waters of heaven, or from the springs which discharge what would otherwise be condemned to perpetual inactivity, each feeder is but a little rill which could not ramble far from its scanty source among growing plants and absorbent earth, without being sucked up and evaporated, did it not meet with other rills in its course. When united they form a body of water still inconsiderable, but much more able, by its bulk, to overcome the little obstacles to its motion; and the rivulet then moves with greater speed, as we have now learned. At the same time, the surface exposed to evaporation and absorption is diminished by the union of the rills. Four equal rills have only the surface of two when united. Thus the portion which escapes arrestment, and travels downward, is continually increasing. This is a happy adjustment to the other operations of nature. Were it otherwise, the lower and more valuable countries would be loaded with the passing waters in addition to their own surplus rains, and the immediate neighbourhood of the sea would be almost covered by the drains of the interior countries.

Theory.

countries. But, fortunately, those passing waters occupy less room as they advance, and by this wise employment of the most simple means, not only are the superfluous waters drained off from our fertile fields, but the drains themselves become an useful part of the country by their magnitude. They become the habitation of a prodigious number of fishes, which share the Creator's bounty; and they become the means of mutual communication of all the blessings of cultivated society. The vague ramblings of the rivers scatter them over the face of the country, and bring them to every door. It is not even an indifferent circumstance, that they gather strength to cut out deep beds for themselves. By this means they cut open many springs. Without this, the produce of a heavy shower would make a swamp which would not dry up in many days. And it must be observed, that the same heat which is necessary for the vigorous growth of useful plants will produce a very copious evaporation. This must return in showers much too copious for immediate vegetation, and the overplus would be destructive. Is it not pleasant to contemplate this adjustment of the great operations of nature, so different from each other, that if chance alone directed the detail, it was almost an infinite odds that the earth would be uninhabitable?

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Their effect on the countries through which they pass.

But let us follow the waters in their operations, and note the face of the countries through which they flow: attending to the breadth, the depth, and the slope of the valleys, we shall be convinced that their present situation is extremely different from what it was in ancient days; and that the valleys themselves are the works of the rivers, or at least of waters which have descended from the heights, loaded with all the lighter matters which they were able to bring away with them. The rivers flow now in beds which have a considerable permanency; but this has been the work of ages. This has given stability, both by filling up and smoothing the valleys, and thus lessening the changing causes, and also by hardening the beds themselves, which are now covered with aquatic plants, and lined with the stones, gravel, and coarser sand, out of which all the lighter matters have been washed away.

The surface of the high grounds is undergoing a continual change; and the ground on which we now walk is by no means the same which was trodden by our remote ancestors. The showers from heaven carry down into the valleys, or sweep along by the torrents, a part of the soil which covers the heights and steep. The torrents carry this soil into the brooks, and these deliver part of it into the great rivers, and these discharge into the sea this fertilizing fat of the earth, where it is swallowed up, and forever lost for the purposes of vegetation. Thus the hillocks lose of their height, the valleys are filled up, and the mountains are laid bare, and show their naked precipices, which formerly were covered over with a flesh and skin, but now look like the skeleton of this globe. The low countries, raised and nourished for some time by the substance of the high lands, will go in their turn to be buried in the ocean; and then the earth, reduced to a dreary flat, will become an immense uninhabitable mass. This catastrophe is far distant, because this globe is in its youth, but it is not the less certain; and the united labours of the human race could not long protract the term.

But, in the mean time, we can trace a beneficent

purpose, and a nice adjustment of seemingly remote circumstances. The grounds near the sources of all our rivers are indeed gradually stripped of their most fertile ingredients. But had they retained them for ages, the sordid inhabitants of the earth, or at least the nobler animals, with man at their head, would not have derived much advantage from it. The general laws of nature produce changes in our atmosphere which must ever render these great elevations unfruitful. That genial warmth, which is equally necessary for the useful plant as for the animal which lives on it, is confined to the lower grounds. The earth, which on the top of Mount Hæmus could only bring forth moss and dittany, when brought into the gardens of Spalatro, produced pot-herbs so luxuriant, that Dioclesian told his colleague Maximian that he had more pleasure in their cultivation than the Roman empire could confer. Thus nature not only provides us manure, but conveys it to our fields. She even keeps it safe in store for us till it shall be wanted. The tracts of country which are but newly inhabited by man, such as great part of America, and the newly discovered regions of Terra Australis, are still almost occupied by marshes and lakes, or covered with impenetrable forests; and they would remain long enough in this state, if population, continually increasing, did not increase industry, and multiply the hands of cultivators along with their necessities. The Author of Nature was alone able to form the huge ridges of the mountains, to model the hillocks and the valleys, to mark out the courses of the great rivers, and give the first trace to every rivulet; but has left to man the task of draining his own habitation and the fields which are to support him, because this is a task not beyond his powers. It was therefore of immense advantage to him that those parts of the globe into which he has not yet penetrated should remain covered with lakes, marshes, and forests, which keep in store the juice of the earth, which the influence of the air and the vivifying warmth of the sun would have expended long ere now in useless vegetation, and which the rains of heaven would have swept into the sea, had they not been thus protected by their situation or their cover. It is therefore the business of man to open up these mines of hoarded wealth, and to thank the Author of all good, who has thus husbanded them for his use, and left them as a rightful heritage for those of after days.

The earth had not in the remote ages, as in our day, those great canals, those capacious voiders, always ready to drain off the rain waters (of which only part is absorbed by the thirsty ground), and the pure waters of the springs from the foot of the hills. The rivers did not then exist, or were only torrents, whose waters, confined by the gullies and glens, are searching for a place to escape. Hence arise those numerous lakes in the interior of great continents, of which there are still remarkable reliques in North America, which in process of time will disappear, and become champaign countries. The most remote from the sea, unable to contain its waters, finds an issue through some gorge of the hills, and pours over its superfluous waters into a lower basin, which, in its turn, discharges its contents into another, and the last of the chain delivers its waters by a river into the ocean. The communication was originally begun by a simple overflowing at the lowest part of the margin. This made a torrent, which quickly

Theory.

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Beneficence displayed in the changes they produce.

Theo. y.

quickly deepened its bed; and this circumstance increasing its velocity, as we have seen, would extend this deepening backward to the lake, and draw off more of its waters. The work would go on rapidly at first, while earth and small stones only resisted the labours of nature; but these being washed away, and the channel hollowed out to the firm rock on all sides, the operation must go on very slowly, till the immense cascade shall undermine what it cannot break off, and then a new discharge will commence, and a quantity of flat ground will emerge all round the lake. The torrent, in the mean time, makes its way down the country, and digs a canal, which may be called the first sketch of a river, which will deepen and widen its bed continually. The water of several basons united, and running together in a great body, will (according to the principles we have established) have a much greater velocity, with the same slope, than those of the lakes in the interior parts of the continent; and the sum of them all united in the bason next the sea, after having broken through its natural mound, will make a prodigious torrent, which will dig for itself a bed so much the deeper as it has more slope and a greater body of waters.

The formation of the first valleys, by cutting open many springs which were formerly concealed under ground, will add to the mass of running waters, and contribute to drain off the waters of these basons. In course of time many of them will disappear, and flat valleys among the mountains and hills are the traces of their former existence.

When nature thus traces out the courses of future rivers, it is to be expected that those streams will most deepen their channels which in their approach to the sea receive into their bed the greatest quantities of rain and spring waters, and that towards the middle of the continent they will deepen their channels less. In these last situations the natural slope of the fields causes the rain-water, rills, and the little rivulets from the springs, to seek their ways to the rivers. The ground can sink only by the flattening of the hills and high grounds; and this must proceed with extreme slowness, because it is only the gentle, though incessant, work of the rains and springs. But the rivers, increasing in bulk and strength, and of necessity flowing over every thing, form to themselves capacious beds in a more yielding soil, and dig them even to the level of the ocean.

The beds of rivers by no means form themselves in one inclined plane. If we should suppose a canal AB (fig. 14.) perfectly straight and horizontal at B, where it joins with the sea, this canal would really be an inclined channel of greater and greater slope as it is farther from B. This is evident; because gravity is directed towards the centre of the earth, and the angle CAB contained between the channel and the plumb-line at A is smaller than the similar angle CDB; and consequently the inclination to the horizon is greater in A than in D. Such a canal therefore would make the bed of a river; and some have thought that this was the real form of nature's work; but the supposition is a whim, and it is false. No river has a slope at all approaching to this. It would be eight inches declivity in the mile next the ocean, 24 inches in the second mile, 40 inches in the third, and so on in the duplicate ratio (for the whole elevation) of the distances from the sea. Such a river would quickly tear up its bed in the

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Beds of rivers not formed in one inclined plane. Fig. 14.

mountains (were there any grounds high enough to receive it), and, except its first cascade, would soon acquire a more gentle slope. But the fact is, and it is the result of the imprescriptible laws of nature, that the continued track of a river is a succession of inclined channels, whose slope diminishes by steps as the river approaches to the sea. It is not enough to say that this results from the natural slope of the countries through which it flows, which we observe to increase in declivity as we go to the interior parts of the continent. Were it otherwise, the equilibrium at which nature aims in all her operations would still produce the gradual diminution of the slope of rivers. Without it they could not be in a permanent train.

That we may more easily form a notion of the manner in which the permanent course of a river is established, let us suppose a stream or rivulet *sa* (fig. 15.) far up the country, make its way through a soil perfectly uniform to the sea, taking the course *abcdef*, and receiving the permanent additions of the streams *ga*, *hb*, *ic*, *kd*, *le*, and that its velocity and slope in all its parts are so suited to the tenacity of the soil and magnitude of its section, that neither do its waters during the annual frosts tear up its banks or deepen its bed, nor do they bring down from the high lands materials which they deposit in the channel in times of smaller velocity. Such a river may be said to be in a permanent state, to be in conservation, or to have stability. Let us call this state of a river its REGIMEN, denoting by the word the proper adjustment of the velocity of the stream to the tenacity of the channel. The velocity of its regimen must be the same throughout, because it is this which regulates its action on the bottom, which is the same from its head to the sea. That its bed may have stability, the mean velocity of the current must be constant, notwithstanding the inequality of discharge through its different sections by the brooks which it receives in its course, and notwithstanding the augmentation of its section as it approaches the sea.

On the other hand, it behoved this exact regimen to commence at the mouth of the river, by the working of the whole body of the river, in concert with the waters of the ocean, which always keep within the same limits, and make the ultimate level invariable. This working will begin to dig the bed, giving it as little breadth as possible: for this working consists chiefly in the efforts of falls and rapid streams, which arise of themselves in every channel which has too much slope. The bottom deepens, and the sides remain very steep, till they are undermined and crumble down; and being then diluted in the water, they are carried down the stream, and deposited where the ocean checks its speed. The banks crumble down anew, the valley or hollow forms; but the section, always confined to its bottom, cannot acquire a great breadth, and it retains a good deal of the form of the trapezium formerly mentioned. In this manner does the regimen begin to be established from *f* to *e*.

With respect to the next part *de*, the discharge or produce is diminished by the want of the brook *le*. It must take a similar form, but its area will be diminished, in order that its velocity may be the same; and its mean depth *d* being less than in the portion *ef* below, the slope must be greater. Without these conditions we could not have the uniform velocity, which the assumed permanency

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How the permanent course of a river is established. Fig. 15.

Theory.

permanency in an uniform soil necessarily supposes. Reasoning after the same manner for all the portions *cd, bc, ab, sa*, we see that the regimen will be successively established in them, and that the slope necessary for this purpose will be greater as we approach the river head. The vertical section or profile of the course of the river *s a b c d e f* will therefore resemble the line *S A B C D E F* which is sketched below, having its different parts variously inclined to the horizontal line *H F*.

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This process of nature

Such is the process of nature to be observed in every river on the surface of the globe. It long appeared a kind of puzzle to the theorists; and it was this observation of the increasing, or at least this continued velocity with smaller slope, as the rivers increased by the addition of their tributary streams, which caused Guglielmini to have recourse to his new principle, the energy of deep waters. We have now seen in what this energy consists. It is only a greater quantity of motion remaining in the middle of a great stream of water after a quantity has been retarded by the sides and bottom; and we see clearly, that since the addition of a new and perhaps an equal stream does not occupy a bed of double surface, the proportion of the retardations to the remaining motion must continually diminish as a river increases by the addition of new streams. If therefore the slope were not diminished, the regimen would be destroyed, and the river would dig up its channel. We have a full confirmation of this in the many works which have been executed on the Po, which runs with rapidity through a rich and yielding soil. About the year 1600, the waters of the Panaro, a very considerable river, were added to the Po Grande; and although it brings along with it in its freshes a vast quantity of sand and mud, it has greatly deepened the whole Tronco di Venezia from the confluence to the sea. This point was clearly ascertained by Manfredi about the 1720, when the inhabitants of the valleys adjacent were alarmed by the project of bringing in the waters of the Rheno, which then ran through the Ferrarese. Their fears were overcome, and the Po Grande continues to deepen its channel every day with a prodigious advantage to the navigations; and there are several extensive marshes which now drain off by it, after having been for ages under water: and it is to be particularly remarked, that the Rheno is the foulest river in its freshes of any in that country. We insert this remark, because it may be of great practical utility, as pointing out a method of preserving and even improving the depth of rivers or drains in flat countries, which is not obvious, and rather appears improper: but it is strictly conformable to a true theory, and to the operations of nature, which never fails to adjust every thing so as to bring about an equilibrium. Whatever the declivity of the country may have been originally, the regimen begins to be settled at the mouths of the rivers, and the slopes are diminished in succession as we recede from the coast. The original slopes inland may have been much greater; but they will (when busy nature has completed her work) be left somewhat, and only so much greater, that the velocity may be the same notwithstanding the diminution of the section and mean depth.

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Effects of freshes.

Freshes will disturb this methodical progress relative only to the successive permanent additions; but their effects chiefly accelerate the deepening of the bed, and the diminution of the slope, by augmenting the velo-

city during their continuance. But when the regimen of the permanent additions is once established, the freshes tend chiefly to widen the bed, without greatly deepening it: for the aquatic plants, which have been growing and thriving during the peaceable state of the river, are now laid along, but not swept away, by the freshes and protect the bottom from their attacks; and the stones and gravel, which must have been left bare in a course of years, working on the soil, will also collect in the bottom, and greatly augment its power of resistance; and even if the floods should have deepened the bottom some small matter, some mud will be deposited as the velocity of the freshes diminishes, and this will remain till the next flood.

We have supposed the soil uniform through the whole course: This seldom happens; therefore the circumstances which insure permanency, or the regimen of a river, may be very different in its different parts and in different rivers. We may say in general, that the farther that the regimen has advanced up the stream in any river, the more slowly will it convey its waters to the sea.

There are some general circumstances in the motion of rivers which it will be proper to take notice of just now, that they may not interrupt our more minute examination of their mechanism, and their explanations will then occur of themselves as corollaries of the propositions which we shall endeavour to demonstrate.

In a valley of small width the river always occupies the lowest part of it; and it is observed, that this is seldom in the middle of the valley, and is nearest to that side on which the slope from the higher grounds is steepest, and this without regard to the line of its course. The river generally adheres to the steepest hills, whether they advance into the plain or retire from it. This general feature may be observed over the whole globe. It is divided into compartments by great ranges of mountains; and it may be observed, that the great rivers hold their course not very far from them, and that their chief feeders come from the other side. In every compartment there is a swell of the low country at a distance from the bounding ridge of mountains; and on the summit of this swell the principal feeders of the great river have their sources.

The name *valley* is given with less propriety to these immense regions, and is more applicable to tracts of champaign land which the eye can take in at one view. Even here we may observe a resemblance. It is not always in the very lowest part of this valley that the river has its bed; although the waters of the river flow in a channel below its immediate banks, these banks are frequently higher than the grounds at the foot of the hills. This is very distinctly seen in Lower Egypt, by means of the canals which are carried backward from the Nile for accelerating its fertilizing inundations. When the calishes are opened to admit the waters, it is always observed that the districts most remote are the first covered, and it is several days before the immediately adjoining fields partake of the blessing. This is a consequence of that general opinion of nature by which the valleys are formed. The river in its floods is loaded with mud, which it retains as long as it rolls rapidly along its limited bed, tumbling its waters over and over, and taking up in every spot as much as it deposits: but as soon as it overflows its banks, the

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In narrow valleys rivers adhere to the steepest hills.

River. River.
 very enlargement of its section diminishes the velocity of the water; and it may be observed still running in the track of its bed with great velocity, while the waters on each side are stagnant at a very small distance: Therefore the water, on getting over the banks, must deposit the heaviest, the firmest, and even the greatest part of its burden, and must become gradually clearer as it approaches the hills. Thus a gentle slope is given to the valley in a direction which is the reverse of what one would expect. It is, however, almost always the case in wide valleys, especially if the great river comes through a soft country. The banks of the brooks and ditches are observed to be deeper as they approach the river, and the merely superficial drains run backwards from it.

⁹²
 The bed of rivers is enlarged near the sea,

We have already observed, that the enlargement of the bed of a river, in its approach to the sea, is not in proportion to the increase of its waters. This would be the case even if the velocity continued the same: and therefore, since the velocity increases, in consequence of the greater energy of a large body of water, which we now understand distinctly, a still smaller bed is sufficient for conveying all the water to the sea.

⁹³
 the water being checked by the tides of the ocean.

This general law is broken, however, in the immediate neighbourhood of the sea; because in this situation the velocity of the water is checked by the passing flood-tides of the ocean. As the whole waters must still be discharged, they require a larger bed, and the enlargement will be chiefly in width. The sand and mud are deposited when the motion is retarded. The depth of the mouth of the channel is, therefore, diminished. It must therefore become wider. If this be done on a coast exposed to the force of a regular tide, which carries the waters of the ocean across the mouth of the river, this regular enlargement of the mouth will be the only consequence, and it will generally widen till it washes the foot of the adjoining hills; but if there be no tide in the sea, or a tide which does not set across the mouth of the river, the sands must be deposited at the sides of the opening, and become additions to the shore, lengthening the mouth of the channel. In this sheltered situation, every trivial circumstance will cause the river to work more on particular parts of the bottom, and deepen the channel there. This keeps the mud suspended in such parts of the channel, and it is not deposited till the stream has shot farther out into the sea. It is deposited on the sides of those deeper parts of the channel, and increases the velocity in them, and thus still farther protracts the deposition. Rivers so situated will not only lengthen their channels, but will divide them, and produce islands at their mouths. A bush, a tree torn up by the roots by a mountain torrent, and floated down the stream, will thus inevitably produce an island; and rivers in which this is common will be continually shifting their mouths. The Mississippi is a most remarkable instance of this. It has a long course through a rich soil, and disembogues itself into the bay of Mexico, in a place where there is no *passing tide*, as may be seen by comparing the hours of high water in different places. No river that we know carries down its stream such numbers of rooted-up trees; they frequently interrupt the navigation, and render it always dangerous in the night-time. This river is so beset with flats and shifting sands at its mouth, that the most experienced pilots are puzzled;

and it has protruded its channel above 50 miles in the short period that we have known it. The discharge of the Danube is very similar: so is that of the Nile; for it is discharged into a still corner of the Mediterranean. It may now be said to have acquired considerable permanency; but much of this is owing to human industry, which strips it as much as possible of its subsidence matter. The Ganges too is in a situation pretty similar, and exhibits similar phenomena. The Maragnon might be noticed as an exception; but it is not an exception. It has flowed very far in a level bed, and its waters come pretty clear to Para; but besides, there is a strong transverse tide, or rather current, at its mouth, setting to the south-east both during flood and ebb. The mouth of the Po is perhaps the most remarkable of any on the surface of this globe, and exhibits appearances extremely singular. Its discharge is into a sequestered corner of the Adriatic. Though there be a more remarkable tide in this gulf than in any part of the Mediterranean, it is still but trifling, and it either sets directly in upon the mouth of the river, or retires straight away from it. The river has many mouths, and they shift prodigiously. There has been a general increase of the land very remarkable. The marshes where Venice now stands were, in the Augustan age, everywhere penetrable by the fishing boats, and in the 5th century could only bear a few miserable huts; now they are covered with crowds of stately buildings. Ravenna, situated on the southernmost mouth of the Po, was, in the Augustan age, at the extremity of a swamp, and the road to it was along the top of an artificial mound, made by Augustus at immense expence. It was, however, a fine city, containing extensive docks, arsenals, and other massy buildings, being the great military port of the empire, where Augustus laid up his great ships of war. In the Gothic times it became almost the capital of the Western empire, and was the seat of government and of luxury. It must, therefore, be supposed to have every accommodation of opulence, and we cannot doubt of its having paved streets, wharfs, &c.; so that its wealthy inhabitants were at least walking dryfooted from house to house. But now it is an Italian mile from the sea, and surrounded with vineyards and cultivated fields, and is accessible in every direction. All this must have been formed by depositions from the Po, flowing through Lombardy loaded with the spoils of the Alps, which were here arrested by the reeds and bulrushes of the marsh. These things are in common course; but when wells are dug, we come to the pavements of the ancient city, and these pavements are all on one exact level, and they are *eight feet below the surface of the sea at low water*. This cannot be ascribed to the subsiding of the ancient city. This would be irregular, and greatest among the heavy buildings. The tomb of Theodoric remains, and the pavement round it is on a level with all the others. The lower story is always full of water; so is the lower story of the cathedral to the depth of three feet. The ornaments of both these buildings leave no room to doubt that they were formerly dry; and such a building as the cathedral could not sink without crumbling into pieces.

It is by no means easy to account for all this. The depositions of the Po and other rivers must raise the ground; and yet the rivers must still flow over all. We must conclude that the surface of the Adriatic is by no means

^{Rivers.} means level, and that it slopes like a river from the Lagoon of Venice to the eastward. In all probability it even slopes considerably outwards from the shore. This will not hinder the alternations of ebb and flow tide, as will be shown in its proper place. The whole shores of this gulf exhibit most uncommon appearances.

⁹⁴
Rivers are convex athwart the stream, and the cause of it.

The last general observation which we shall make in this place is, that the surface of a river is not flat, considered athwart the stream, but convex: this is owing to its motion. Suppose a canal of stagnant water; its surface would be a perfect level. But suppose it possible by any means to give the middle waters a motion in the direction of its length, they must drag along with them the waters immediately contiguous. These will move less swiftly, and will in like manner drag the waters without them; and thus the water at the sides being abstracted, the depth must be less, and the general surface must be convex across. The fact in a running stream is similar to this; the side waters are withheld by the sides, and every filament is moving more slowly than the one next it towards the middle of the river, but faster than the adjoining filament on the land side. This alone must produce a convexity of surface, But besides this, it is demonstrable that the pressure of a running stream is diminished by its motion, and the diminution is proportional to the height which would produce the velocity with which it is gliding past the adjoining filament. This convexity must in all cases be very small. Few rivers have the velocity nearly equal to eight feet per second, and this requires a height of one foot only. An author quoted by M. Buffon says, that he has observed on the river Aveiron an elevation of three feet in the middle during floods; but we suspect some error in the observation.

§ 4. Of the Windings of Rivers.

⁹⁵
Winding course of rivers, how formed.

RIVERS are seldom straight in their course. Formed by the hand of nature, they are accommodated to every change of circumstance. They wind around what they cannot get over, and work their way to either side according as the resistance of the opposite bank makes a straight course more difficult; and this seemingly fortuitous rambling distributes them more uniformly over the surface of a country, and makes them every where more at hand, to receive the numberless rills and rivulets which collect the waters of our springs and the superfluities of our showers, and to comfort our habitations with the many advantages which cultivation and society can derive from their presence. In their feeble beginnings the smallest inequality of slope or consistency is enough to turn them aside and make them ramble through every field, giving drink to our herds and fertility to our soil. The more we follow nature into the minutiae of her operations, the more must we admire the inexhaustible fertility of her resources, and the simplicity of the means by which she produces the most important and beneficial effects. By thus twisting the course of our rivers into 10,000 shapes, she keeps them long amidst our fields, and thus compensates for the declivity of the surface, which would otherwise tumble them with great rapidity into the ocean, loaded with the best and richest of our soil. Without this, the showers of heaven would have little influence in supplying the waste of incessant evaporation. But as things are, the rains are kept slowly trickling along the sloping sides of our hills

and steep, winding round every clod, nay every plant, which lengthens their course, diminishes their slope, checks their speed, and thus prevents them from quickly brushing off from every part of the surface the lightest and best of the soil. The fittest of our holm lands would be too steep, and the rivers would shoot along through our finest meadows, hurrying every thing away with them, and would be unfit for the purposes of inland conveyance, if the inequalities of soil did not make them change this headlong course for the more beautiful meanders which we observe in the course of the small rivers winding through our meadows. Those rivers are in general the straightest in their course which are the most rapid, and which roll along the greatest bodies of water; such are the Rhone, the Po, the Danube. The smaller rivers continue more devious in their progress, till they approach the sea, and have gathered strength from all their tributary streams.

Every thing aims at an equilibrium, and this directs ⁹⁶ What nature left for man to perform. even the rambling of rivers. It is of importance to understand the relation between the force of a river and the resistance which the soil opposes to those deviations from a rectilinear course; for it may frequently happen that the general procedure of nature may be inconsistent with our local purposes. Man was set down on this globe, and the task of cultivating it was given him by nature, and his chief enjoyment seems to be to struggle with the elements. He must not find things to his mind, but he must mould them to his own fancy. Yet even this seeming anomaly is one of nature's most beneficent laws; and his exertions must still be made in conformity with the general train of the operations of mechanical nature: and when we have any work to undertake relative to the course of rivers, we must be careful not to thwart their general rules, otherwise we shall be sooner or later punished for their infraction. Things will be brought back to their former state, if our operations are inconsistent with that equilibrium which is constantly aimed at, or some new state of things which is equivalent will be soon induced. If a well regulated river has been improperly deepened in some place, to answer some particular purpose of our own, or if its breadth has been improperly augmented, we shall soon see a deposition of mud or sand choak up our fancied improvements; because, as we have enlarged the section without increasing the slope or the supply, the velocity must diminish, and floating matters must be deposited.

It is true, we frequently see permanent channels where the forms are extremely different from that which the waters would dig for themselves in a uniform soil, and which approaches a good deal to the trapezium described formerly. We see a greater breadth frequently compensate for a want of depth; but all such deviations are a sort of constraint, or rather are indications of inequality of soil. Such irregular forms are the works of nature; and if they are permanent, the equilibrium is obtained. Commonly the bottom is harder than the sides, consisting of the coarsest of the sand and of gravel; and therefore the necessary section can be obtained only by increasing the width. We are accustomed to attend chiefly to the appearances which prognosticate mischief, and we interpret the appearances of a permanent bed in the same way, and frequently form very false judgments. When we see
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Theory. one bank low and flat, and the other high and abrupt, we suppose that the waters are passing along the first in peace, and with a gentle stream, but that they are rapid on the other side, and are tearing away the bank; but it is just the contrary. The bed being permanent, things are in equilibrio, and each bank is of a form just competent to that equilibrium. If the soil on both sides be uniform, the stream is most rapid on that side where the bank is low and flat, for in no other form would it withstand the action of the stream; and it has been worn away till its flatness compensates for the greater force of the stream. The stream on the other side must be more gentle, otherwise the bank could not remain abrupt. In short, in a state of permanency, the velocity of the stream and form of the bank are just suited to each other. It is quite otherwise before the river has acquired its proper regimen.

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Necessity of attending to nature in regulating the course of rivers.

A careful consideration therefore of the general features of rivers which have settled their regimen, is of use for informing us concerning their internal motions, and directing us to the most effectual methods of regulating their course.

We have already said that perpendicular brims are inconsistent with stability. A semicircular section is the form which would produce the quickest train of a river whose expanse and slope are given; but the banks at B and D (fig. 16.) would crumble in, and lie at the bottom, where their horizontal surface would secure them from farther change. The bed will acquire the form G c F, of equal section, but greater width, and with brims less shelving. The proportion of the velocities at A and c may be the same with that of the velocities at A and C; but the velocity at G and F will be less than it was formerly at B, C, or D; and the velocity in any intermediate point E, being somewhat between those at F and c, must be less than it was in any intermediate point of the semicircular bed. The velocities will therefore decrease along the border from c towards G and F, and the steepness of the border will augment at the same time, till, in every point of the new border G c F, these two circumstances will be so adjusted that the necessary equilibrium is established.

Fig. 16.

The same thing must happen in our trapezium. The slope of the brims may be exact, and will be retained; it will, however, be too great anywhere below, where the velocity is greater, and the sides will be worn away till the banks are undermined and crumble down, and the river will maintain its section by increasing its width. In short, no border made up of straight lines is consistent with that gradation of velocity which will take place whenever we depart from a semicircular form. And we accordingly see, that in all natural channels the section has a curvilinear border, with the slope increasing gradually from the bottom to the brim.

These observations will enable us to understand how nature operates when the inequality of surface or of tenacity obliges the current to change its direction, and the river forms an elbow.

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Conditions necessary for a permanent regimen.

Supposing always that the discharge continues the same, and that the mean velocity is either preserved or restored, the following conditions are necessary for a permanent regimen.

1. The depth of water must be greater in the elbow than anywhere else.

2. The main stream, after having struck the concave bank, must be reflected in an equal angle, and must then be in the direction of the next reach of the river.

3. The angle of incidence must be proportioned to the tenacity of the soil.

4. There must be in the elbow an increase of slope, or of head of water, capable of overcoming the resistance occasioned by the elbow.

The reasonableness, at least, of these conditions will appear from the following considerations.

1. It is certain that force is expended in producing this change of direction in a channel which by supposition diminishes the current. The diminution arising from any cause which can be compared with friction must be greater when the stream is directed against one of the banks. It may be very difficult to state the proportion, and it would occupy too much of our time to attempt it; but it is sufficient that we be convinced that the retardation is greater in this case. We see no cause to increase the mean velocity in the elbow, and we must therefore conclude that it is diminished. But we are supposing that the discharge continues the same; the section must therefore augment, or the channel increase its transverse dimensions. The only question is, In what manner it does this, and what change of form does it affect, and what form is competent to the final equilibrium and the consequent permanency of the bed? Here there is much room for conjecture. Mr Buat reasons as follows. If we suppose that the points B and C (fig. 17.) continue on a level, and that the points H and I at the beginning of the next reach are also on a level, it is an inevitable consequence that the slope along CMI must be greater than along BEH, because the depression of H below B is equal to that of I below C, and BEH is longer than CMI. Therefore the velocity along the convex bank CMI must be greater than along BEH. There may even be a stagnation and an eddy in the contrary direction along the concave bank. Therefore, if the form of the section were the same as up the stream, the sides could not stand on the convex bank. When therefore the section has attained a permanent form, and the banks are again in equilibrio with the action of the current, the convex bank must be much flatter than the concave. If the water is really still on the concave bank, that bank will be absolutely perpendicular; nay, may overhang.—Accordingly, this state of things is matter of daily observation, and justifies our reasoning, and entitles us to say, that this is the nature of the internal motion of the filaments which we cannot distinctly observe. The water moves most rapidly along the convex bank, and the thread of the stream is nearest to this side. Reasoning in this way the section, which we may suppose to have been originally of the form M b a E (fig. 18.) assumes the shape M B A E.

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Reasonableness of these conditions.

Fig. 17.

2. Without presuming to know the mechanism of the internal motions of fluids, we know that superficial waves are reflected precisely as if they were elastic bodies, making the angles of incidence and reflection equal. In as far therefore as the superficial wave is concerned in the operation, Mr Buat's second position is just. The permanency of the next reach requires that its axis shall be in the direction of the line EP which makes the angle GEP = FEN. If the next reach has the direction EQ, MR, the wave reflected in the line ES will work on the bank at S, and will be reflected in the line ST, and work again

Fig. 18.

Theory.

again on the opposite bank at T. We know that the effect of the superficial motion is great, and that it is the principal agent in destroying the banks of canals. So far therefore Mr Buat is right. We cannot say with any precision or confidence how the actions of the under filaments are modified; but we know no reason for not extending to the under filaments what appears so probable with respect to the surface water.

3. The third position is no less evident. We do not know the mode of action of the water on the bank; but our general notions on this subject, confirmed by common experience, tell us that the more obliquely a stream of water beats on any bank, the less it tends to undermine it or wash it away. A stiff and cohesive soil therefore will suffer no more from being almost perpendicularly buffeted by a stream than a friable sand would suffer from water gliding along its face. Mr Buat thinks, from experience, that a clay bank is not sensibly affected till the angle FEB is about 36 degrees.

4. Since there are causes of retardation, and we still suppose that the discharge is kept up, and that the mean velocity, which had been diminished by the enlargement of the section, is again restored, we must grant that there is provided, in the mechanism of these motions, an accelerating force adequate to this effect. There can be no accelerating force in an open stream but the superficial slope. In the present case it is undoubtedly so; because by the deepening of the bottom where there is an elbow in the stream, we have of necessity a counter slope. Now, all this head of water, which must produce the augmentation of velocity in that part of the stream which ranges round the convex bank, will arise from the check which the water gets from the concave bank. This occasions a gorge or swell up the stream, enlarges a little the section at BVC; and this, by the principle of uniform motion, will augment all the velocities, deepen the channel, and put every thing again into its train as soon as the water gets into the next reach. The water at the bottom of this basin has very little motion, but it defends the bottom by this very circumstance.

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Remarks
on these
conditions,
and the rea-
sons of
them.

Such are the notions which Mr de Buat entertains of this part of the mechanism of running waters. We cannot say that they are very satisfactory, and they are very opposite to the opinions commonly entertained on the subject. Most persons think that the motion is most rapid and turbulent on the side of the concave bank, and that it is owing to this that the bank is worn away till it become perpendicular, and that the opposite bank is flat, because it has not been gnawed away in this manner. With respect to this general view of the matter, these persons may be in the right; and when a stream is turned into a crooked and yielding channel for the first time, this is its manner of action. But Mr Buat's aim is to investigate the circumstances which obtain in the case of a regimen; and in this view he is undoubtedly right as to the facts, though his mode of accounting for these facts may be erroneous. And as this is the only useful view to be taken of the subject, it ought chiefly to be attended to in all our attempts to procure stability to the bed of a river, without the expensive helps of masonry, &c. If we attempt to secure permanency by deepening on the inside of the elbow, our bank will undoubtedly crumble down, diminish the passage, and occasion a more violent action on the hollow bank. The most effectual mean of security is to enlarge the section: and if we do this on the in-

side bank, we must do it by widening the stream very much, that we may give a very sloping bank. Our attention is commonly drawn to it when the hollow bank is giving way, and with a view to stop the ravages of the stream. Things are not now in a state of permanency, but nature is working in her own way to bring it about. This may not suit *our* purpose, and we must thwart her. The phenomena which we then observe are frequently very unlike to those described in the preceding paragraphs. We see a violent tumbling motion in the stream towards the hollow bank. We see an evident accumulation of water on that side, and the point B is frequently higher than C. This regorging of the water extends to some distance, and is of itself a cause of greater velocity, and contributes, like a head of stagnant water, to force the stream through the bend, and to deepen the bottom. This is clearly the case when the velocity is excessive, and the hollow bank able to abide the shock. In this situation the water thus heaped up escapes where it best can; and as the water, obstructed by an obstacle put in its way, escapes by the sides, and there has its velocity increased, so here the water gorged up against the hollow bank swells over towards the opposite side, and passes round the convex bank with an increased velocity. It depends much on the adjustment between the velocity and consequent accumulation, and the breadth of the stream and the angle of the elbow, whether this augmentation of velocity shall reach the convex bank; and we sometimes see the motion very languid in that place, and even depositions of mud and sand are made there. The whole phenomena are too complicated to be accurately described in general terms, even in the case of perfect regimen: for this regimen is relative to the consistence of the channel; and when this is very great, the motions may be most violent in every quarter. But the preceding observations are of importance, because they relate to ordinary cases and to ordinary channels.

It is evident, from Mr Buat's second position, that the proper form of an elbow depends on the breadth of the stream as well as on the radius of curvature, and that every angle of elbow will require a certain proportion between the width of the river and the radius of the sweep. Mr Buat gives rules and formulæ for all these purposes, and shows that in one sweep there may be more than one reflection or rebound. It is needless to enlarge on this matter of mere geometrical discussion. It is with the view of enabling the engineer to trace the windings of a river in such a manner that there shall be no rebounds which shall direct the stream against the sides, but preserve it always in the axis of every reach. This is of consequence, even when the bends of the river are to be secured by masonry or piling; for we have seen the necessity of increasing the section, and the tendency which the waters have to deepen the channel on that side where the rebound is made. This tends to undermine our defences, and obliges us to give them deeper and more solid foundations in such places. But any person accustomed to the use of the scale and compasses will form to himself rules of practice equally sure and more expeditious than Mr de Buat's formulæ.

We proceed, therefore, to what is more to our purpose, the consideration of the resistance caused by an elbow, and the methods of providing a force capable of overcoming it. We have already taken notice of the salutary consequences arising from the rambling course

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Resistance
caused by
an elbow,
and mode
of over-
coming it.

Theory. course of rivers, inasmuch as it more effectually spreads them over the face of a country. It is no less beneficial by diminishing their velocity. This it does both by lengthening their course, which diminishes the declivity, and by the very resistance which they meet with at every bend. We derive the chief advantages from our rivers, when they no longer shoot their way from precipice to precipice, loaded with mud and sand, but peaceably roll along their clear waters, purified during their gentler course, and offer themselves for all the purposes of pasturage, agriculture, and navigation. The more a river winds its way round the foot of the hills, the more is the resistance of its bed multiplied; the more obstacles it meets with in its way from its source to the sea, the more moderate is its velocity; and instead of tearing up the very bowels of the earth, and digging for itself a deep trough, along which it sweeps rocks and rooted-up trees, it flows with majestic pace even with the surface of our cultivated grounds, which it embellishes and fertilizes.

We may with safety proceed on the supposition, that the force necessary for overcoming the resistance arising from a rebound is as the square of the velocity; and it is reasonable to suppose it proportional to the square of the sine of the angle of incidence, and this for the reasons given for adopting this measure of the general *RESISTANCE of Fluids*. It cannot, however, claim a greater confidence here than in that application; and it has been shown in that article with what uncertainty and limitations it must be received. We leave it to our readers to adopt either this or the simple ratio of the sines, and shall abide by the duplicate ratio with Mr Buat, because it appears by his experiments that this law is very exactly observed in tubes in inclinations not exceeding 40° ; whereas it is in these small angles that the application to the general resistance of fluids is most in fault. But the correction is very simple, if this value shall be found erroneous. There can be little doubt that the force necessary for overcoming the resistance will increase as the number of rebounds.—Therefore we may express the

resistance, in general, by the formula $r = \frac{V^2 s^2 n}{m}$; where r is the resistance, V the mean velocity of the stream, s the sine of the angle of incidence, n the number of equal rebounds (that is, having equal angles of incidence), and m is a number to be determined by experiment. Mr de Buat made many experiments on the resistance occasioned by the bendings of pipes, none of which differed from the result of the above formula above one part in twelve; and he concludes, that the resistance to one bend may be estimated at $\frac{V^2 s^2}{3000}$.

The experiment was in this form: A pipe of one inch diameter, and 10 feet long, was formed with 10 rebounds of 36° each. A head of water was applied to it, which gave the water a velocity of six feet per second. Another pipe of the same diameter and length, but without any bendings, was subjected to a pressure of a head of water, which was increased till the velocity of efflux was also six feet per second. The additional head of water was $5\frac{1}{5}$ inches. Another of the same diameter and length, having one bend of $24^\circ 34'$, and running 85 inches per second, was compared with a straight pipe having the same velocity, and the diffe-

rence of the heads of water was $\frac{17}{100}$ of an inch. A computation from these two experiments will give the above result, or in English measure, $r = \frac{V^2 s^2}{3200}$ very nearly. It is probable that this measure of the resistance is too great; for the pipe was of uniform diameter even in the bends: whereas in a river properly formed, where the regimen is exact, the capacity of the section of the bend is increased.

The application of this theory to inclined tubes and to open streams is very obvious, and very legitimate and safe. Let AB (fig. 19.) be the whole height of the reservoir A B I K, and BC the horizontal length of a pipe, containing any number of rebounds, equal or unequal, but all regular, that is, constructed according to the conditions formerly mentioned. The whole head of water should be conceived as performing, or as divided into portions which perform, three different offices.—

One portion, AD = $\frac{V^2}{505}$, impels the water into the

entry of the pipe with the velocity with which it really moves in it; another portion EB is in equilibrio with the resistances arising from the mere length of the pipe expanded into a straight line; and the third portion DE serves to overcome the resistance of the bends. If, therefore, we draw the horizontal line BC, and, taking the pipe BC out of its place, put it in the position DH, with its mouth C in H, so that DH is equal to BC, the water will have the same velocity in it that it had before. *N. B.* For greater simplicity of argument, we may suppose that when the pipe was inserted at B, its bends lay all in a horizontal plane, and that when it is inserted at D, the plane in which all its bends lie slopes only in the direction DH, and is perpendicular to the plane of the figure. We repeat it, the water will have the same velocity in the pipes BC and DH, and the resistances will be overcome. If we now prolong the pipe DH towards L to any distance, repeating continually the same bendings in a series of lengths, each equal to DH, the motion will be continued with the velocity corresponding to the pressure of the column AD; because the declivity of the pipe is augmented in each length equal to DH, by a quantity precisely sufficient for overcoming all the resistances in that length; and the true slope in these cases is BE + ED, divided by the expanded length of the pipe BC or DH.

The analogy which we were enabled to establish between the uniform motion or the train of pipes and of open streams, intitles us now to say, that when a river has bendings, which are regularly repeated at equal intervals, its slope is compounded of the slope which is necessary for overcoming the resistance of a straight channel of its whole expanded length, agreeably to the formula for uniform motion, and of the slope which is necessary for overcoming the resistance arising from its bending alone.

Thus, let there be a river which, in the expanded course of 6000 fathoms, has 10 elbows, each of which has 30° of rebound; and let its mean velocity be 20 inches in a second. If we should learn its whole slope in this 6000 fathoms, we must first find (by the formula of uniform motion) the slope s which will produce the velocity of 20 inches in a straight river of this length,

Theory.

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Theory ap-
plied to in-
clined tubes
and open
stream
Fig. 19.

section,

Theory. section, and mean depth. Suppose this to be $\frac{1}{1000}$, or 20 inches in this whole length. We must then find (by the formula $\frac{V^2 \text{Sin}^2}{3200}$) the slope necessary for overcoming the resistance of 10 rebounds of 30° each. This

Theory. we shall find to be $6\frac{2}{3}$ inches in the 6000 fathoms. Therefore the river must have a slope of $26\frac{2}{3}$ inches in 6000 fathoms, or $\frac{1}{1000}$; and this slope will produce the same velocity which 20 inches, or $\frac{1}{1000}$, would do in a straight running river of the same length.

PART II. PRACTICAL INFERENCES.

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Approximation by trial and correction recommended to practical engineers.

HAVING thus established a theory of a most important part of hydraulics, which may be considered in as a just representation of nature's procedure, we shall apply it to the examination of the chief results of every thing which art has contrived for limiting the operations of nature, or modifying them so as to suit our particular views. Trusting to the detail which we have given of the connecting principles, and the chief circumstances which co-operate in producing the ostensible effect; and supposing that such of our readers as are interested in this subject will not think it too much trouble to make the applications in the same detail; we shall content ourselves with merely pointing out the steps of the process, and showing their foundation in the theory itself: and frequently, in place of the direct analysis which the theory enables us to employ for the solution of the problems, we shall recommend a process of approximation by trial and correction, sufficiently accurate, and more within the reach of practical engineers. We are naturally led to consider in order the following articles.

1. The effects of permanent additions of every kind to the waters of a river, and the most effectual methods of preventing or removing inundations.
2. The effects of weirs, bars, sluices, and keeps of every kind, for raising the surface of a river; and the similar effects of bridges, piers, and every thing which contracts the section of the stream.
3. The nature of canals; how they differ from rivers in respect of origin, discharge, and regimen, and what conditions are necessary for their most perfect construction.
4. Canals for draining land, and drafts or canals of derivation from the main stream. The principles of their construction, so that they may suit their intended purposes, and the change which they produce on the main stream, both above and below the point of derivation.

Of the Effects of Permanent Additions to the Waters of a River.

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Problems and examples on the effects of permanent additions to the waters of a river.

FROM what has been said already, it appears that to every kind of soil or bed there corresponds a certain velocity of current, too small to hurt it by digging it up, and too great to allow the deposition of the materials which it is carrying along. Supposing this known for any particular situation, and the quantity of water which the channel must of necessity discharge, we may wish to learn the smallest slope which must be given to this stream, that the waters may run with the required velocity. This suggests,

PROB. I. Given the discharge D of a river, and V its

velocity of regimen: required the smallest slope s , and the dimensions of its bed?

Since the slope must be the smallest possible, the bed must have the form which will give the greatest mean depth d , and should therefore be the trapezium formerly described; and its area and perimeter are the same with those of a rectangle whose breadth is twice its height

h . These circumstances gives us the equation $\frac{D}{V} = 2h^2$.

For the area of the section is twice the square of the height, and the discharge is the product of this area

and the velocity. Therefore $\sqrt{\frac{D}{2V}} = h$ and $\sqrt{\frac{2D}{V}} =$ the breadth b .

The formula of uniform motion gives $\sqrt{s} = L\sqrt{s+1.6} = \frac{297(\sqrt{d}-0.1)}{V+0.3(\sqrt{d}-0.1)}$. Instead of $\sqrt{d}-0.1$, put its

equal $\sqrt{\frac{h}{2}}-0.1$, and every thing being known in the

second member of this equation, we easily get the value of s by a few trials after the following manner: Suppose that the second member is equal to any number, such as 9. First suppose that \sqrt{s} is = 9. Then the hyperbolic logarithm of $9+1.6$ or of 10.6 is 2.36. Therefore we have $\sqrt{s} - L\sqrt{s+1.6} = 9 - 2.36 = 6.64$; whereas it should have been = 9. Therefore say $6.64 : 9 = 9 : 11.2$ nearly. Now suppose that \sqrt{s} is = 12.2. Then $L 12.2+1.6 = L 13.8 = 2.625$ nearly, and $12.2 - 2.625$ is 9.575, whereas it should be 9. Now we find that changing the value of \sqrt{s} from 9 to 12.2 has changed the answer from 6.64 to 9.575, or a change of 3.2 in our assumption has made a change of 2.935 in the answer, and has left an error of 0.575. Therefore say $2.935 : 0.575 = 3.2 : 0.628$. Then, taking 0.628 from 12.2, we have (for our next assumption or value of \sqrt{s}) 11.572. Now $11.572 + 1.6 = 13.172$, and $L 13.172$ is 2.58 nearly. Now try this last value $11.561 - 2.58 = 9.008$, sufficiently exact. This may serve as a specimen of the trials by which we may avoid an intricate analysis.

PROB. II. Given the discharge D, the slope s , and the velocity V, of permanent regimen, to find the dimensions of the bed.

Let x be the width, and y the depth of the channel, and S the area of the section. This must be $= \frac{D}{V}$, which is therefore $= xy$. The denominator s being given, we may make $\sqrt{s} - L\sqrt{s+1.6} = \sqrt{B}$, and the formula

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formula of mean velocity will give $V = \frac{207(\sqrt{d}-0.1)}{\sqrt{B}}$

$-0.3(\sqrt{d}-0.1)$, which we may express thus: $V =$

$(\sqrt{d}-0.1) \left(\frac{297}{\sqrt{B}} - 0.3 \right)$, which gives $\frac{V}{\frac{297}{\sqrt{B}} - 0.3} =$

$\sqrt{d}-0.1$; and finally, $\frac{V}{\frac{297}{\sqrt{B}} - 0.3} + 0.1 = \sqrt{d}$.

Having thus obtained what we called the mean depth, we may suppose the section rectangular. This gives $d = \frac{xy}{x+2y}$. Thus we have two equations, $S = xy$

and $d = \frac{xy}{x+2y}$.

From which we obtain $x = \sqrt{\left(\frac{S}{2d}\right)^2 - 2S} + \frac{S}{2d}$.

And having the breadth y and area S , we have $y = \frac{S}{x}$.

And then we may change this for the trapezium often mentioned.

These are the chief problems on this part of the subject, and they enable us to adjust the slope and channel of a river which receives any number of successive permanent additions by the influx of other streams. This last informs us of the rise which a new supply will produce, because the additional supply will require additional dimensions of the channel; and as this is not supposed to increase in breadth, the addition will be in depth. The question may be proposed in the following problem.

PROB. III. Given the slope s , the depth and the base of a rectangular bed (or a trapezium), and consequently the discharge D , to find how much the section will rise, if the discharge be augmented by a given quantity.

Let h be the height after the augmentation, and w the width for the rectangular bed. We have in any uniform current $\sqrt{d} = \frac{V}{\frac{297}{\sqrt{B}} - 0.3}$. Raising this to a square,

and putting for d and V their values $\frac{wh}{w+2h}$ and $\frac{D}{wh}$, and

making $\frac{297}{\sqrt{B}} - 0.3 = K$, the equation becomes $\frac{wh}{w+2h}$

$= \left(\frac{D}{whK} + 0.1 \right)^2$. Raising the second member to a square, and reducing, we obtain a cubic equation, to be solved in the usual manner.

But the solution would be extremely complicated. We may obtain a very expeditious and exact approximation from this consideration, that a small change in one of the dimensions of the section will produce a much greater change in the section and the discharge than in the mean depth d . Having therefore augmented the unknown dimension, which is here the height, make use of this to form a new mean depth, and then the new

equation $\sqrt{d} = \frac{D}{wh \left(\frac{297}{\sqrt{B}} - 0.3 \right)} + 0.1$ will give us ano-

ther value of h , which will rarely exceed the truth by $\frac{1}{10}$. This serves (by the same process) for finding another, which will commonly be sufficiently exact. We shall illustrate this by an example.

Let there be a river whose channel is a rectangle 150 feet wide and six feet deep, and which discharges 1500 cubic feet of water per second, having a velocity of 20 inches, and slope of $\frac{1}{113.36}$, or about $\frac{1}{113}$ of an inch in 100 fathoms. How much will it rise if it receives an addition which triples its discharge? and what will be its velocity?

If the velocity remained the same, its depth would be tripled; but we know by the general formula that its velocity will be greatly increased, and therefore its depth will not be tripled. Suppose it to be doubled, and to become 12 feet. This will give $d = 10.34483$, or 124.138 inches; then the equation $\sqrt{d}-0.1 =$

$\frac{D}{wh \left(\frac{297}{\sqrt{B}} - 0.3 \right)}$, or $h = \frac{D}{w(\sqrt{d}-0.1) \left(\frac{297}{\sqrt{B}} - 0.3 \right)}$, and in

which we have $\sqrt{B} = 107.8$, $D = 4500$; $\sqrt{d}-0.1 = 11.0417$, will give $h = 13.276$; whereas it should have been 12. This shows that our calculated value of d was too small. Let us therefore increase the depth by 0.9, or make it 12.9, and repeat the calculation.

This will give us $\sqrt{d}-0.1 = 11.3927$, and $h = 12.867$, instead of 13.276. Therefore augmenting our data 0.9 changes our answer 0.409. If we suppose these small changes to retain their proportions, we may conclude that if 12 be augmented by the quantity $x \times 0.9$, the quantity 13.276 will diminish by the quantity $x \times 0.409$. Therefore that the estimated value of h may agree with the one which results from the calculation, we must have $12 + x \times 0.9 = 13.276 - x \times 0.409$. This

will give $x = \frac{1.276}{1.309} = 0.9748$, and $x \times 0.9 = 0.8773$; and $h = 12.8773$. If we repeat the calculation with this value of h , we shall find no change.

This value of h gives $d = 131.8836$ inches. If we now compute the new velocity by dividing the new discharge 4500 by the new area 150×12.8773 , we shall find it to be 27.95 inches, in place of 20, the former velocity.

We might have made a pretty exact first assumption, by recollecting what was formerly observed, that when the breadth is very great in proportion to the depth, the mean depth differs insensibly from the real depth, or rather follows nearly the same proportions, and that the velocities are proportional to the square roots of the depths. Call the first discharge d , the height h , and velocity v , and let D , H , and V , express these

things in their augmented state. We have $v = \frac{d}{wh}$ and

$V = \frac{D}{wH}$, and $v : V = \frac{d}{h} : \frac{D}{H}$, and $v^2 : V^2 = \frac{d^2}{h^2} : \frac{D^2}{H^2}$.

But by this remark $v^2 : V^2 = h : H$. Therefore $h : H = \frac{d^2}{h^2} : \frac{D^2}{H^2}$, and $\frac{hD^2}{H^2} = \frac{Hd^2}{h^2}$, and $h^3D^2 = H^3d^2$, and $d^2 :$

$D^2 = h^3 : H^3$ (a useful theorem) and $H^3 = \frac{h^3D^2}{d^2}$, and

$H = \sqrt[3]{\frac{h^3D^2}{d^2}} = 12.48$.

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Or we might have made the same assumption by the remark also formerly made on this case, that the squares of the discharges are nearly as the cubes of the height, or $1500^2 : 4500^2 = 6^3 : 12.48^3$.

And in making these first guesses, we shall do it more exactly, by recollecting that a certain variation of the mean depth d requires a greater variation of the height, and the increment will be to the height nearly as half the height to the width, as may easily be seen. Therefore, if we add to 12.48 its $\frac{6.24}{150}$ th part, or its 24th part,

viz. 0.52, we have 13 for our first assumption, exceeding the truth only an inch and a half. We mention these circumstances, that those who are disposed to apply these doctrines to the solution of practical cases may be at no loss when one occurs of which the regular solution requires an intricate analysis.

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The inverse of the problems show the effects of enlarging the section of a river,

It is evident that the inverse of the foregoing problems will show the effects of enlarging the section of a river, that is, will show how much its surface will be sunk by any proposed enlargement of its bed. It is therefore needless to propose such problems in this place. Common sense directs us to make these enlargements in those parts of the river where their effect will be greatest, that is, where it is shallowest when its breadth greatly exceeds its depth, or where it is narrowest (if its depth exceed the breadth, which is a very rare case), or in general, where the slope is the smallest for a short run.

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and direct us in the method of embankments.

The same general principles direct us in the method of embankments, for the prevention of floods, by enabling us to ascertain the heights necessary to be given to our banks. This will evidently depend, not only on the additional quantity of water which experience tells us a river brings down during its freshes, but also on the distance at which we place the banks from the natural banks of the river. This is a point where mistaken economy frequently defeats its own purpose. If we raise our embankment at some distance from the natural banks of the river, not only will a smaller height suffice, and consequently a smaller base, which will make a saving in the duplicate proportion of the height; but our works will be so much the more durable nearly, if not exactly, in the same proportion. For by thus enlarging the additional bed which we give to the swollen river, we diminish its velocity almost in the same proportion that we enlarge its channel, and thus diminish its power of ruining our works. Except, therefore, in the case of a river whose freshes are loaded with fine sand to destroy the turf, it is always proper to place the embankment at a considerable distance from the natural banks. Placing them at half the breadth of the stream from its natural banks, will nearly double its channel; and, except in the case now mentioned, the space thus detached from our fields will afford excellent pasture.

The limits of such a work as ours will not permit us to enter into any detail on the method of embankment. It would require a volume to give instructions as to the manner of founding, raising, and securing the dykes which must be raised, and a thousand circumstances which must be attended to. But a few general observations may be made, which naturally occur while we are considering the manner in which a river works in settling or altering its channel.

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It must be remarked, in the first place, that the river will rise higher when embanked than it does while it was allowed to spread; and it is by no means easy to conclude to what height it will rise from the greatest height to which it has been observed to rise in its floods. When at liberty to expand over a wide valley; then it could only rise till it overflowed with a thickness or depth of water sufficient to produce a motion backwards into the valley quick enough to take off the water as fast as it was supplied; and we imagine that a foot or two would suffice in most cases. The best way for a prudent engineer will be to observe the utmost rise remembered by the neighbours in some gorge, where the river cannot spread out. Measure the increased section in this place, and at the same time recollect, that the water increases in a much greater proportion than the section; because an increase of the hydraulic mean depth produces an increase of velocity in the duplicate proportion of the depth nearly. But as this augmentation of velocity will obtain also between the embankments, it will be sufficiently exact to suppose that the section must be increased here nearly in the same proportion as at the gorge already mentioned. Neglecting this method of information, and regulating the height of our embankment by the greatest swell that has been observed in the plain, will assuredly make them too low, and render them totally useless.

A line of embankment should always be carried on by a strict concert of the proprietors of both banks through its whole extent. A greedy proprietor, by advancing his own embankment beyond that of his neighbours, not only exposes himself to risk by the working of the waters on the angles which this will produce, but exposes his neighbours also to danger, by narrowing the section, and thereby raising the surface and increasing the velocity, and by turning the stream athwart, and causing it to shoot against the opposite bank. The whole should be as much as possible in a line; and the general effect should be to make the course of the stream straighter than it was before. All bends should be made more gentle, by keeping the embankment further from the river in all convex lines of the natural bank, and bringing it nearer where the bank is concave. This will greatly diminish the action of the waters on the bankment, and insure their duration. The same maxim must be followed in fencing any brook which discharges itself into the river. The bends given at its mouth to the two lines of embankment should be made less acute than those of the natural brook, although, by this means, two points of land are left out. And the opportunity should be embraced of making the direction of this transverse brook more sloping than before, that is, less athwart the direction of the river.

It is of great consequence to cover the outside of the dyke with very compact turf closely united. If it admit water, the interior part of the wall, which is always more porous, becomes drenched in water, and this water acts with its statical pressure, tending to burst the bank on the land-side, and will quickly shift it from its seat. The utmost care should therefore be taken to make it and keep it perfectly tight. It should be a continued fine turf, and every bare spot should be carefully covered with fresh sod; and rat holes must be carefully closed up.

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Inferences.*Of Straightening or Changing the Course of Rivers.*107
Of the slope
required at
the bend of
a river, and
the conse-
quences.

WE have seen, that every bending of a river requires an additional slope in order to continue its train, or enable it to convey the same quantity of water without swelling in its bed. Therefore the effect of taking away any of these bends must be to sink the waters of the river. It is proper, therefore, to have it in our power to estimate these effects. It may be desirable to gain property, by taking away the sweeps of a very winding stream. But this may be prejudicial, by destroying the navigation on such a river. It may also hurt the proprietors below, by increasing the velocity of the stream, which will expose them to the risk of its overflowing, or of its destroying its bed, and taking a new course. Or this increase of velocity may be inconsistent with the regimen of the new channel, or at least require larger dimensions than we should have given it if ignorant of this effect.

Our principles of uniform motion enable us to answer every question of this kind which can occur; and M. de Buat proposes several problems to this effect. The regular solutions of them are complicated and difficult; and we do not think them necessary in this place, because they may all be solved in a manner not indeed so elegant, because indirect, but abundantly accurate, and easy to any person familiar with those which we have already considered.

We can take the exact level across all these sweeps, and thus obtain the whole slope. We can measure with accuracy the velocity in some part of the channel which is most remote from any bend, and where the channel itself has the greatest regularity of form. This will give us the expence or discharge of the river, and the mean depth connected with it. We can then examine whether this velocity is precisely such as is compatible with stability in the straight course. If it is, it is evident that if we cut off the bends, the greater slope which this will produce will communicate to the waters a velocity incompatible with the regimen suited to this soil, unless we enlarge the width of the stream, that is, unless we make the new channel more capacious than the old one. We must now calculate the dimensions of the channel which, with this increased slope, will conduct the waters with the velocity that is necessary. All this may be done by the foregoing problems; and we may easiest accomplish this by steps. First, suppose the bed the same with the old one, and calculate the velocity for the increased slope by the general formula. Then change one of the dimensions of the channel, so as to produce the velocity we want, which is a very simple process. And in doing this, the object to be kept chiefly in view is not to make the new velocity such as will be incompatible with the stability of the new bed.

Having accomplished this first purpose, we learn (in the very solution) how much shallower this channel with its greater slope will be than the former, while it discharges all the waters. This diminution of depth must increase the slope and the velocity, and must diminish the depth of the river, above the place where the alteration is to be made. How far it produces these effects may be calculated by the general formula. We then see whether the navigation will be hurt, either in the

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old river up the stream, or in the new channel. It is plain that all these points cannot be reconciled. We may make the new channel such, that it shall leave a velocity compatible with stability, and that it shall not diminish the depth of the river up the stream. But, having a greater slope, it must have a smaller mean depth, and also a smaller real depth, unless we make it of a very inconvenient form.

The same things viewed in a different light, will show us what depression of waters may be produced by rectifying the course of a river in order to prevent its overflowing. And the process which we would recommend is the same with the foregoing. We apprehend it to be quite needless to measure the angles of rebound, in order to compute the slope which is employed for sending the river through the bend, with a view to supersede this by straightening the river. It is infinitely easier and more exact to measure the levels themselves, and then we know the effect of removing them.

Nor need we follow M. de Buat in solving problems for diminishing the slope and velocity, and deepening the channel of a river by bending its course. The expence of this would be in every case enormous; and the practices which we are just going to enter upon afford infinitely easier methods of accomplishing all the purposes which are to be gained by these changes.

Of Bars, Weirs, and Jetteys, for raising the Surface of Rivers.

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We propose, under the article *WATER-Works*, to consider in sufficient practical detail all that relates to the construction and mechanism of these and other erections in water; and we confine ourselves, in this place, to the mere effect which they will produce on the current of the river. Problems, examples, and consequences, of raising the surface of rivers.

We gave the name of *weir* or *bar* to a dam erected across a river for the purpose of raising its waters, whether in order to take off a draft for a mill or to deepen the channel. Before we can tell the effect which they will produce, we must have a general rule for ascertaining the relation between the height of the water above the lip of the weir or bar, and the quantity of water which will flow over.

First, then, with respect to a weir, represented in fig. 20. and fig. 21. The latter figure more resembles their usual form, consisting of a dam of solid masonry, or built of timber, properly fortified with shoars and banks. On the top is set up a strong plank FR, called the wasteboard or waster, over which the water flows. This is brought to an accurate level, of the proper height. Such voiders are frequently made in the side of a mill-course, for letting the superfluous water run off. This is properly the *WASTER, VOIDER*: it is also called an *OFFSET*. The same observations will explain all these different pieces of practice. The following questions occur in course.

PROB. I. Given the length of an offset or wasteboard, made in the face of a reservoir of stagnant water, and the depth of its lip under the horizontal surface of the water, to determine the discharge, or the quantity of water which will run over in a second?

Let AB be the horizontal surface of the still water, and F the lip of the wasteboard. Call the depth BF under the surface h , and the length of the wasteboard l .

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N. B. The water is supposed to flow over into another basin or channel, so much lower that the surface HL of the water is lower, or at least not higher, than F.

If the water could be supported at the height BF, BF might be considered as an orifice in the side of a vessel. In which case, the discharge would be the same as if the whole water were flowing with the velocity acquired from the height $\frac{4}{9}$ BF, or $\frac{4}{9} h$. And if we suppose that there is no contraction at the orifice, the mean velocity would be $\sqrt{2g \frac{4}{9} h} = \sqrt{772 \frac{2}{3} h}$, in English inches, per second. The area of this orifice is $l h$. Therefore the discharge would be $l h \sqrt{772 \frac{2}{3} h}$, all being measured in inches. This is the usual theory; but it is not an exact representation of the manner in which the efflux really happens. The water cannot remain at the height BF; but in drawing towards the wasteboard from all sides, it forms a convex surface AIH, so that the point I, where the vertical drawn from the edge of the wasteboard meets the curve, is considerably lower than B. But as all the mass above F is supposed perfectly fluid, the pressure of the incumbent water is propagated, in the opinion of M. de Buat, to the filament passing over at F without any diminution. The same may be said of any filament between F and I. Each tends, therefore, to move in the same manner if it were really impelled through an orifice in its place. Therefore the motions through every part of the line or plane IF are the same as if the water were escaping through an orifice IF, made by a sluice let down on the water, and keeping up the water of the reservoir to the level AB. It is beyond a doubt (says he) that the height IF must depend on the whole height BF, and that there must be a certain determined proportion between them. He does not attempt to determine this proportion theoretically, but says, that his experiments ascertain it with great precision to be the proportion of one to two, or that IF is always one-half of BF. He says, however, that this determination was not by an immediate and direct measurement; he concluded it from the comparison of the quantities of water discharged under different heights of the water in the reservoir.

We cannot help thinking that this reasoning is very defective in several particulars. It cannot be inferred, from the laws of hydrostatical pressure, that the filament at I is pressed forward with all the weight of the column BI. The particle I is really at the surface; and considering it as making part of the surface of a running stream, it is subjected to hardly any pressure, any more than the particles on the surface of a cup of water held in the hand, while it is carried round the axis of the earth and round the sun. Reasoning according to his own principles, and availing himself of his own discovery, he should say, that the particle at I has an accelerating force depending on its slope only; and then he should have endeavoured to ascertain this slope. The motion of the particle at I has no immediate connection with the pressure of the column BI; and if it had, the motion would be extremely different from what it is: for this pressure alone would give it the velocity which M. Buat assigns it. Now it is already passing through the point I with the velocity which it has acquired in descending along the curve AI; and this is the real state of the case. The particles are passing through

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with a velocity already acquired by a sloping current; and they are accelerated by the hydrostatical pressure of the water above them. The internal mechanism of these motions is infinitely more complex than M. Buat here supposes; and on this supposition, he very nearly abandons the theory which he has so ingeniously established, and adopts the theory of Guglielmini which he had exploded. At the same time, we think that he is not much mistaken when he asserts, that the motions are nearly the same as if a sluice had been let down from the surface to I. For the filament which passes at I has been gliding down a curved surface, and has not been exposed to any friction. It is perhaps the very case of hydraulics where the obstructions are the smallest; and we should therefore expect that its motion will be least retarded.

We have therefore no hesitation in saying, that the filament at I is in the very state of motion which the theory would assign to it if it were passing under a sluice, as M. Buat supposes. And with respect to the inferior filaments, without attempting the very difficult task of investigating their motions, we shall just say, that we do not see any reason for supposing that they will move slower than our author supposes. Therefore, though we reject his theory, we admit his experimental proposition in general; that is, we admit that the whole water which passes through the plane IF moves with the velocity (though not in the same direction) with which it would have run through a sluice of the same depth; and we may proceed with his determination of the quantity of water discharged.

If we make BC the axis of a parabola BEGH, the velocities of the filaments passing at I and F will be represented by the ordinates IE and FG, and the discharge by the area LEGF. This allows a very neat solution of the problem. Let the quantity discharged per second be D, and let the whole height BF be h . Let $2G$ be the quantity by which we must divide the square of the mean velocity, in order to have the producing height. This will be less than $2g$, the acceleration of gravity, on account of the convergency at the sides and the tendency to convergence at the lip F. We formerly gave for its measure 726 inches, instead of 772, and said that the inches discharged per second from an orifice of one inch were 26.49, instead of 27.78. Let x be the distance of any filament from the horizontal line AB. An element of the orifice, therefore, (for we may give it this name) is $l x$. The velocity of this element is $\sqrt{2Gx}$, or $\sqrt{2G} \times \sqrt{x}$. The discharge from it is $l \sqrt{2Gx} \frac{1}{2} x$, and the fluent of this, or $D = \int l \sqrt{2G} x^{\frac{1}{2}} x$, which is $\frac{2}{3} l \sqrt{2G} x^{\frac{3}{2}} + C$.

To determine the constant quantity C, observe that M. de Buat found by experiment that B was in all cases $\frac{1}{2}$ BF. Therefore D must be nothing when $x = \frac{1}{2} h$; consequently $C = -\frac{2}{3} l \sqrt{2G} \left(\frac{h}{2}\right)^{\frac{3}{2}}$, and the completed fluent will be $D = \frac{2}{3} l \sqrt{2G} \left(x^{\frac{3}{2}} - \left(\frac{h}{2}\right)^{\frac{3}{2}}\right)$.

Now make $x = h$, and we have

$$D = \frac{2}{3} l \sqrt{2G} \left(h^{\frac{3}{2}} - \left(\frac{h}{2}\right)^{\frac{3}{2}}\right) = \frac{2}{3} l \sqrt{2G} \left(1 - \left(\frac{1}{2}\right)^{\frac{3}{2}}\right) h^{\frac{3}{2}}.$$

But

Practical Inferences. But $1 - (\frac{1}{2})^{\frac{3}{2}} = 0.64645$, and $\frac{2}{3}$ of this is 0.431 :
Therefore, finally,

$$D = 0.431 (\sqrt{2G} h^{\frac{1}{2}} \times l).$$

If we now put 26.49 or $26\frac{1}{2}$ for $\sqrt{2G}$, or the velocity with which a head of water of one inch will impel the water over a weir, and multiply this by 0.431 , we get the following quantity 11.4172 , or, in numbers of easy recollection, $11\frac{1}{2}$, for the cubic inches of water per second, which runs over every inch of a wasteboard when the edge of it is one inch below the surface of the reservoir; and this must be multiplied by $h^{\frac{1}{2}}$, or by the square root of the cube of the head of water. Thus let the edge of the wasteboard be four inches below the surface of the water. The cube of this is 64 , of which the square root is eight. Therefore a wasteboard of this depth under the surface, and three feet long, will discharge every second $8 \times 36 \times 11\frac{1}{2}$ cubic inches of water, or $\frac{8}{10}$ cubic feet, English measure.

The following comparisons will show how much this theory may be depended on. Col. 1. shows the depth of the edge of the board under the surface; 2. shows the discharge by theory; and, 3. the discharge actually observed. The length of the board was $18\frac{1}{2}$ inches. N. B. The numbers in M. Buat's experiments are here reduced to English measure.

D.	D. Theor.	D. Exp.	E.
1.778	506	524	28.98
3.199	1222	1218	69.83
4.665	2153	2155	123.03
6.753	3750	3771	214.29

The last column is the cubic inches discharged in a second by each inch of the wasteboard. The correspondence is undoubtedly very great. The greatest error is in the first, which may be attributed to a much smaller lateral contraction under so small a head of water.

But it must be remarked, that the calculation proceeds on two suppositions. The height FI is supposed $\frac{1}{2}$ of BI ; and $2G$ is supposed 726 . It is evident, that by increasing the one and diminishing the other, nearly the same answers may be produced, unless much greater variations of h be examined. Both of these quantities are matters of considerable uncertainty, particularly the first; and it must be farther remarked, that this was not measured, but deduced from the uniformity of the experiments. We presume that M. Buat tried various values of G , till he found one which gave the ratios of discharge which he observed. We beg leave to observe, that in a set of numerous experiments which we had access to examine, BI was uniformly much less than $\frac{1}{2}$; it was very nearly $\frac{2}{7}$: and the quantity discharged was greater than what would result from M. Buat's calculation. It was farther observed, that IF depended very much on the form of the wasteboard. When it was a very thin board of considerable depth, IF was very considerably greater than if the board was thick, or narrow, and set on the top of a broad dam-head, as in fig. 21.

It may be proper to give the formula a form which will correspond to any ratio which experience may discover between BF and IF . Thus, let BI be $\frac{m}{n} BF$.

The formula will be $D = \frac{2}{3} l \sqrt{2G} \left(1 - \left(\frac{m}{n}\right)^{\frac{3}{2}}\right)^{\frac{1}{2}}$ Practical Inferences.

Meantime, this theory of M. de Buat is of great value to the practical engineer, who at present must content himself with a very vague conjecture, or take the calculation of the erroneous theory of Guglielmini. By that theory, the board of three feet, at the depth of four inches, should discharge nearly $3\frac{1}{10}$ cubic feet per second, which is almost double of what it really delivers.

We presume, therefore, that the following table will be acceptable to practical engineers, who are not familiar with such computations. It contains, in the first column, the depth in English inches from the surface of the stagnant water of a reservoir to the edge of the wasteboard. The second column is the cubic feet of water discharged in a minute by every inch of the wasteboard.

Depth.	Discharge.
1	0.403
2	1.140
3	2.095
4	3.225
5	4.507
6	5.925
7	7.466
8	9.122
9	10.884
10	12.748
11	14.707
12	16.758
13	18.895
14	21.117
15	23.419
16	25.800
17	28.258
18	30.786

When the depth does not exceed four inches, it will not be exact enough to take proportional parts for the fractions of an inch. The following method is exact.

If they be odd quarters of an inch, look in the table for as many inches as the depth contains quarters, and take the eighth part of the answer. Thus, for $3\frac{3}{4}$ inches, take the eighth part of 23.419 , which corresponds to 15 inches. This is 2.927 .

If the wasteboard is not on the face of a dam, but in a running stream, we must augment the discharge by multiplying the section by the velocity of the stream. But this correction can seldom occur in practice; because, in this case, the discharge is previously known; and it is h that we want; which is the object of the next problem.

We only beg leave to add, that the experiments which we mention as having been already made in this country, give a result somewhat greater than this table, viz. about $\frac{1}{10}$. Therefore, having obtained the answer by this table, add to it its 16th part, and we apprehend that it will be extremely near the truth.

When, on the other hand, we know the discharge over a wasteboard, we can tell the depth of its edge under

Practical Inferences. der the surface of the stagnant water of the reservoir, because we have $h = \left(\frac{D}{11\frac{1}{2}l}\right)^{\frac{2}{3}}$ very nearly.

We are now in a condition to solve the problem respecting a weir across a river.

PROB. II. The discharge and section of a river being given, it is required to determine how much the waters will be raised by a weir of the whole breadth of the river, discharging the water with a clear fall, that is, the surface of the water in the lower channel being below the edge of the weir?

In this case we have $2G = 746$ nearly, because there will be no contraction at the sides when the weir is the whole breadth of the river. But further, the water is not now stagnant, but moving with the velocity $\frac{D}{S}$, S being the section of the river.

Therefore let a be the height of the weir from the bottom of the river, and h the height of the water above the edge of the weir. We have the velocity

with which the water approaches the weir $= \frac{D}{l(a+h)}$,

l being the length of the weir or breadth of the river. Therefore the height producing the primary mean velocity is $\left(\frac{D}{l\sqrt{2g}(a+h)}\right)^2$. The equation given a

little ago will give $h = \left(\frac{D}{0.431\sqrt{2G}}\right)^{\frac{2}{3}}$, when the water above the weir is stagnant. Therefore, when it is already moving with the velocity $\frac{D}{la+h}$, we shall

have $h = \left(\frac{D}{0.431\sqrt{2G}}\right)^{\frac{2}{3}} - \left(\frac{D}{l\sqrt{2g}(a+h)}\right)^2$. It

would be very troublesome to solve this equation regularly, because the unknown quantity h is found in the second term of the answer. But we know that the height producing the velocity above the weir is very small in comparison of h and of a , and, if only estimated roughly, will make a very insensible change in the value of h ; and, by repeating the operation, we can correct this value, and obtain h to any degree of exactness.

To illustrate this by an example. Suppose a river, the section of whose stream is 150 feet, and that it discharges 174 cubic feet of water in a second; how much will the waters of this river be raised by a weir of the same width, and three feet high?

Suppose the width to be 50 feet. This will give 3 feet for the depth; and we see that the water will have a clear fall, because the lower stream will be the same as before.

The section being 150 feet, and the discharge 174, the mean velocity is $\frac{174}{150} = 1.16$ feet, = 14 inches nearly, which requires the height of $\frac{1}{4}$ of an inch very nearly. This may be taken for the second term of the

value of h . Therefore $h = \left(\frac{D}{0.431\sqrt{2G}l}\right)^{\frac{2}{3}} - \frac{1}{4}$. Now $\sqrt{2G}$ is, in the present case, = 27.313; l is 600, and D is 174×1728 , = 300672. Therefore $h = 12.192 - 0.25$, = 11.942. Now correct this value of h , by correcting the second term, which is $\frac{1}{4}$ of an inch, in

stead of $\left(\frac{D}{\sqrt{2g}l(a+h)}\right)^2$, or 0.141. This will give

Practical Inferences. $h = 12.192 - 0.141$, = 12.051, differing from the first value about $\frac{1}{6}$ of an inch. It is needless to carry the approximation farther. Thus we see that a weir, which dams up the whole of the former current of three feet deep, will only raise the waters of this river one foot.

The same rule serves for showing how high we ought to raise this weir in order to produce any given rise of the waters, whether for the purposes of navigation, or for taking off a draft to drive mills, or for any other service; for if the breadth of the river remain the same, the water will still flow over the weir with nearly the same depth. A very small and hardly perceptible difference will indeed arise from the diminution of slope occasioned by this rise, and a consequent diminution of the velocity with which the river approaches the weir. But this difference must always be a small fraction of the second term of our answer; which term is itself very small: and even this will be compensated, in some degree, by the freer fall which the water will have over the weir.

If the intended weir is not to have the whole breadth of the river (which is seldom necessary even for the purposes of navigation), the waters will be raised higher by the same height of the wasteboard. The calculation is precisely the same for this case. Only in the second term, which gives the head of water corresponding to the velocity of the river, l must still be taken for the whole breadth of the river, while in the first term l is the length of the wasteboard. Also $\sqrt{2G}$ must be a little less, on account of the contractions at the ends of the weir, unless these be avoided by giving the masonry at the ends of the wasteboard a curved shape on the upper side of the wasteboard. This should not be done when the sole object of the weir is to raise the surface of the waters. Its effect is but trifling at any rate, when the length of the wasteboard is considerable, in proportion to the thickness of the sheet of water flowing over it.

The following comparisons of this rule with experiment will give our readers some notion of its utility.

Discharge of the Weir per Second.	Head producing the velocity at the Weir.	Head producing the Velocity above it.	Calculated Height of the River above the Wasteboard.	Observed Height.
Inches. 3888	Inches. 7.302	Inches. 0.625	Inches. 6.677	Inches. 6.583
2462	5.385	0.350	5.035	4.750
1112	3.171	0.116	3.055	3.166
259	1.201	0.0114	1.189	1.250

It was found extremely difficult to measure the exact height of the water in the upper stream above the wasteboard. The curvature AI extended several feet up the stream. Indeed there must be something arbitrary in this measurement, because the surface of the stream is not horizontal. The deviation should be taken, not from a horizontal plane, but from the inclined surface of the river.

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It is plain that a river cannot be fitted for continued navigation by WEIRS. These occasion interruptions; but a few inches may sometimes be added to the waters of a river by a BAR, which may still allow a flat-bottomed lighter or a raft to pass over it. This is a very frequent practice in Holland and Flanders; and a very cheap and certain conveyance of goods is there obtained by means of streams which we would think no better than boundary ditches, and unfit for every purpose of this kind. By means of a bar the water is kept up a very few inches, and the stream has free course to the sea. The shoot over the bar is prevented by means of another bar placed a little way below it, lying flat in the bottom of the ditch, but which may be raised up on hinges. The lighterman makes his boat fast to a stake immediately above the bar, raises the lower bar, brings over his boat, again makes it fast, and, having laid down the other bar again, proceeds on his journey. This contrivance answers the end of a lock at a very trifling expence; and though it does not admit of what we are accustomed to call navigation, it gives a very sure conveyance, which would otherwise be impossible. When the waters can be raised by bars, so that they may be drawn off for machinery or other purposes, they are preferable to weirs, because they do not obstruct floating with rafts, and are not destroyed by the ice.

respond to a weir, as also the velocity CH, which corresponds to the part of the section CA, which is wholly under water. Then we correct all these quantities by repeating the operation with them instead of our first assumptions.

Mr Buat found this computation extremely near the truth, but in all cases a little greater than observation exhibited.

We may now solve the problem in the most general terms.

PROB. IV. Given the breadth, depth, and the slope of a river, if we confine its passage by a bar or weir of a known height and width, to determine the rise of the waters above the bar.

The slope and dimensions of the channel being given, our formula will give us the velocity and the quantity of water discharged. Then, by the preceding problem, find the height of water above the wasteboard. From the sum of these two heights deduct the ordinary depth of the river. The remainder is the rise of the waters. For example :

Let there be a river whose ordinary depth is 3 feet, and breadth 40, and whose slope is $1\frac{1}{2}$ inches in 100 fathoms, or $\frac{1}{4800}$. Suppose a weir on this river six feet high and 18 feet wide.

We must first find the velocity and discharge of the river in its natural state, we have $l=480$ inches, $h=$

$36, \frac{1}{s} = \frac{1}{4800}$. Our formula of uniform motion gives $V=23.45$, and $D=405216$ cubic inches.

The contraction obtains here on the three sides of the orifice. We may therefore take $\sqrt{2G} = 26.1$.—*N. B.* This example is Mr Buat's, and all the measures are French. We have also a (the height of the weir) 72, and $2g = 724$. Therefore the equation $h = \left(\frac{D}{0.431\sqrt{2G}l}\right)^{\frac{2}{3}} - \left(\frac{D}{l\sqrt{2g}(a+h)}\right)^2$ becomes 30.182.

Add this to the height of the weir, and the depth of the river above the sluice is 102.182, = 8 feet and 6.182 inches. From this take 3 feet, and there remains 5 feet and 6.182 inches for the rise of the waters.

There is, however, an important circumstance in this rise of the waters, which must be distinctly understood before we can say what are the interesting effects of this weir. This swell extends, as we all know, to a considerable distance up the stream, but is less sensible as we go away from the weir. What is the distance to which the swell extends, and what increase does it produce in the depth at different distances from the weir?

If we suppose that the slope and the breadth of the channel remain as before, it is plain, that as we come down the stream from that point where the swell is insensible, the depth of the channel increases all the way to the dam. Therefore, as the same quantity of water passes through every section of the river, the velocity must diminish in the same proportion (very nearly) that the section increases. But this being an open stream, and therefore the velocity being inseparably connected with the slope of the surface, it follows, that the slope of the surface must diminish all the way from that point where the swell of the water is insensible to the dam. The surface, therefore, cannot be a simple inclined plane, but must be concave upwards, as represented in fig. 23. where FKLB represents the channel

PROB. III. Given the height of a bar, the depth of water both above and below it, and the width of the river; to determine the discharge.

This is by no means so easily solved as the discharge over a weir, and we cannot do it with the same degree of evidence. We imagine, however, that the following observations will not be very far from a true account of the matter.

We may first suppose a reservoir LFBM (fig. 22.) of stagnant water, and that it has a wasteboard of the height CB. We may then determine, by the foregoing problems, the discharge through the plane EC. With respect to the discharge through the part CA, it should be equal to this product of the part of the section by the velocity corresponding to the fall EC, which is the difference of the heights of water above and below the bar; for, because the difference of Ea and Ca is equal to EC, every particle a of water in the plane CA is pressed in the direction of this stream with the same force, viz. the weight of the column EC. The sum of these discharges should be the whole discharge over the bar: but since the bar is set up across a running river, its discharge must be the same with that of the river. The water of the river, when it comes to the place of the bar, has acquired some velocity by its slope or other causes, and this corresponds to some height FE. This velocity, multiplied by the section of the river, having the height EB, should give a discharge equal to the discharge over the bar.

To avoid this complication of conditions, we may first compute the discharge of the bar in the manner now pointed out, without the consideration of the previous velocity of the stream. This discharge will be a little too small. If we divide it by the section FB, it will give a primary velocity too small, but not far from the truth. Therefore we shall get the height FE, by means of which we shall be able to determine a velocity intermediate between DG and CH, which would cor-

Fig. 22.

Fig. 23.

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of a river, and FB the surface of the water running in it. If this be kept up to A by a weir AL, the surface will be a curve FIA, touching the natural surface F at the beginning of the swell, and the line AD which touches it in A will have the slope S corresponding to the velocity which the waters have immediately before going over the weir. We know this slope, because we are supposed to know the discharge of the river and its slope and other circumstances before barring it with a dam; and we know the height of the dam H, and therefore the new velocity at A, or immediately above A, and consequently the slope S. Therefore, drawing the horizontal lines DC, AG, it is plain that CB and CA will be the primary slope of the river, and the slope S corresponding to the velocity in the immediate neighbourhood of A, because these verticals have the same horizontal distance DC. We have therefore $CB : CA = S : s$ very nearly, and $S - s : s = CB - CA : CA = A$ (nearly) : CA. Therefore $CA = \frac{AB \times s}{S - s} = \frac{Hr}{S - s}$. But $DA = CA \times S$, by our definition of slope; therefore $DA = \frac{H.S.s}{S - s}$.

This is all that we can say with precision of this curve. Mr Buat examined what would result from supposing it an arch of a circle. In this case we should have $DA = DF$, and AF very nearly equal to $2 AD$; and as we can thus find AD, we get the whole length FIA of the swell, and also the distances of any part of the curve from the primitive surface FB of the river; for these will be very nearly in the duplicate proportion of their distances from F. Thus ID will be one-fourth of AB, &c. Therefore we should obtain the length Id of the stream in that place. Getting the depth of the stream, and knowing the discharge, we get the velocity, and can compare this with the slope of the surface at I. This should be the slope of that part of the arch of the circle. Making this comparison, he found these circumstances to be incompatible. He found that the section and swell at I, corresponding to an arch of a circle, gave a discharge nearly one-fourth too great (they were as 405216 to 492142). Therefore the curve is such, that AD is greater than DF, and that it is more incurvated at F than at A. He found, that making DA to DF as 10 to 9, and the curve FIA an arch of an ellipse whose longer axis was vertical, would give a very nice correspondence of the sections, velocities, and slopes. The whole extent of the swell therefore can never be double of AD, and must always greatly surpass AD; and these limits will do very well for every practical question. Therefore making DF nine-tenths of AD, and drawing the chord AD, and making DI one-half of D*i*, we shall be very near the truth. Then we get the swell with sufficient precision for any point H between F and D, by making $FD^2 : FH^2 = ID : Hh$; and if H is between D and A, we get its distance from the tangent DA by a similar process.

It only remains to determine the swell produced in the waters of a river by the erection of a bridge or cleaning sluice which contracts the passage. This requires the solution of

PROB. V. Given the depth, breadth, and slope of a river, to determine the swell occasioned by the piers of

a bridge or sides of a cleaning sluice, which contract the passage by a given quantity, for a given length of channel.

This swell depends on two circumstances.

1. The whole river must pass through a narrow space, with a velocity proportionably increased; and this requires a certain head of water above the bridge.

2. The water, in passing the length of the piers with a velocity greater than that corresponding to the primary slope of the river, will require a greater slope in order to acquire this velocity.

Let V be the velocity of the river before the erection of the bridge, and K the quotient of the width of the river divided by the sum of the widths between the piers. If the length of the piers, or their dimension in the direction of the stream, is not very great, KV will nearly express the velocity of the river under the arches; and if we suppose for a moment the contraction (in the sense hitherto used) to be nothing, the height producing this velocity will be $\frac{K^2 V^2}{2g}$. But the river will not rise so high, having already a slope and velocity before getting under the arches, and the height corresponding to this velocity is $\frac{V^2}{2g}$; therefore the height for producing the augmentation of velocity is $\frac{K^2 V^2}{2g}$

$-\frac{V^2}{2g}$. But if we make allowance for contraction we must employ a $2G$ less than $2g$, and we must multiply the height now found by $\frac{2g}{2G}$. It will then become $\left(\frac{K^2 V^2}{2g} - \frac{V^2}{2g}\right) \frac{2g}{2G} = \frac{V^2}{2G} (K^2 - 1)$. This is that part of the swell which must produce the augmentation of velocity.

With respect to what is necessary for producing the additional slope between the piers, let ρ be the natural slope of the river (or rather the difference of level in the length of the piers) before the erection of the bridge, and corresponding to the velocity V; $K^2 \rho$ will very nearly express the difference of superficial level for the length of the piers, which is necessary for maintaining the velocity KV through the same length. The increase of slope therefore is $K^2 \rho - \rho = \rho (K^2 - 1)$. Therefore the whole swell will be $\left(\frac{V^2}{2G} + \rho\right) \frac{2g}{K^2 - 1}$.

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Further at-
tention to
the subject
recom-
mended.

THESE are the chief questions or problems on this subject which occur in the practice of an engineer; and the solutions which we have given may in every case be depended on as very near the truth, and we are confident that the errors will never amount to one-fifth of the whole quantity. We are equally certain, that of those who call themselves engineers, and who, without hesitation, undertake jobs of enormous expence, not one in ten is able even to guess at the result of such operations, unless the circumstances of the case happen to coincide with those of some other project which he has executed, or has distinctly examined; and very few have the sagacity and penetration necessary for appreciating the effects of the distinguishing circumstances which yet remain. The society established for the encouragement

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couragement of arts and manufactures could scarcely do a more important service to the public in the line of their institution, than by publishing in their Transactions a description of every work of this kind executed in the kingdom, with an account of its performance. This would be a most valuable collection of experiments and facts. The unlearned practitioner would find among them something which resembles in its chief circumstances almost any project which could occur to him in his business, and would tell him what to expect in the case under his management: and the intelligent engineer, assisted by mathematical knowledge, and the habit of classing things together, would frequently be able to frame general rules. To a gentleman qualified as was the Chevalier de Buat, such a collection would be inestimable, and might suggest a theory, as far superior to his as he has gone before all other writers.

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Modes of
making
small rivers
and brooks
fit for in-
land navi-
gation.

WE shall conclude this article with some observations on the methods which may be taken for rendering small rivers and brooks fit for inland navigation, or at least for floatage. We get much instruction on this subject from what has been said concerning the swell produced in a river by weirs, bars, or any diminution of its former section. Our knowledge of the form which the surface of this swell affects, will furnish rules for spacing these obstructions in such a manner, and at such distances from each other, that the swell produced by one shall extend to the one above it.

If we know the slope, the breadth, and the depth of a river, in the droughts of summer, and have determined on the height of the flood-gates, or keeps, which are to be set up in its bed, it is evident that their stations are not matters of arbitrary choice, if we would derive the greatest possible advantage from them.

Some rivers in Flanders and Italy are made navigable in some sort by simple sluices, which, being shut, form magazines of water, which, being discharged by opening the gates, raises the inferior reach enough to permit the passage of the craft which are kept on it. After this momentary rise the keeps are shut again, the water sinks in the lower reach, and the lighters which were floated through the shallows are now obliged to draw into those parts of the reach where they can lie afloat till the next supply of water from above enables them to proceed. This is a very rude and imperfect method, and unjustifiable at this day, when we know the effect of locks, or at least of double gates. We do not mean to enter on the consideration of these contrivances, and to give the methods of their construction, in this place, but refer our readers to what has been already said on this subject in the articles CANAL, LOCK, NAVIGATION (*Inland*), and to what will be said in the article *WATER-Works*. At present we confine ourselves to the single point of husbanding the different falls in the bed of the river, in such a manner that there may be everywhere a sufficient depth of water: and, in what we have to deliver on the subject, we shall take the form of an example to illustrate the application of the foregoing rules.

Suppose then a river 40 feet wide and 3 feet deep in the droughts of summer, with a slope of 1 in 4800. This, by the formula of uniform motion, will have a velocity $V = 23\frac{1}{2}$ inches per second, and its discharge

will be 405216 cubic inches, or $234\frac{1}{2}$ feet. It is proposed to give this river a depth not less than five feet in any place, by means of flood-gates of six feet high and 18 feet wide.

We first compute the height at which this body of $234\frac{1}{2}$ cubic feet of water will discharge itself over the flood-gates. This we shall find by Prob. II. to be $30\frac{1}{4}$ inches, to which adding 72, the height of the gate, we have $102\frac{1}{4}$ for the whole height of the water above the floor of the gate; the primitive depth of the river being 3 feet, the rise or swell 5 feet $6\frac{1}{4}$ inches. In the next place, we find the range or sensible extent of this swell by Prob. I. and the observations which accompany it. This will be found to be nearly 9177 fathoms. Now since the primitive depth of the river is three feet, there is only wanted two feet of addition; and the question is reduced to the finding what point of the curved surface of the swell is two feet above the tangent plane at the head of the swell? or how far this point is from the gate? The whole extent being 9177 fathoms, and the deviations from the tangent plane being nearly in the duplicate ratio of the distances from the point of contact, we may substitute this proportion $66\frac{1}{2} : 24 = 9177^2 : 5526^2$. The last term is the distance (from the head of the swell) of that part of the surface which is two feet above the primitive surface of the river. Therefore $9177 - 5526$, or 3651 fathoms, is the distance of this part from the flood-gate; and this is the distance at which the gates should be placed from each other. No inconvenience would arise from having them nearer, if the banks be high enough to contain the waters; but if they are farther distant, the required depth of water cannot be had without increasing the height of the gates; but if reasons of convenience should induce us to place them nearer, the same depth may be secured by lower gates, and no additional height will be required for the banks. This is generally a matter of moment, because the raising of water brings along with it the chance of flooding the adjoining fields. Knowing the place where the swell ceases to be sensible, we can keep the top of the intermediate flood-gate at the precise height of the curved surface of the swell by means of the proportionality of the deviations from the tangent to the distances from the point of contact.

But this rule will not do for a gate which is at a greater distance from the one above it than the 3651 fathoms already mentioned. We know that a higher gate is required, producing a more extensive swell; and the one swell does not coincide with the other, although they may both begin from the same point A (fig. 24.). Fig. 24. Nor will the curves even be similar, unless the thickness of the sheet of water flowing over the gate be increased in the same ratio. But this is not the case; because the produce of the river, and therefore the thickness of the sheet of water, is constant.

But we may suppose them similar without erring more than two or three decimals of an inch; and then we shall have $AF : AL = fF : DL$; from which, if we take the thickness of the sheet of water already calculated for the other gates, there will remain the height of the gate BL.

By following these methods, instead of proceeding by random guesses, we shall procure the greatest depth of water at the smallest expence possible.

But

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Effects of
freshes,

But there is a circumstance which must be attended to, and which, if neglected, may in a short time render all our works useless. These gates must frequently be open in the time of freshes; and as this channel then has its natural slope increased in every reach by the great contraction of the section in the gates, and also rolls along a greater body of water, the action of the stream on its bed must be increased by the augmentation of velocity which these circumstances will produce: and although we may say that the general slope is necessarily secured by the sills of the flood-gates, which are paved with stone or covered with planks, yet this will not hinder this increased current from digging up the bottom in the intervals, undermining the banks, and lodging the mud and earth thus carried off in places where the current meets with any check. All these consequences will assuredly follow if the increased velocity is greater than what corresponds to the regimen relative to the soil in which the river holds on its course.

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and of local circum-
stances,

In order therefore to procure durability to works of this kind, which are generally of enormous expence, the local circumstances must be most scrupulously studied. It is not the ordinary hurried survey of an engineer that will free us from the risk of our navigation becoming very troublesome by the rise of the waters being diminished from their former quantity, and banks formed at a small distance below every sluice. We must attentively study the nature of the soil, and discover experimentally the velocity which is not inconsistent with the permanency of the channel. If this be not a great deal less than that of the river when accelerated by freshes, the regimen may be preserved after the establishment of the gate, and no great changes in the channel will be necessary: but if, on the other hand, the natural velocity of the river during its freshes greatly exceeds what is consistent with stability, we must enlarge the width of the channel, that we may diminish the hydraulic mean depth, and along with this the velocity. Therefore, knowing the quantity discharged during the freshes, divide it by the velocity of regimen, or rather by a velocity somewhat greater (for a reason which will appear by and by), the quotient will be the area of a new section. Then taking the natural slope of the river for the slope which it will preserve in this enlarged channel, and after the sills of the flood-gates have been fixed, we must calculate the hydraulic mean depth, and then the other dimensions of the channel. And, lastly, from the known dimensions of the channel and the discharge (which we must now compute), we proceed to calculate the height and the distances of the flood-gates, adjusted to their widths, which must be regulated by the room which may be thought proper for the free passage of the lighters which are to ply on the river. An example will illustrate the whole of this process.

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illustrated
by an ex-
ample.

Suppose then a small river having a slope of two inches in 100 fathoms or $\frac{1}{5000}$, which is a very usual declivity of such small streams, and whose depth in summer is two feet, but subject to floods which raise it to nine feet. Let its breadth at the bottom be 18 feet, and the base of its slanting sides four-thirds of their height. All of these dimensions are very conformable to the ordinary course of things. It is proposed to make this river navigable in all seasons by means of keeps and gates placed at pro-

per distances; and we want to know the dimensions of a channel which will be permanent, in a soil which begins to yield to a velocity of 80 inches per second, but will be safe under a velocity of 24.

The primitive channel having the properties of a rectangular channel, its breadth during the freshes must be $B=30$ feet, or 360 inches, and its depth h nine feet or 108 inches; therefore its hydraulic mean depth

$$d = \frac{Bh}{B+2h} = 61.88 \text{ inches.}$$

Its real velocity therefore, during the freshes, will be 38.9447 inches, and its discharge 1514169 cubic inches, or $876\frac{1}{4}$ cubic feet per second. We see therefore that the natural channel will not be permanent, and will be very quickly destroyed or changed by this great velocity. We have two methods for procuring stability, viz. diminishing the slope, or widening the bed. The first method will require the course to be lengthened in the proportion of 24^2 to 3988^2 , or nearly of 36 to 100. The expence of this would be enormous. The second method will require the hydraulic mean depth to be increased nearly in the same proportion (because the velocities are

nearly as $\frac{\sqrt{d}}{\sqrt{s}}$). This will evidently be much less costly, and, even to procure convenient room for the navigation, must be preferred.

We must now observe, that the great velocity, of which we are afraid, obtains only during the winter floods. If therefore we reduce this to 24 inches, it must happen that the autumnal freshes, loaded with sand and mud, will certainly deposit a part of it, and choke up our channel below the flood-gates. We must therefore select a mean velocity somewhat exceeding the regimen, that it may carry off these depositions. We shall take 27 inches, which will produce this effect on the loose mud without endangering our channel in any remarkable degree.

Therefore we have, by the theorem for uniform motion, $V = 27 = \frac{297(\sqrt{d}-0.1)}{\sqrt{s}-L\sqrt{s}+1.6} - 0.3(\sqrt{s}-0.1)$.

Calculating the divisor of this formula, we find it $= 55.884$. Hence $\sqrt{d}-0.1 = \frac{27 \text{ inch.}}{55.884} = 0.4833$.

and therefore $d = 30\frac{1}{4}$. Having thus determined the hydraulic mean depth, we find the area S of the section by dividing the discharge 1514169 by the velocity 27. This gives us 56080.368. Then we get the breadth B by the formula formerly given, $B = \sqrt{\left(\frac{S}{2d}\right)^2 - 2S} + \frac{S}{2d}$, $= 1802.296$ inches, or 150.19 feet, and the depth $h = 31.115$ inches.

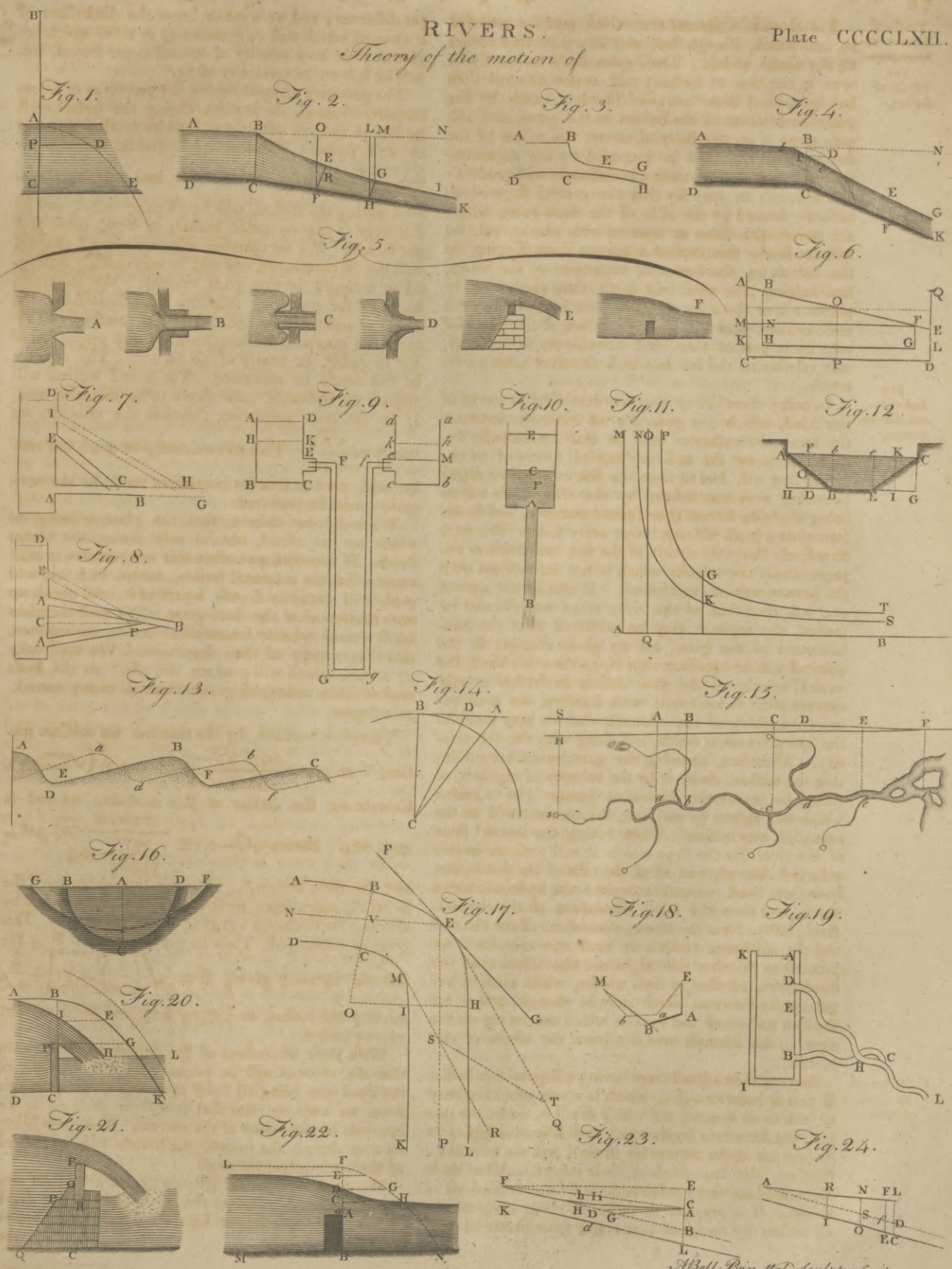
With these dimensions of the section we are certain that the channel will be permanent; and the sills of the flood-gate being all fixed agreeable to the primitive slope, we need not fear that it will be changed in the intervals by the action of the current. The gates being all open during the freshes, the bottom will be cleared of the whole deposited mud.

We must now station the flood-gates along the new channel, at such distances that we may have the depth of water which is proper for the lighters that are to be employed

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Theory of the motion of



Practical Inferences. employed in the navigation. Suppose this to be four feet. We must first of all learn how high the water will be kept in this new channel during the summer droughts. There remained in the primitive channel only two feet, and the section in this case had 20 feet eight inches mean width; and the discharge corresponding to this section and slope of $\frac{1}{3000}$ is, by the theorem of uniform motion, 130,849 cubic inches per second. To find the depth of water in the new channel corresponding to this discharge, and the same slope, we must take the method of approximation formerly exemplified, remembering that the discharge D is 130849, and the breadth B is 1760.8 at the bottom (the slant sides being four thirds). These data will produce a depth of water = $6\frac{1}{2}$ inches. To obtain four feet therefore behind any of the flood-gates, we must have a swell of $41\frac{1}{2}$ inches produced by the gate below.

We must now determine the width of passage which must be given at the gates. This will regulate the thickness of the sheet of water which flows over them when shut; and this, with the height of the gate, fixes the swell at the gate. The extent of this swell, and the elevation of every point of its curved surface above the new surface of the river, require a combination of the height of swell at the flood-gate, with the primitive slope and the new velocity. These being computed, the stations of the gates may be assigned, which will secure four feet of water behind each in summer. We need not give these computations, having already exemplified them all with relation to another river.

This example not only illustrates the method of proceeding, so as to be ensured of success, but also gives us a precise instance of what must be done in a case which cannot but frequently occur. We see what a prodigious excavation is necessary, in order to obtain permanency. We have been obliged to enlarge the primitive bed to about thrice its former size, so that the excavation is at least two-thirds of what the other method required. The expence, however, will still be vastly inferior to the other, both from the nature of the work and the quantity of ground occupied. At all events, the expence is enormous, and what could never be repaid by the navigation, except in a very rich and populous country.

There is another circumstance to be attended to.—The navigation of this river by sluices must be very desultory, unless they are extremely numerous, and of small heights. The natural surface of the swell being concave upwards, the additions made by its different parts to the primitive height of the river decrease rapidly as they approach to the place A (fig. 23.), where the swell terminates; and three gates, each of which raises the water one foot when placed at the proper distance from each other, will raise the water much more than two gates at twice this distance, each raising the water two feet. Moreover, when the elevation produced by a flood-gate is considerable, exceeding a very few inches, the fall and current produced by the opening of the gate is such, that no boat can possibly pass up the river, and it runs imminent risk of being overfet and sunk, in the attempt to go down the stream. This renders the navigation desultory. A number of lighters collect themselves at the gates, and wait their opening. They pass through as soon as the current becomes moderate. This would not, perhaps, be very hurtful in a regulated navigation,

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if they could then proceed on their voyage. But the boats bound up the river must stay on the upper side of the gate which they have just now passed, because the channel is now too shallow for them to proceed. Those bound down the river can only go to the next gate, unless it has been opened at a time nicely adjusted to the opening of the one above it. The passage downwards *may*, in many cases, be continued, by very intelligent and attentive lockmen, but the passage up *must* be exceedingly tedious. Nay, we may say, that *while* the passage downwards is continuous, it is but in a very few cases that the passage upward is practicable. If we add to these inconveniences the great danger of passage during the freshes, while all the gates are open, and the immense and unavoidable accumulations of ice, on occasion even of slight frosts, we may see that this method of procuring an inland navigation is amazingly expensive, desultory, tedious, and hazardous. It did not therefore merit, on its own account, the attention we have bestowed on it. But the discussion was absolutely necessary, in order to show what must be done in order to obtain effect and permanency, and thus to prevent us from engaging in a project which, to a person not duly and confidently informed, is so feasible and promising. Many professional engineers are ready, and with honest intentions, to undertake such tasks; and by avoiding this immense expence, and contenting themselves with a much narrower channel, they succeed, (witness the old navigation of the river Mersey). But the work has no duration; and, not having been found very serviceable, its cessation is not matter of much regret. The work is not much spoken of during its continuance. It is soon forgotten, as well as its failure, and engineers are found ready to engage for such another.

It was not a very refined thought to change this imperfect mode for another free from most of its inconveniences. A boat was brought up the river, through one of these gates, only by raising the waters of the inferior reach, and depressing those of the upper: and it could not escape observation, that when the gates were far asunder, a vast body of water must be discharged before this could be done, and that it would be a great improvement to double each gate, with a very small distance between. Thus a very small quantity of water would fill the interval to the desired height, and allow the boat to come through; and this thought was the more obvious, from a similar practice having preceded it, viz. that of navigating a small river by means of double bars, the lowest of which lay flat in the bottom of the river, but could be raised up on hinges. We have mentioned this already; and it appears to have been an old practice, being mentioned by Stevinus in his valuable work on sluices, published about the beginning of the last century; yet no trace of this method is to be found of much older date. It occurred, however, accidentally, pretty often in the flat countries of Holland and Flanders, which being the seat of frequent wars, almost every town and village was fortified with wet ditches, connected with the adjoining rivers. Stevinus mentions particularly the works of Condé, as having been long employed, with great ingenuity, for rendering navigable a very long stretch of the Scheldt. The boats were received into the lower part of the fosse, which was separated from the rest by a stone batardeau, serving to

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tion of
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keep

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keep up the waters in the rest of the fossee about eight feet. In this was a sluice and another dam, by which the boats could be taken into the upper fossee, which communicated with a remote part of the Scheldt by a long canal. This appears to be one of the earliest locks.

In the first attempt to introduce this improvement in the navigation of rivers already kept up by weirs, which gave a partial and interrupted navigation, it was usual to avoid the great expence of the second dam and gate, by making the lock altogether detached from the river, within land, and having its basin parallel to the river, and communicating by one end with the river above the weir, and by the other end with the river below the weir, and having a flood-gate at each end.— This was a most ingenious thought; and it was a prodigious improvement, free from all the inconveniences of currents, ice, &c. &c. It was called a *schluffel*, or lock, with considerable propriety; and this was the origin of the word *sluice*, and of our application of its translation *lock*. This practice being once introduced, it was not long before engineers found that a complete separation of the navigation from the bed of the river was not only the most perfect method for obtaining a sure, easy, and uninterrupted navigation, but that it was in general the most œconomical in its first construction, and subject to no risks of deterioration by the action of the current, which was here entirely removed. Locked canals, therefore, have almost entirely supplanted all attempts to improve the natural beds of rivers; and this is hardly ever attempted except in the flat countries, where they can hardly be said to differ from horizontal canals. We therefore close with these observations this article, and reserve what is yet to be said on the construction of canals and locks for the article *WATER-Works*.

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Concluding
observations
to the
reader.

WE beg leave, however, to detain the reader for a few moments. He cannot but have observed our anxiety to render this dissertation worthy of his notice, by making it practically useful. We have on every occasion appealed, from all theoretical deductions, however specious and well supported, to fact and observation of those spontaneous phenomena of nature which are continually passing in review before us in the motion of running waters. Resting in this manner our whole doctrines on experiment, on the observation of what really happens, and what happens in a way which we cannot or do not fully explain, these spontaneous operations of nature came insensibly to acquire a particular value in our imagination. It has also happened in the course of our reflections on these subjects, that these phenomena have frequently presented themselves to our view in groups, not less remarkable for the extent and the importance of their consequences than for the simplicity, and frequently the seeming insignificance, nay frivolity, of the means employed. Our fancy has therefore been sometimes warmed with the view of a something; and

Ens agitans molem, et magno se corpore miscens.

This has sometimes made us express ourselves in a way that is susceptible of misinterpretation, and may even lead into a mistake of our meaning.

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We therefore find ourselves obliged to declare, that by the term NATURE, which we have so frequently used *con amore*, we do not mean that indescribable idol which the self conceit and vanity of some philosophers or pretended philosophers have set up and ostentatiously worshipped, that *ens rationis*, that creature of the imagination, which has long been the object of cool contemplation in the closet of the philosopher, and has shared his attention with many other playthings of his ever-working fancy. By NATURE, then, we mean that admirable system of general laws, by which the adored Author and Governor of the universe has thought fit to connect the various parts of this wonderful and goodly frame of things, and to regulate all their operations.

We are not afraid of continually appealing to the laws of nature: and as we have already observed in the article PHILOSOPHY, we consider these general laws as the most magnificent displays of Infinite Wisdom, and the contemplation of them as the most cheering employment of our understandings.

*Ignæus est illis vigor et cœlestis origo
Seminibus.*

At the same time we despise the cold-hearted philosopher who stops short here, and is satisfied (perhaps inwardly pleased) that he has completely accounted for every thing by the laws of unchanging nature; and we suspect that this philosopher would analyse with the same frigid ingenuity, and explain by irresistible *σοφία*, the tender attachment of her whose breast he sucked, and who by many anxious and sleepless nights preserved alive the pining infant. But let us rather listen to the words of him who was the most sagacious observer and the most faithful interpreter of nature's laws, our illustrious countryman Sir Isaac Newton. He says,

“Elegantissima hæcce rerum compages non nisi consilio et dominio entis sapientissimi et potentissimi oriri potuit, Omnia, simili constructa consilio, suberunt unius dominio. Hic omnia regit, non ut *anima mundi*, sed ut universorum dominus. Propter dominium suum dominus deus, *παντοκράτωρ* nuncupatur. Deus ad servientes respicit, et *deitas* est dominatio dei, non in corpus proprium, uti sentiunt quibus deus est natura seu anima mundi, sed in servos. Deus summus est ens æternum, infinitum, absolute perfectum. Ens utcunque perfectum, at sine dominio, non est dominus deus.

“Hunc cognoscimus, solummodo per proprietates ejus et attributa. Attribuuntur ut ex phenomenis dignoscuntur, Phenomena sunt sapientissimæ et optimæ rerum structuræ, atque causæ finales.—Hunc admiramur ob perfectiones; hunc veneramur et colimus ob dominium.”

Our readers will probably be pleased with the following list of authors who have treated professedly of the motions of rivers: Guglielmini *De Fluviis et Castellis Aquarum—Danubius Illustratus*; Grandi *De Castellis*; Zandrini *De Motu Aquarum*; Frisius *de Fluviis*; Leclerc *Idrostatica i Idraulica*; Michelotti *Spercinze Idrauliche*; Belidor's *Architècture Hydraulique*; Bossut *Hydrodynamique*; Buat *Hydraulique*; Silberschlag *Theorie des Fleuves*; *Lettres de M. L'Epinasse au P. Frise touchant sa Theorie des Fleuves*; *Tableau des principales Rivieres du Monde, par Genetté*; *Stevens sur les Ecluses*; *Traité des Ecluses, par Boulard, qui a remporté le Prix*

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de l'Acad. de Lyons; Bleiswyck *Dissertatio de Aggeribus*; Boffut et Viallet *sur la Construction des Digues*; Stevin *Hydrostatica*; Tielman van der Horst *Theatrum Machinarum Universale*; De la Lande *sur la Canaux de Navigation*; Racolta di Autori *chi Trattano del Moto dell' Acque*, 3 tom. 4to. Firenze 1723.—This most

valuable collection contains the writings of Archimedes, Albizi, Galileo, Castelli, Michelini, Borelli, Montanari, Viviani, Cassini, Guglielmini, Grandi, Manfredi, Piccard, and Narduci; and an account of the numberless works which have been carried on in the embankment of the Po.

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R I V

RIVER-Water. This is generally much softer and better accommodated to economical purposes than spring-water. For though rivers proceed originally from springs, yet, by their rapid motion, and by being exposed during a long course to the influence of the sun and air, the earthy and metallic salts which they contain are decomposed, the acid flies off, and the terrestrial parts precipitate to the bottom. Rivers are also rendered softer by the vast quantity of rain-water, which, passing along the surface of the earth, is conveyed into their channels. But all rivers carry with them a great deal of mud and other impurities; and, when they flow near large and populous towns, they become impregnated with a number of heterogeneous substances, in which state the water is certainly unfit for many purposes; yet, by remaining for some time at rest, all the feculencies subside, and the water becomes sufficiently pure for most of the common purposes of life. River water may be rendered still purer by filtration through sand and gravel; a method which was first resorted to in Paisley, and more lately in Glasgow, for supplying the inhabitants of those towns with good water.

RIVERS, EARL. See WODEVILLE.

RIVINA, a genus of plants belonging to the tetrandria class. See **BOTANY Index**. This plant is called *Solunides* by Tournefort, and *Piercea* by Miller. There are four species which grow naturally in most of the islands of the West Indies. The juice of the berries of one species will stain paper and linen of a bright red colour, and many experiments made with it to colour flowers have succeeded extremely well in the following manner: the juice of the berries was pressed out, and mixed with common water, putting it into a phial, shaking it well together for some time, till the water was thoroughly tinged; then the flowers, which were white and just fully blown, were cut off, and their stalks placed into the phial; and in one night the flowers have been finely variegated with red; the flowers on which the experiments were made were the tuberose, and the double white narcissus.

RIVULET, a diminutive of river. See **RIVER**.

ROACH. See **CYPRINUS**, **ICHTHYOLOGY Index**.

ROAD, an open way, or public passage, forming a communication between one place and another.

Of all the people in the world the Romans took the most pains in forming roads; and the labour and expences they were at in rendering them spacious, firm, straight, and smooth, are incredible. They usually strengthened the ground by ramming it, laying it with flints, pebbles, or sands, and sometimes with a lining of masonry, rubbish, bricks, &c. bound together with mortar. In some places in the Lyonsis, F. Menestrier observes, that he has found huge clusters of flints cemented with lime, reaching 10 or 12 feet deep, and

R I V

making a mass as hard and compact as marble; and which, after resisting the injuries of time for 1600 years, is still scarcely penetrable by all the force of hammers, mattocks, &c. and yet the flints it consists of are not bigger than eggs. The most noble of the Roman roads was the Via Appia, which was carried to such a vast length, that Procopius reckons it five days journey to the end of it, and Leipsius computes it at 350 miles: it is 12 feet broad, and made of square free-stone generally a foot and a half on each side; and though this has lasted for above 1800 years, yet in many places it is for several miles together as entire as when it was first made.

The ancient roads are distinguished into military roads, double roads, subterraneous roads, &c. The military roads were grand roads, formed by the Romans for marching their armies into the provinces of the empire; the principal of these Roman roads in England are Watling-street, Ikenild-street, Foss-way, and Eiminage-street. Double roads among the Romans, were roads for carriages, with two pavements, the one for those going one way, and the other for those returning the other: these were separated from each other by a causeway raised in the middle, paved with bricks, for the conveniency of foot passengers; with borders and mounting stones from space to space, and miliary columns to mark the distance. Subterraneous roads are those dug through a rock, and left vaulted; as that of Puzzuoli near Naples, which is near half a league long, and is 15 feet broad and as many high.

The first law enacted respecting highways and roads in England was in the year 1285; when the lords of the soil were enjoined to enlarge those ways where bushes, woods, or ditches be, in order to prevent robberies. The next law was made by Edward III. in the year 1346; when a commission was granted by the king to lay a toll on all sorts of carriages passing from the hospital of St Giles in the fields to the bar of the Old Temple, and also through another highway called *Port-pool* (now Gray's Inn Lane) joined to the before-named highway; which roads were become almost impassable. Little further relating to this subject occurs, till the reign of Henry VIII. when the parishes were entrusted with the care of the roads, and surveyors were annually elected to take care of them. But the increase of luxury and commerce introduced such a number of heavy carriages for the conveyance of goods, and lighter ones for the convenience and ease of travelling, that parish aid was found sufficient to keep the best frequented roads in repair. This introduced toll gates, or turnpikes; that something might be paid towards their support by every individual who enjoyed the benefit of these improvements, by passing over the roads.

Speaking of roads, the Abbé Raynal justly remarks.

M 2

"Let

Road
||
Robbery.

“ Let us travel over all the countries of the earth, and wherever we shall find no facility of trading from a city to a town, and from a village to a hamlet, we may pronounce the people to be barbarians; and we shall only be deceived respecting the degree of barbarism.”

ROAD, in *Navigation*, a bay, or place of anchorage, at some distance from the shore, whither ships or vessels occasionally repair to receive intelligence, orders, or necessary supplies; or to wait for a fair wind, &c. The excellence of a road consists chiefly in its being protected from the reigning winds and the swell of the sea; in having a good anchoring-ground, and being at a competent distance from the shore. Those which are not sufficiently inclosed are termed *open roads*.

ROAN, in the manege. A *roan* horse is one of a bay, sorrel, or black colour, with grey or white spots interspersed very thick. When this party-coloured coat is accompanied with a black head and black extremities, he is called a *roan horse with a black-a-moor's head*: and if the same mixture is predominant upon a deep sorrel, he is called *claret roan*.

ROANOAK, an island of North America, near the coast of North Carolina. Here the English first attempted to settle in 1585, but were obliged to leave it for want of provisions. E. Long. 75. O. N. Lat. 35. 40.

ROANOAK, a river of North America, which rises in Virginia, runs through Carolina, and at length falls into the sea, where it forms a long narrow bay called *Albemarle sound*.

ROASTING, in metallurgic operations, signifies the dissipation of the volatile parts of an ore by means of heat. See ORES, Reduction of.

ROB, in *Pharmacy*, the juices of fruits purified and inspissated till it is of the consistence of honey.

ROBBERY, the *rapina* of the civilians, is the felonious and forcible taking, from the person of another, of goods or money to any value, by violence or putting him in fear. 1. There must be a taking, otherwise it is no robbery. A mere attempt to rob was indeed held to be felony so late as Henry IVth's time; but afterwards it was taken to be only a misdemeanour, and punishable with fine and imprisonment; till the statute 7 Geo. II. c. 21. which makes it a felony (transportable for seven years) unlawfully and maliciously to assault another, with any offensive weapon or instrument;—or by menaces, or by other forcible or violent manner, to demand any money or goods; with a felonious intent to rob. If the thief, having once taken a purse, returns it, still it is a robbery: and so it is whether the taking be strictly from the person of another, or in his presence only; as where a robber by menaces and violence puts a man in fear, and drives away his sheep or his cattle before his face. 2. It is immaterial of what value the thing taken is: a penny, as well as a pound thus forcibly extorted, makes a robbery. 3. Lastly, the taking must be by force, or a previous putting in fear; which makes the violation of the person more atrocious than privately stealing. For, according to the maxim of the civil law, “ *qui vi rapuit, fur improbius esse videtur*.” This previous violence, or putting in fear, is the criterion that distinguishes robbery from other larcenies. For if one privately steals sixpence from the person of another, and afterwards keeps it by putting him in fear, this is no robbery, for the fear is subsequent: neither is it

capital as privately stealing, being under the value of twelvepence. Not that it is indeed necessary, though usual, to lay in the indictment that the robbery was committed by *putting in fear*: it is sufficient, if laid to be done by *violence*. And when it is laid to be done by putting in fear, this does not imply any great degree of terror or affright in the party robbed: it is enough that so much force or threatening, by word or gesture, be used, as might create an apprehension of danger, or induce a man to part with his property without or against his consent. Thus, if a man be knocked down without previous warning, and stripped of his property while senseless, though strictly he cannot be said to be *put in fear*, yet this is undoubtedly a robbery. Or, if a person with a sword drawn begs an alms, and I give it him through mistrust and apprehension of violence, this is a felonious robbery. So if, under a pretence of sale, a man forcibly extorts money from another, neither shall this subterfuge avail him. But it is doubted, whether the forcing a higler, or other chapman, to sell his wares, and giving him the full value of them, amounts to so heinous a crime as robbery.

This species of LARCENY is debarred of the benefit of clergy by statute 23 Hen. VIII. c. 1. and other subsequent statutes; not indeed in general, but only when committed in a dwelling-house, or in or near the king's highway. A robbery, therefore, in a distant field, or footpath, was not punished with death; but was open to the benefit of clergy, till the statute 3 and 4 W. and M. c. 9. which takes away clergy from both principals and accessories before the fact, in robbery, wheresoever committed. See LAW, N^o clxxxvi. 20.

ROBERT BRUCE, king of Scotland, in 1306; a renowned general, and the deliverer of his country from a state of vassalage to the English. See SCOTLAND.

ROBERT, king of France, surnamed the Wise and the Pious, came to the crown in 996, after the death of Hugh Capet his father. He was crowned at Orleans, the place of his nativity, and afterwards at Rheims, after the imprisonment of Charles of Lorraine. He married Bertha his cousin, daughter of Conrad king of Burgundy; but the marriage was declared null by Gregory V.; and the king, if we can give credit to Cardinal Peter Damien, was excommunicated. This anathema made such a noise in France, that all the king's courtiers, and even his very domestics, went away from him. Only two continued with him; who were so deeply impressed with a sense of horror at whatever the king touched, that they purified it with fire: this scruple they carried so far, as to the very plates on which he was served with his meat, and the vessels out of which he drank. The same cardinal reports, that as a punishment for this pretended incest, the queen was delivered of a monster, which had the head and neck of a duck. He adds, that Robert was so struck with astonishment at this species of prodigy, that he lived apart from the queen. He contracted a second marriage with Constance, daughter of William count of Arles and Provence; but the arrogant disposition of this princess would have totally overturned the kingdom, and thrown it into confusion, had not the wisdom of the king prevented her from intermeddling with the affairs of the state. He carefully concealed from her whatever acts of liberality he showed to any of his domestics. “ Take care (said he to them) that the queen don't perceive it.”

Robbery,
Robert.

Robert. it." Henry duke of Burgundy, brother of Hugh Capet, dying in 1002, without lawful issue, left his dukedom to his nephew the king of France. Robert invested his second son Henry with this dukedom, who afterwards coming to the crown, resigned it in favour of Robert his cadet. This duke Robert was chief of the first royal branch of the dukes of Burgundy, who flourished till 1361. This dukedom was then re-united to the crown by King John, who gave it to his fourth son Philip the Bold, chief of the second house of Burgundy, which was terminated in the person of Charles the Rash who was slain in 1477. King Robert was so much esteemed for his wisdom and prudence, that he was offered the empire and kingdom of Italy, which, however, he declined to accept. Hugh, called the *Great*, whom he had had by Constance, being dead, he caused his second son Henry I. to be crowned at Rheims. He died at Melun, July 20. 1031, at the age of 60. Robert was, according to the knowledge of the times, a wise prince. Helgand, friar of Fleury, relates, in his life of him, that, to prevent his subjects from falling into the crime of perjury, and incurring the penalties which followed thereon, he made them swear upon a shrine from which the relics had been previously removed, as if intention did not constitute perjury! and long after similar reasoning was adopted. Robert built a great number of churches, and procured a restitution to the clergy of the tithes and wealth which the laylords had made themselves masters of. The depredations were such, that the laity possessed the ecclesiastical treasures by hereditary titles; they divided them among their children; they even gave benefices as a dowry with their daughters, or left them to their sons as lawful inheritance. Although Robert was pious, and although he respected the clergy, yet it was evident that he opposed the bishops with a firmness and resolution, of which, for many ages, they had no examples. Lutheric archbishop of Sens had introduced into his diocese the custom of proving by the eucharist persons accused as guilty of any crime. The king wrote to him in the following strong terms:—"I swear (says he) by the faith I owe to God, that if you do not put a stop to the gross abuse complained of, you shall be deprived of your priesthood." The prelate was forced to comply. He punished, in 1022, the Manichæans, canons of Orleans, by burning them at the stake. There are, however, recorded of him some less severe actions, which it is right to mention. A dangerous conspiracy against his person and government having been discovered, and the authors taken into custody, he seized the moment when their judges had met to sentence them to death, to cause an elegant repast to be served up to them. Next day they were admitted to the eucharist. Then Robert told them, that he gave them their pardon, "because none of those can die whom Jesus Christ came to receive at his table." One day when he was at prayers in the chapel, he perceived a thief, who had cut off the half of the fringe of his mantle, proceeding to take the remainder; "Friend (says he with a pleasant countenance), be content with what you have already taken, the rest will very well serve some other." Robert cultivated, and was a patronizer of the sciences. There are several hymns wrote by him, which still continue to be sung in the church. His reign was happy and tran-

quil. According to some authors, he instituted the order of the Star, commonly attributed to King John.

ROBERT of France, second son of Louis VIII. and brother to St Louis, who erected in his favour Artois into a royal peerage in the year 1237. It was during this time that the unlucky difference between Pope Gregory IX. and the emperor Frederic II. took place. Gregory offered to St Louis the empire for Robert; but the French noblesse, having met to deliberate on this proposal, were of opinion that he ought to reject it. He gave the pope for answer: "That Count Robert esteemed himself sufficiently honoured by being the brother of a king, who surpassed in dignity, in strength, in wealth, and in birth, all other monarchs in the world." Robert accompanied St Louis into Egypt, and fought with more bravery than prudence at the battle of Mafoure, on the 6th of February 1250. In his pursuit of the cowards through a certain small village, he was killed by stones, sticks, and other things which they threw at him from the windows. He was an intrepid prince, but too passionate, dogmatical, and quarrelsome.

ROBERT II. *Count of Artois*, son of the preceding, surnamed the Good and the Noble, was at the expedition into Africa in 1270. He drove the rebels from Navarre in 1276. He brought a very powerful assistance to Charles I. king of Naples, of which kingdom he was regent during the captivity of Charles II. He defeated the Arragonians in Sicily in 1289, the English near Bayonne in 1296, and the Flemish at Furnes in 1298. But having in 1302 imprudently attempted to force these last, when encamped near Courtray, he received no less than 30 wounds; and in that expedition lost both his honour and his life. He was a brave, but passionate and fierce man, and good at nothing but pugilistic encounters. Mahaud his daughter inherited the dukedom of Artois, and gave herself in marriage to Otho duke of Burgundy, by whom she had two daughters, Jane wife of Philip the Long, and Blanche wife of Charles the Fair. In the mean time Philip, son of Robert II. had a son.

ROBERT III. who disputed the dukedom of Artois with Mahaud his aunt; but he lost his suit by two sentences given in against him in 1302 and 1318. He wished to revive the process in 1329, under Philip of Valois, by means of pretended new titles, which were found to be false. Robert was condemned the third time, and banished the kingdom in 1331. Having found an asylum with Edward III. king of England, he undertook to declare him king of France; which proved the cause of those long and cruel wars which distressed that kingdom. Robert was wounded at the siege of Vannes in 1342, and died of his wound in England. John, son to Robert, and count of Eu, was taken prisoner at the battle of Poitiers in 1356, and terminated his career in 1387. His son Philip II. high constable of France, carried on war in Africa and Hungary, and died in 1397, being a prisoner of the Turks. He had a son named *Charles*, who died in 1472, leaving no issue.

CHARLES of Anjou, surnamed the Wise, third son of Charles the Lamé, succeeded his father in the kingdom of Naples in 1309, by the protection of the popes, and the will of the people, to the exclusion of Charobert son of his eldest brother. He aided the Roman pontiffs against

Robert.

Robert.

against the emperor Henry VII. and, after the death of that prince, was nominated in 1313 vicar of the empire in Italy, in temporal matters, unless a new emperor was elected. This title was given him by Clement V. in virtue of a right which he pretended to have to govern the empire during an interregnum. Robert reigned with glory 33 years, eight months, and died on the 10th of January 1343, aged 64. "This prince (says M. De Montigni) had not those qualities which constitute heroes, but he had those which make good kings. He was religious, affable, generous, kind, wise, prudent, and a zealous promoter of justice." He was called the *Solomon* of his age. He loved the poor, and caused a ticket to be placed upon his palace, to give notice when he meant to distribute from the throne. He had no other passion but a very great love for learning. He used to say, that he would rather renounce his crown than his study. His court soon became the sanctuary of the sciences, which he encouraged equally by his example and his bounty. This prince was versed in theology, jurisprudence, philosophy, mathematics, and medicine. Boccace says, "that since the days of Solomon we have not seen so wise a prince upon the throne." For a great part of his life he had no taste for poetry; he even despised it, as, in his opinion, unworthy of a man of learning. A conversation which he had with Petrarch, however, undeceived him; he retained this poet at his court, and attempted himself to write some poems, which are still extant. He was forced to engage a little in war, for which he possessed no great talents; alluding to which, may be seen on his tomb a wolf and a lamb drinking out of the same vessel. Philip of Valois refrained from giving battle in 1339, by the repeated advice which this prince gave him, who was a great friend to France, both from inclination and interest. He detested quarrels among Christian princes, and had studied the science of astrology, not so much to know the course of the stars, as to learn by this chimerical science the hidden things of futurity. He believed that he read in the grand book of heaven a very great misfortune which would befall France if Philip hazarded a battle against the English.

ROBERT the First, called the Magnificent, duke of Normandy, second son of Richard II. succeeded in 1028 his brother Richard III. whom it is reported he poisoned. He had early in his reign to suppress frequent rebellions of several of the great vassals. He re-established in his estates Baudouin IV. count of Flanders, who had been unjustly stripped of his possessions by his own son. He forced Canute king of Denmark, who was also king of England, to divide his possessions with his cousins Alfred and Edward. In the year 1035, he undertook barefooted a journey to the Holy Land; on his return from which he died, being poisoned at Nice in Bithynia, leaving as his successor William his natural son, afterwards king of England, whom he had caused before his departure to be publicly acknowledged in an assembly of the states of Normandy.

ROBERT, or *Rupert*, surnamed the Short and the Mild, elector Palatine, son of Robert the Niggardly, was born in 1352, and elected emperor of Germany in 1400, after the deposition of the cruel Wenceslas. In order to gain the affection of the Germans, he wished to restore Milanès to the empire, which Wenceslas had taken from it; but his attempts in this respect were

unsuccessful. His attachment to the anti-pope Gregory XII. entirely alienated the affections of the German princes. To such a degree were they incensed against him, that they entered into a conspiracy to cut him off; but his death, which happened on the 18th of May 1410, being then 58 years old, put a stop to their machinations. Robert began to fetter the sovereignty of the German princes. The emperors had formerly retained in their own hands the power of life and death, within the territories of a great many of the nobles; but he yielded them this right by his letters patent.—The chief fault imputed to this prince was an excess of lenity. But, if we consider the plots which he had to detect, the conspiracies which he had to frustrate, the secret and powerful enemies he had to deal with; if we inquire also into the commotions which the wicked administration of Wenceslas had excited, the irruptions and devastations of plunderers and highway robbers, which the nobles countenanced, and the distressed situation in which he found Germany, we must without hesitation conclude, that his lenity indicated his prudence, in restoring by slow degrees the empire to its original tranquillity. Robert had his virtues, he loved his subjects, and governed them with wisdom. Possessed of much political knowledge for the age in which he lived, he wanted nothing but talents for war to make him an accomplished prince. He was twice married. The name and rank of his first wife is unknown; he had by her a son, who died before him. His second wife was Elizabeth, daughter of Frederic burgrave of Nuremberg, by whom he had five sons and three daughters. The three daughters were, Margaret married to Charles duke of Lorraine; Agnes to Adolphus duke of Cleves; Elizabeth to Frederic duke of Austria. His sons were, Louis the first of the electoral branch, which became extinct in 1559; John father of Christopher king of Denmark; Frederic who died without issue; Otho count of Sinsheim; lastly, Stephen, from whom descended the elector, and the other counts palatine of the Rhine, who are extant at this day.

ROBERT of Bavaria, prince palatine of the Rhine, and duke of Cumberland, the son of Frederic, elector palatine, by Elizabeth, daughter of James I. king of England, distinguished himself by his valour as a general and admiral; first in the Dutch, and then in the English service. He was unsuccessful in the cause of his uncle Charles I. against the parliament forces; but under Charles II. he defeated the Dutch fleet, and was made lord high admiral of England in 1673. This prince was a lover of the sciences, and particularly skilful in chemistry. He died in 1682.

ROBERTSON, DR WILLIAM, one of the most celebrated historians of his age, was one of those great characters, whose private life, flowing in an even and unvaried stream, can afford no important information to the biographer, although his writings will be read to the latest posterity with undiminished pleasure. He was born at the manse of Borthwick in the year 1721. His father was, at the time of his death, one of the ministers of the Old Grey Friars church in Edinburgh, which the Doctor came afterwards to supply. In 1743 he was licenced preacher, and placed in the parish of Gladsmuir in 1744; whence, in 1758, he was translated to Lady Yester's parish in Edinburgh. In 1761, on the death of Principal Goldie, he was elected principal of the

Robert,
Robertson.

Robertson. the university of Edinburgh, and appointed one of the ministers of the Old Grey Friars church. About this period he received the degree of Doctor of Divinity, and was appointed historiographer to his majesty for Scotland, and one of his majesty's chaplains for that kingdom.

We find it not easy to ascertain at what period were first unfolded the great and singular talents which destined Dr Robertson to be one of the first writers that rescued this island from the reproach of not having any good historians. We are, however, assured, that before the publication of any of his literary performances, even from his first appearance in public life, his abilities had begun to attract the notice of observing men; and to his more intimate friends he discovered marks of such high-minded ambition, as, seconded by those abilities, could not have failed to carry him to the first honours of his profession, in whatever sphere he had been placed, and whatever opposition he might have had to combat.

The first theatre that offered for the display of his talents, was the General Assembly of the Church of Scotland. It is the annual meetings of this court that produce to view men who would otherwise remain in the deepest obscurity. There the humble pastor, whose lot has been cast in the remotest corner of the Highland wilds, feels himself, for a time, on a footing of equality with the first citizen in the kingdom: he can there dispute with him the prize of eloquence, the most flattering distinction to a liberal mind; a distinction which is naturally sought after with the greater eagerness in that assembly, as the simple establishment of the church of Scotland has rendered it the only pre-eminence to which the greatest part of its members can ever hope to attain.

From the moment Dr Robertson first appeared in this assembly, he became the object of universal attention and applause. His speeches were marked with the same manly and persuasive eloquence that distinguishes his historical compositions; and it was observed by all, that while his young rivals in oratory contented themselves with opening a cause, or delivering a studied harangue, he showed equal ability to start objections, to answer, or to reply; and that even his most unpremeditated effusions were not unadorned with those harmonious and seemingly measured periods, which have been so much admired in his works of labour and reflection. He soon came to be considered as the ablest supporter of the cause he chose to espouse, and was now the unrivalled leader of one of the great parties which have long divided the church of which he was a member.

When we reflect upon this circumstance, and consider how much mankind are the same in every society, we shall be the less surprised to find, in the literary works of Dr Robertson, an acquaintance with the human heart, and a knowledge of the world, which we look for in vain in other historians. The man who has spent his life in the difficult task of conducting the deliberations of a popular assembly, in regulating the passions, the interests, the prejudices, of a numerous faction, has advantages over the pedant, or mere man of letters, which no ability, no study, no second-hand information, can ever compensate.

The first work which extended the Doctor's reputation beyond the walls of the general assembly, was a

sermon preached at Edinburgh before the society for propagating Christian knowledge, and afterwards published; the subject of which was, 'The state of the world at the appearance of Jesus Christ.' The ingenuity with which a number of detached circumstances are there collected, and shown to tend to one single point, may perhaps rival the art which is so much admired in the bishop of Meaux's celebrated Universal History.

This sermon did great honour to the author; and it is probably to the reputation he gained by it, that we ought to attribute the unanimity with which he was called to be one of the ministers of Edinburgh—an event which happened not long after, viz. in the year 1758. In 1759, he published, in two volumes quarto, 'The History of Scotland, during the reigns of Queen Mary and of King James VI. till his Accession to the Crown of England, with a Review of the Scots History previous to that period.' This work in its structure is one of the most complete of all modern histories. It is not a dry jejune narrative of events, destitute of ornament; nor is it a mere frothy relation, all glow and colouring. The historian discovers a sufficient store of imagination to engage the reader's attention, with a due proportion of judgement to check the exuberance of fancy. The arrangement of his work is admirable, and his descriptions are animated. His style is copious, nervous, and correct. He has displayed consummate skill in rendering such passages of our history as are familiar to our recollection agreeable and entertaining. He has embellished old materials with all the elegance of modern dress. He has very judiciously avoided too circumstantial a detail of trite facts. His narratives are succinct and spirited; his reflections copious, frequent, and generally pertinent. His sentiments respecting the guilt of Mary have indeed been warmly controverted by Messrs Tytler, Stuart, and Whitaker; and, till the publication of Mr Laing's Dissertation on the same subject, (see MARY, life of) the general opinion seemed to be, that their victory was complete. That victory, however, on the part of Whitaker, is sullied by the acrimony with which he writes. Dr Robertson was no rancorous or malignant enemy of the unfortunate queen. While relating, what he doubtless believed, he makes every possible allowance for Mary from the circumstances in which she was placed; and his history will be read with pleasure by candid men of all parties as long as the language in which it is composed shall continue to be understood.

In 1769, Dr Robertson published, in three volumes quarto, The History of the Reign of the Emperor Charles V. with a View of the Progress of Society in Europe, from the Subversion of the Roman Empire to the beginning of the 16th century.—The vast and general importance of the period which this history comprises, together with the reputation which our historian had deservedly acquired, co-operated to raise such high expectations in the public, that no work perhaps was ever more impatiently wished for, or perused with greater avidity. The first volume (which is a preliminary one, containing the progress of society in Europe, as mentioned in the title) is a very valuable part of the work; for it serves not only as a key to the pages that follow, but may be considered as a general introduction to the study of history in that period in which

Robertson. which the several powers of Europe were formed into one great political system, in which each took a station, wherein it has since remained (till within a very few years at least) with less alterations than could have been expected, after the shocks occasioned by so many internal revolutions, and so many foreign wars. Of the history itself, it may be sufficient to observe, that it is justly ranked among the capital pieces of historical excellence. There is an elegance of expression, a depth of discernment, and a correctness of judgement, which do honour to the historian. The characters are inimitably penned. They are not contrasted by a studied antithesis, but by an opposition which results from a very acute and penetrating insight into the real merits of each character, fairly deduced from the several circumstances of his conduct exemplified in the history. For this work the author received 4500*l.* sterling.

In 1779, Dr Robertson published *The History of America*, in two volumes quarto. This celebrated work may be considered with great propriety as a sequel to the preceding history. From the close of the 15th century we date the most splendid era in the annals of modern times. Discoveries were then made, the influence which descended to posterity; and events happened that gave a new direction to the spirit of nations.

To the inhabitants of Europe, America was in every respect a new world. There the face of the earth changed its appearance. The plants and trees and animals were strange; and nature seemed no longer the same. A continent opened that appeared to have recently come from the hands of the Creator, and which showed lakes, rivers, and mountains, on a grander scale, and the vegetable kingdom in greater magnificence, than in the other quarters of the globe; but the animal tribes in a state of degradation, few in number, degenerated in kind, imperfect, and unfinished. The human species in the earliest stage of its progress, vast and numerous nations in the rudest form of the savage state which philosophers have contemplated, and two great empires in the lowest degree of civilization which any records have transmitted to our review, presented to the philosophic eye at this period the most fruitful subject of speculation that was to be found in the annals of history.

The discovery of the New World, moreover, was not only a curious spectacle to the philosopher, but, by the change which it effected, an interesting spectacle to the human race. When Columbus set sail for unknown lands, he little expected that he was to make a revolution in the system of human affairs, and to form the destiny of Europe for ages to come. The importance and celebrity therefore of the subject had attracted the attention of philosophers and historians. Views and sketches of the new world had been given by able writers, and splendid portions of the American story had been adorned with all the beauties of eloquence. But, prior to the appearance of Dr Robertson's history, no author had bestowed the mature and profound investigation which such a subject required, or had finished, upon a regular plan, that complete narration and perfect whole which it is the province of the historian to transmit to posterity. And as the subject upon which our author entered was grand, his execution was masterly. The character of his former works was im-

mediately discerned in it. They had been read with uncommon admiration. When the *History of Scotland* was first published, and the author altogether unknown, Lord Chesterfield pronounced it to be equal in eloquence and beauty to the productions of Livy, the purest and most classical of all the Roman historians. His literary reputation was not confined to his own country: the testimony of Europe was soon added to the voice of Britain. It may be mentioned, indeed, as the characteristic quality of our author's manner, that he possessed in no common degree that supported elevation which is suitable to compositions of the higher class; and, in his *History of America*, he displayed that happy union of strength and grace which becomes the majesty of the historic muse. In the fourth book of his first volume, which contains a description of America when first discovered, and a philosophical inquiry into the manners and policy of its ancient inhabitants, he displays, moreover, so much patient investigation and sound philosophy, abounds in such beautiful or interesting description, and exhibits such variety and copiousness of elegant writing, that future times will probably refer to it as that part of his works which gives the best idea of his genius, and is the most finished of all his productions.

In 1787 appeared a translation of the abbé Clavigero's *History of Mexico*; in which work the author threw out various reflections, tending in several instances to impeach the credit of Dr Robertson's *History of America*. This attack induced our learned historian to revise his work, and to inquire into the truth of the charges brought against it by the historian of New Spain: and this he appears to have done with a becoming attention to the importance of the facts that are controverted, and to the common interests of truth. The result he published in 1788, under the title of *Additions and Corrections to the former Editions of Dr Robertson's History of America*.—In many of the disputed passages, he fully answered the abbé Clavigero, and vindicated himself: in others he candidly submitted to correction, and thus gave additional value to his own work.

The literary labours of Dr Robertson appear to have been terminated in 1791 by the publication of *An Historical Disquisition concerning the Knowledge which the Ancients had of India, and the progress of Trade with that Country prior to the Discovery of the Passage to it by the Cape of Good Hope; with an Appendix, containing Observations on the Civil Polity, the Laws, and Judicial Proceedings, the Arts, the Sciences, and Religious Institutions of the Indians*.—The perusal of Major Rennel's *Memoir*, for illustrating his map of Hindostan, suggested to Dr Robertson the design of examining more fully than he had done, in his *History of America*, into the knowledge which the ancients had of India, and of considering what is certain, what is obscure, and what is fabulous, in their accounts of that remote country. Of his various performances, this is not that of which the design is the most extensive, or the execution the most elaborate; but in this historical disquisition we perceive the same patient assiduity in collecting his materials, the same discernment in arranging them, the same perspicuity of narrative, and the same power of illustration, which so eminently distinguish his other writings, and which have long rendered them the delight

Robertson ||
Robinia. } delight of the British reader at home and an honour to British literature abroad.

A truly useful life Dr Robertson closed on the 11th of June 1793, at Grange-House, near Edinburgh, after a lingering illness, which he endured with exemplary fortitude and resignation. It may be justly observed of him, that no man lived more respected, or died more sincerely lamented. Indefatigable in his literary researches, and possessing from nature a sound and vigorous understanding, he acquired a store of useful knowledge, which afforded ample scope for the exertion of his extraordinary abilities, and raised him to the most distinguished eminence in the republic of letters. As a minister of the gospel, he was a faithful pastor, and justly merited the esteem and veneration of his flock. In a word, he may be pronounced to be one of the most perfect characters of the age; and his name will be a lasting honour to the island that gave him birth. His conversation was cheerful, entertaining, and instructive; his manners affable, pleasing, and endearing.

ROBERVALLIAN LINES, a name given to certain lines used for the transformation of figures, so called from Roberval the inventor of them.

These lines are the boundaries of lines infinitely extended in length, yet equal to other spaces which are terminated on all sides.

It is observed by the abbot Gallois, that the method of transforming figures which is explained at the end of Roberval's treatise of Indivisibles, was the same with that afterwards published by James Gregory, in his *Geometria Universalis*, and also by Dr Barrow in his *Lectiones Geometricae*; and that it appears from Torricelli's letter, that Roberval was the inventor of this method of transforming figures, by means of certain lines, called by Torricelli, for that reason, *Robervallian lines*.

The same author adds, that J. Gregory probably first learned this method at Padua in the year 1668; for the method was known in Italy in 1646, although the book was not published till 1692.

David Gregory endeavoured to refute this account, in vindication of his uncle James, whose answer appeared in the *Phil. Trans.* for 1694, and the abbot rejoined in the *Memoirs of the French Academy* for 1703; so that it remains in a state of uncertainty to which of the two we are to ascribe the invention.

ROBIGUS AND ROBIGO, a Roman god and goddess, who joined in the preservation of corn from blight. Their festival was kept on the 25th of April.

ROBIN HOOD. See HOOD.

ROBIN-Redbreast. See MOTACILLA, ORNITHOLOGY Index.

ROBINIA, FALSE ACACIA; a genus of plants belonging to the diadelphia class; and in the natural method ranking under the 32d order, *Papilionaceae*. See BOTANY Index. There are nine species included under this genus, and the most remarkable are the *caragnana* and *ferox*, the leaves of the former of which are conjugated, and composed of a number of small foliicles, of an oval figure, and ranged by pairs on one common stock. The flowers are leguminous, and are clustered on a filament. Every flower consists of a small bell-shaped petal, cut into four segments at the edge, the upper part being rather the widest. The keel is small, open, and rounded. The wings are large, oval, and a little raised. Within are 10 stamina united at the base, curved towards the

top, and rounded at the summit. In the midst of a sheath, formed by the filaments of the stamina, the pistil is perceivable, consisting of an oval germen, terminated by a kind of button. This germen becomes afterwards an oblong flattish curved pod, containing four or five seeds, of a size and shape irregular and unequal; yet in both respects somewhat resembling a lentil.

This tree grows naturally in the severe climates of Northern Asia, in a sandy soil mixed with black light earth. It is particularly found on the banks of great rivers, as the Oby, Jenisei, &c. It is very rarely met with in the inhabited parts of the country, because cattle are very fond of its leaves, and hogs of its roots; and it is so hardy, that the severest winters do not affect it. Gmelin found it in the neighbourhood of Tobolsk, buried under 15 feet of snow and ice, yet had it not suffered the least damage. Its culture consists in being planted or sowed in a lightish sandy soil, which must on no account have been lately manured. It thrives best near a river, or on the edge of a brook or spring; but presently dies if planted in a marshy spot, where the water stagnates. If it is planted on a rich soil, well tilled, it will grow to the height of 20 feet, and in a very few years will be as big as a common birch tree.

In a very bad soil this tree degenerates, and becomes a mere shrub: the leaves grow hard, and their fine bright green colour is changed to a dull deep green. The Tungusian Tartars, and the inhabitants of the northern parts of Siberia, are very fond of the fruit of this tree, it being almost the only sort of pulse they eat. M. Strahlemberg, author of a well-esteemed description of Siberia, assures us that this fruit is tolerably pleasant food, and very nourishing. These pease are first infused in boiling water, to take off a certain acrid taste, and are afterwards dressed like common pease or Windsor beans; and being ground into meal, pretty good cakes are made of them. The leaves and tender shoots of this tree make excellent fodder for several sorts of cattle. The roots, being sweet and succulent, are very well adapted to fattening hogs; and the fruit is greedily eaten by all sorts of poultry. After several experiments somewhat similar to the methods used with anil and indigo, a fine blue colour was procured from its leaves. The smaller kind of this tree seems still better adapted to answer this purpose. The striking elegance of its foliage, joined to the pleasing yellow colour of its beautiful flowers, should, one would imagine, bring it into request for forming nosegays, or for speedily making an elegant hedge.

Besides the qualities above recited, it possesses the uncommon advantage of growing exceedingly quick, and of being easily transplanted. There are large plantations of it now in Sweden, Norway, Lapland, and Iceland. Linnæus assures us, that, after the *Pinus fol. quinis*, erroneously called the *cedar tree of Siberia*, this tree, of all that are to be found in Siberia, is most worthy of cultivation.

The robinia *ferox* is a beautiful hardy shrub, and, on account of its robust strong prickles, might be introduced into this country as a hedge plant, with much propriety. It resists the severest cold of the climate of St Petersburg, and perfects its seed in the imperial garden there. It rises to the height of six or eight feet; does not send out suckers from the root,

Robinia
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Robins.

nor ramble so much as to be with difficulty kept within bounds. Its flowers are yellow, and the general colour of the plant a light pleasing green. A figure of it is given in the *Flora Rossica* by Dr Pallas, who found it in the southern districts, and sent the seeds to St Petersburg, where it has prospered in a situation where few plants can be made to live.

ROBINS, BENJAMIN, a most ingenious mathematician, was born at Bath in 1707. His parents were Quakers of low condition, and consequently were unable to have him much instructed in human learning. But his own propensity to science having procured him a recommendation to Dr Pemberton at London, by his assistance, while he attained the sublimer parts of mathematical knowledge, he commenced teacher of the mathematics. But the business of teaching, which required confinement, not suiting his active disposition, he gradually declined it, and engaged in business that required more exercise. Hence he tried many laborious experiments in gunnery, from the persuasion that the resistance of the air has a much greater influence on swift projectiles than is generally imagined. Hence also he was led to consider the mechanic arts that depend on mathematical principles; as the construction of mills, the building of bridges, the draining of fens, the rendering of rivers navigable, and the making of harbours. Among other arts, fortification much engaged his attention; and he met with opportunities of perfecting himself by viewing the principal strong places of Flanders, in some tours he made abroad with persons of distinction.

Upon his return from one of these excursions, he found the learned amused with Dr Berkeley's work, intitled *The Analyst*, in which an attempt was made to explode the method of fluxions. Mr Robins was therefore advised to clear up this affair by giving a distinct account of Sir Isaac Newton's doctrines, in such a manner as to obviate all the objections that had been made without naming them. Accordingly he published, in 1735, *A Discourse concerning the Nature and Certainty of Sir Isaac Newton's Method of Fluxions*: and some exceptions being made to his manner of defending Sir Isaac Newton, he afterwards wrote two or three additional discourses. In 1738 he defended the same great philosopher against an objection contained in a note at the end of a Latin piece, called *Matho, sive Cosmotheoria puerilis*; and the following year printed *Remarks on M. Euler's Treatise of Motion, on Dr Smith's System of Optics, and on Dr Jurin's Discourse of distinct and indistinct Vision annexed to Dr Smith's work*. In the meanwhile, Mr Robins did not solely confine himself to mathematical subjects: for in 1739 he published three pamphlets on political affairs, without his name; when two of them, relating to the convention and negotiations with Spain, were so universally esteemed, as to occasion his being employed in a very honourable post; for on a committee being appointed to examine into the past conduct of Sir Robert Walpole, he was chosen their secretary.

In 1742, Mr Robins published a small treatise, intitled *New Principles of Gunnery*, containing the result of many experiments; when a Discourse being published in the *Philosophical Transactions*, in order to invalidate some of his opinions, he thought proper, in an account he gave of his book in the same *Transactions*, to take notice

Robins
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Robinson.

of those experiments; in consequence of which, several of his *Dissertations on the Resistance of the Air* were read, and the experiments exhibited before the Royal Society, for which he was presented by that honourable body with a gold medal.

In 1748 appeared Lord Anson's *Voyage round the World*, which, though Mr Walter's name is in the title, has been generally thought to be the work of Mr Robins. Mr Walter, chaplain on board the *Centurion*, had brought it down to his departure from Macao for England, when he proposed to print the work by subscription. It was, however, it is said, thought proper, that an able judge should review and correct it, and Mr Robins was appointed; when, upon examination, it was resolved that the whole should be written by Mr Robins, and that what Mr Walter had done should only serve as materials. Hence the introduction entire, and many dissertations in the body of the work, it is said, were composed by him, without receiving the least assistance from Mr Walter's manuscript, which chiefly related to the wind and the weather, the currents, courses, bearings, distances, the qualities of the ground on which they anchored, and such particulars as generally fill up a sailor's account. No production of this kind ever met with a more favourable reception; four large impressions were sold within a twelvemonth; and it has been translated into most of the languages of Europe. The fifth edition, printed at London in 1749, was revised and corrected by Mr Robins himself. It appears, however, from the corrigenda and addenda to the 1st volume of the *Biographia Britannica*, printed in the beginning of the fourth volume of that work, that Mr Robins was only consulted with respect to the disposition of the drawings, and that he had left England before the book was printed. Whether this be the fact, as it is asserted to be by the widow of Mr Walter, it is not for us to determine.

It is certain, however, that Mr Robins acquired the fame, and he was soon after desired to compose an apology for the unfortunate affair at Prestonpans in Scotland, which was prefixed as a preface to *The Report of the Proceedings of the Board of General Officers on their Examination into the conduct of Lieutenant-General Sir John Cope*; and this preface was esteemed a masterpiece in its kind. He afterwards, through the interest of Lord Anson, contributed to the improvements made in the Royal Observatory at Greenwich. Having thus established his reputation, he was offered the choice of two considerable employments; either to go to Paris as one of the commissaries for adjusting the limits of Acadia, or to be engineer-general to the East India company. He chose the latter, and arrived in the East Indies in 1750; but the climate not agreeing with his constitution, he died there the year following.

ROBINSON, THE MOST REV. SIR RICHARD, archbishop of Armagh and Lord Rokeby, was immediately descended from the Robinsons of Rokeby in the north riding of the county of York, and was born in 1709. He was educated at Westminster school, from whence he was elected to Christ-Church, Oxford, in 1726. After continuing his studies there the usual time, Doctor Blackburne, archbishop of York, appointed him his chaplain, and collated him first to the rectory of Elton, in the east riding of Yorkshire, and next to the prebend of Grindal, in the cathedral of York. In 1751 he

Robinson. he attended the duke of Dorset, lord-lieutenant of Ireland, to that kingdom, as his first chaplain, and the same year was promoted to the bishopric of Killala. A family connection with the earl of Holderness, who was secretary of state that year, with the earl of Sandwich and other noblemen related to him, opened the fairest prospects of attaining to the first dignity in the Irish church. Accordingly in 1759 he was translated to the united sees of Leighlin and Ferns, and in 1761 to Kildare. The duke of Northumberland being appointed to the lieutenancy of Ireland in 1765, he was advanced to the primacy of Armagh, made lord-almoner, and vice-chancellor of the university of Dublin. When Lord Harcourt was lord-lieutenant of Ireland in 1777, the king was pleased by privy-seal at St James's, February 6th, and by patent at Dublin the 26th of the same month, to create him Baron Rokeby of Armagh, with remainder to Matthew Robinson of West Layton, Esq; and in 1783 he was appointed prelate to the most illustrious order of St Patrick. On the death of the duke of Rutland lord-lieutenant of Ireland in 1787, he was nominated one of the lords-justices of that kingdom. Sir William Robinson, his brother, dying in 1785, the primate succeeded to the title of baronet, and is the survivor in the direct male line of the Robinsons of Rokeby, being the 8th in descent from William of Kendal. His grace died at Clifton near Bristol in the end of October 1794.

No primate ever sat in the see of Armagh who watched more carefully over the interest of the church of Ireland, as the statute-book evinces. The act of the 11th and 12th of his present majesty, which secures to bishops and ecclesiastical persons repayment by their successors of expenditures in purchasing glebes and houses, or building new houses, originated from this excellent man, and must ever endear his name to the clergy. The other acts for repairing churches, and facilitating the recovery of ecclesiastical dues, were among the many happy exertions of the primate.

But it was at Armagh, the ancient seat of the primacy, that he displayed a princely munificence. A very elegant palace, 90 feet by 60, and 40 high, adorns that town; it is light and pleasing, without the addition of wings or lesser parts; which too frequently wanting a sufficient uniformity with the body of the edifice, are unconnected with it in effect, and divide the attention. Large and ample offices are conveniently placed behind a plantation at a small distance. Around the palace is a large lawn, which spreads on every side over the hills, skirted by young plantations, in one of which is a terrace, which commands a most beautiful view of cultivated hill and dale; this view from the palace is much improved by the barracks, the school, and a new church at a distance; all which are so placed as to be exceedingly ornamental to the whole country.

The barracks were erected under the primate's direction, and form a large and handsome edifice. The school is a building of considerable extent, and admirably adapted for the purpose; a more beautiful or better contrived one is nowhere to be seen; there are apartments for a master, a school-room 56 feet by 28, a large dining room and spacious airy dormitories, with every other necessary, and a spacious play-ground wall-ed in; the whole forming a handsome front: and attention being paid to the residence of the master (the salary is 400l. a-year), the school flourishes, and must

prove one of the greatest advantages to the country. *Robinson.* This edifice was built entirely at the primate's expence. The church is erected of white stone, and having a tall spire, makes a very agreeable object, in a country where churches and spires do not abound. The primate built three other churches, and made considerable reparations to the cathedral; he was also the means of erecting a public infirmary, contributing amply to it himself: he likewise constructed a public library at his own cost, endowed it, and gave it a large collection of books; the room is 45 feet by 25, and 20 high, with a gallery and apartments for the librarian. The town he ornamented with a market-house and shambles, and was the direct means, by giving leases upon that condition, of almost new-building the whole place. He found it a nest of mud cabins, and he left it a well-built city of stone and slate. These are noble and spirited works, in which the primate expended not less than 30,000l. Had this sum been laid out in improving a paternal estate, even then they would be deserving great praise; but it is not for his posterity but the public good that his grace was so munificent. A medal was struck by the ingenious William Mossop of Dublin, which has on one side the head of the primate, inscribed "Richard Robinson, Baron Rokeby, Lord Primate of all Ireland." And on the reverse, the south front of the observatory at Armagh, erected by his grace, with this admirable motto, "The Heavens declare the glory of God." MDCLXXXIX.

ROBINSON, *Robert*, a dissenting minister of considerable note, was born on the 8th of October 1735 at Swaffham in Norfolk. His father died when he was young; and his maternal grandfather Robert Wilkin, of Mildenhall, Suffolk, gent. who had ever been dissatisfied with his daughter's marriage, deprived him of his maternal inheritance, cutting him off with half-a-guinea. His uncle, however, who was a substantial farmer, in some measure supplied their loss. He took Mr Robinson home, and placed him under the Rev. Joseph Brett, at Scarning school in Norfolk, with a view to the ministry of the church of England; where he had for one of his school-fellows the lord chancellor Thurlow. When about the age of 15 or 16, he imbibed the notions of George Whitfield; on which account he was discarded by his uncle, and again exposed to poverty and want. He first directed his thoughts towards the ministry in the year 1754, and commenced preacher in the following year at the age of 20; preaching his first sermon to a congregation of poor people at Mildenhall. He continued for a year or two as one of Mr Whitfield's preachers, and during that period he married. In the year 1758, however, he determined to separate from the Methodists; after which he settled at Norwich with a small congregation formed chiefly of his methodistic friends, being at that time an Independent. In the year 1759 he was invited to Cambridge, and for two years preached on trial to a congregation consisting of no more than 34 people, and so poor that they could only raise 3l. 6s. a quarter for his subsistence. In June 1761 he settled as their pastor, and was ordained in the usual manner; at which time we are told he exercised the office of a barber. In 1774, his congregation had so much increased as to consist of 1000 souls, including children and servants.

In Cambridge Mr Robinson's talents soon attracted notice,

Robinson. notice, and he quickly set up a Sunday evening lecture, which was well attended. His preaching was altogether without notes; a method in which he was peculiarly happy: not by trusting to his memory entirely, nor by working himself up to a degree of warmth and passion, to which the preachers among whom he first appeared commonly owe their ready utterance; but by thoroughly studying and making himself perfectly master of his subject, and a certain faculty of expression which is never at a loss for suitable and proper words. In short, his manner was admirably adapted to enlighten the understanding, and to affect and reform the heart. He had such a plainness of speech, such an easy and apparent method in dividing a discourse, and such a familiar way of reasoning, as discovered an heart filled with the tenderest concern for the meanest of his hearers; and yet there was a decency, propriety, and justness, that the most judicious could not but approve. Several gentlemen of the university, eminent for character and abilities, we are told, were his constant hearers.

The circumstances which lost him his uncle's patronage paved the way for the future events of his life. The incident which made him discard the common sentiments on the subject of baptism, at once marked the turn of his mind, and shows what apparently slight causes frequently determine the lot and usefulness of our lives. He was invited to the baptism of a child; the minister who was to perform the service keeping the company in long expectation of his appearance, some one suggested, that supposing the child were not baptized at all, he saw not how it could affect his happiness. Though the conversation was not pursued, the hint struck Mr Robinson's mind; and he immediately determined to read the New Testament with this particular view, to examine what it said concerning the baptism of infants. He accordingly began with the Gospel of Matthew; and, in succession, perused the historical and epistolary books; in expectation that he should find in every following part what he had not met with in the preceding parts of the sacred volume; namely, passages recommending and urging this rite. But observing, on the whole, a total silence about it, he thought it his duty to relinquish the practice, as without foundation in the rule of our faith; which appeared to him to speak only of the baptism of believers.

This change of his sentiments was more unfavourable than the former alterations in his religious judgement to his wordly views; and having married very early in life from pure affection, he was involved in great difficulties for near 12 years after his settlement in Cambridge; as, in that course of time, his family became numerous, and the support of an aged mother, as well as of a wife and ten children, depended upon him. But unexpected supplies, from quarters of which he was ignorant, frequently relieved his necessities, and confirmed his trust in Providence: yet the situation of his family must, it is easy to conceive, have much affected his mind. For he appears to have possessed great tenderness and sensibility, and to have regarded with peculiar endearment his domestic connections.

It may be reckoned a circumstance worthy of mention, that the sphere of Mr Robinson's ministry was the same in which his great grandfather Mr Shelly, of Jesus College, and vicar of All-Saints, had, with others,

diffused the principles of the Puritans, about the beginning of the 17th century. The reputation of the Dissenters in the university and neighbourhood had for almost a century been sinking into contempt, when Mr Robinson settled with the baptist church at Stone-Yard. His abilities and assiduity, however, raised their reputation. The place in which his people assembled, which was at first a barn, afterwards a stable and granary, and then a meeting-house, but still a damp, dark, and ruinous place, soon became too small for the audience; and several of the new auditors being men of fortune, they purchased the site, and erected at their own expence a new house in the year 1764.

His labours as a preacher were not limited to the town of Cambridge; but soon after his coming there, he set up several lectures in the adjacent villages. His lectures were either annual or occasional, or stated on fixed days. The usual time was half an hour after six in the evening; and sometimes at five in the morning; and now and then in the summer at two in the afternoon, for the sake of those who came from a distance.

He died on the 9th of June 1790, at the house of William Russel, Esq. of Showell Green near Birmingham. He had laboured under an alarming disorder for some time before; but on the Sunday preceding his death he preached a charity sermon. On Monday he was seized with a fit; on Tuesday he recovered and went to bed tolerably well, but was found dead next morning.

The abilities of Mr Robinson were very considerable, as appears from his numerous works; and he possessed the quality of expressing his thoughts in an easy and a forcible manner. But he appears to have been of an unsteady temper, and in our opinion, acquires but little credit either from the frequency with which he changed his religious creed (for we have reason to believe he died a Socinian), or from the foolish and undeserved acrimony with which he treated the church of England. His Plan of Lectures on the Principles of Nonconformity, for the Instruction of Catechumens, is a piece of the most unjust and illiberal abuse that we have ever seen, and would have disgraced the most high-flying Puritan of the last century.

Mr Robinson's largest work, the History of Baptism and of the Baptists, was published since his death, and is written in the same style and with the same confidence as his other works. Yet, as we have heard it remarked by a learned and liberal professor of theology in the church which he opposed, it is not a little remarkable that there is in it no argument or fact against infant baptism which was not answered by Dr Wall nearly 100 years ago, of whose arguments Mr Robinson however takes no notice.

ROBORANTS, in *Pharmacy*, medicines which strengthen the parts, and give new vigour to the constitution.

ROCHEFORT, a handsome and considerable town of France in the department of Lower Charente. It was constructed by Louis XIV. and is built in the midst of marshes expressly drained for that purpose; and time evinced the utility of the project, for as a port it soon became as necessary and important to the crown of France as Brest or Toulon. It has a department of the marine, and has large magazines of naval stores. There is also one of the finest halls of arms in the kingdom, and a great many workmen employed in making them; there

Rocheport there are also forges for anchors, and work-houses for ship-carpenters, who are employed in every thing that relates to the fitting out of ships that come within the compass of their province. They likewise cast great guns here; and have artists, whose employment is sculpture and painting. There are also stocks for building men of war, rope-walks, magazines of provisions and powder, a manufactory of sail-cloth, an hospital for sailors, and proper places to clean the ships. Add to these, the houses of the intendant, the square of the capuchins, and the superb structure which contains lodgings for 300 marine guards, where they are taught the business and exercises belonging to seamen and officers who go on board the men of war.

Besides the usual number of workmen which were employed at Rochefort during the monarchy, which amounted to about 900, there were about 600 galley slaves, occupied in the most painful and laborious branches of service. The town is situated on the river Charente, about five leagues from its mouth, and was fortified by Louis XIV. at the time he constructed it; but its situation is at so considerable a distance from the sea, as to render it sufficiently secure from any attack, and they have therefore closed up the battlements, and neglected the fortifications. It is supposed to contain about 10,000 inhabitants. The town is laid out with great beauty and elegance. The streets are all very broad and straight, extending through the whole place from side to side; but the buildings do not correspond with them in this respect, as they are mostly low and irregular. W. Long. 0. 54. N. Lat. 46. 3.

ROCHEFOUCAULT, FRANCIS EARL OF, descended of an illustrious family, next in dignity to that of the sovereigns, was chamberlain to King Charles VIII. and Louis XII. His character at court was admired as obliging, generous, upright, and sincere. In 1494 he stood godfather to Francis I. who, when he came to the throne, continued to pay great respect to that spiritual relation. He made him his chamberlain in ordinary, and erected, in 1515, the barony of Rochefoucault into an earldom; and, in his writ of erection, observes, that he did this in memory of the great, honourable, highly useful, and commendable services which the said Francis had done to his predecessors, to the crown of France, and to himself. The earl of Rochefoucault died in 1517, leaving behind him an illustrious memory, and a character universally respected. Since his time all the eldest sons of that family have taken the name of Francis.

ROCHEFOUCAULT, Francis duke de la, prince of Marillac, governor of Poitou, was born in 1603.—He was the son of Francis, the first duke of Rochefoucault, and was distinguished equally by his courage and his wit. These shining qualities endeared him to all the nobility at court, who were ambitious of decorating themselves at once with the laurels of Mars and of Apollo. He wrote two excellent works; the one a book of Maxims, which M. de Voltaire says has contributed more than any thing else to form the taste of the French nation; and the other, Memoirs of the Regency of Queen Anne of Austria. It was partly at the instigation of the beautiful duchess de Longueville, to whom he had been long attached, that the duke de Rochefoucault engaged in the civil wars, in which he signalized himself particularly at the battle of St An-

toine. Beholding one day a portrait of this lady, he wrote underneath it these two lines from the tragedy of Alcyonée:

“ *Pour mériter son cœur, pour plaire à ses beaux yeux,
“ J’ai fait la guerre aux rois, je l’aurois fait aux dieux.*”

Which may be thus rendered in English:

“ To gain her heart, and please her sparkling eyes,
“ I’ve war’d with kings, and would have brav’d the skies.”

It is reported, that after his rupture with Madame Longueville, he parodied the above verses thus:

“ *Pour ce cœur inconstant, qu’ensin je connois mieux,
“ Je fais la guerre aux rois, j’en ai perdu les yeux.*”

After the civil wars were ended, he thought of nothing but enjoying the calm pleasures of friendship and literature. His house became the rendezvous of every person of genius in Paris and Versailles. Racine, Boileau, Savigne, and La Fayette, found in his conversation charms which they sought for in vain elsewhere. He was not, however, with all his elegance and genius, a member of the French Academy. The necessity of making a public speech on the day of his reception was the only cause that he did not claim admittance. This nobleman, with all the courage he had displayed upon various critical occasions, and with his superiority of birth and understanding over the common run of men, did not think himself capable of facing an audience, to utter only four lines in public, without being out of countenance. He died at Paris in 1680, aged 68, leaving behind him a character which has been variously drawn by those who during his life were proud of his friendship. That he was well acquainted with human nature is certain; and his merit in that respect was fully admitted by Swift, who was himself not easily imposed upon by the artificial disguises of the hypocrite.

ROCHELLE, a celebrated city of France, in the department of Lower Charente, with a very commodious and safe harbour, which, though it does not admit vessels of any considerable burden, is yet well calculated for trade. “ It may be divided (says Mr Wraxal) into three parts; the basin, which is the innermost of these, is only a quarter of a mile in circumference; and at the entrance are two very noble Gothic towers, called the Tour de St Nicholas, and the Tour de la Chaine. They are now in a state of decay, but were anciently designed to protect the town and harbour. Without these towers is the Avant Port, extending more than a league, and bounded by two points of land to the north and south. Beyond all is the road where the largest ships usually anchor, protected from the south-west winds by the islands of Re, Oleron, and Aix.” The celebrated mound erected by Richlieu extends from side to side across the whole harbour, nearly an English mile in length, and when the sea retires is still visible. “ I walked out upon it (says Mr Wraxal) above 300 feet. Its breadth is at this time more than 150 feet, and it widens continually towards the base. No effort of art or power can possibly impress the mind with so vast and sublime an idea of the genius of Richlieu, as does this bulwark against the sea. While I stood upon it, in the middle of the port, between the waves which rolled on either side, and contemplated its extent and strength, I was almost inclined to suppose this astonishing work to be

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be superior to human power, and the production rather of a deity than of a mortal. A small opening of about 200 feet was left by Pompey Targon, the architect who constructed it, to give entrance to vessels, and shut up by chains fixed across it. A tower was likewise erected at each end, no remains of which are now to be seen. Neither the duke of Buckingham, nor the earl of Lindsey, who were successively sent from England to the aid of the besieged by Charles the First, dared to attack this formidable barrier: they retired, and left Rochelle to its fate. In all probability, a thousand years, aided by storms and all the fury of the sea, will make little or no impression on this mound, which is designed to endure as long as the fame of the cardinal, its author."

Before the revolution, Rochelle was a bishop's see, and contained a college of humanities, an academy, a school for medicine, anatomy, and botany, and a mint. It cannot lay claim to any remote antiquity, being merely a little collection of houses on the shore, inhabited by fishermen, when William IX. last count of Poictou, rendered himself master of it in 1139. From this prince it descended to his only daughter Eleanor, afterwards queen of Henry II. of England; and her charter incorporating the town is still preserved in the registers of the city. In the year 1540, Rochelle was the grand asylum of the Protestants; and the massacre at Paris was soon followed by the siege of Rochelle, which began in November 1572, and was raised in June 1573; but in 1628, after a most obstinate resistance, and a siege of 13 months, it surrendered to the mercy of Louis XIII. At the beginning of the first siege, the number of inhabitants in the city amounted to 72,000; in the second they diminished to 28,000; and they were, when Mr Wraxal was there, between 17 and 18,000, of which scarce 2000 were Huguenots. The houses of this city are fine, and supported with piazzas, under which persons may walk in all weathers; and the streets in general are as straight as a line. There are several handsome churches, and other structures, besides a remarkable pump in the square of Dauphiny, which throws out the water through several pipes. There are no remains of the old fortifications, except on the side of the harbour, where there are bulwarks and strong towers to defend the entrance. The new fortifications are in the manner of Vauban. Before Canada was ceded to England, and New Orleans to Spain, the trade of Rochelle was very lucrative. It revived about the year 1773, and, beside that to the coast of Guinea and the East Indies, the inhabitants carried on a considerable trade in wines, brandy, salt, paper, linen cloth, and serge. It is seated on the ocean, in W. Long. 1. 4. N. Lat. 46. 9.

ROCHESTER, a city of Kent, in England, is situated on the Medway, seven miles and a half north of Maidstone, and 30 from London. It appears to have been one of the Roman stations, from the bricks in the walls, as well as the Roman coins that have been found about it. It has three parish churches built with stone and flints, besides the cathedral, which is but a mean structure. This little city, which was made a bishop's see by King Ethelbert, anno 604, has met with many misfortunes. In 676, it was sacked by Eldred king of Mercia; in 839 and 885, besieged by the Danes, but rescued by King Alfred. About 100 years

after, it was besieged by King Ethelred, and forced to pay 100l. Anno 999 it was taken and plundered by the Danes. Anno 1088 it was besieged and taken by William Rufus. In King John's time it was taken from the Barons, after three months siege; and the very next year, viz. 1256, its castle, founded by William the Conqueror, was stormed and taken by several of the Barons, under the French king's son. In the reign of Henry III. it was besieged by Simon Montford, who burnt its then wooden bridge and tower, and spoiled the church and priory, and then marched off. This city has also been several times destroyed by fire, viz. in 1130, on June 3. in 1137, and in 1177; after which it is said to have continued desolate till 1225, when it was repaired, ditched, and walled round. In the Saxon heptarchy there were three mints in Rochester, two for the king and one for the bishop. In 1281, its old wooden bridge was carried off by the ice, in a sudden thaw after a frost which had made the Medway passable on foot. Another was built in the reign of Richard II. but pulled down again, on the rumour of an invasion from France. It was afterwards restored, but so often subject to expensive repairs, by reason of the rapid course of the river under it, as well as the great breadth and depth of it, that in the reign of Edward III. it was resolved to build a new bridge of stone; and the same was begun, and in a manner completed, at the expence of Sir John Cobham and Sir Robert Knolles, Edward III.'s generals, out of the spoils they had taken in France. It has 21 arches. The town is governed by a mayor, recorder, 12 aldermen, 12 common-councilmen, a town-clerk, three serjeants at mace, and a water-bailiff. To its cathedral belong a dean and six prebendaries. Gundulph's tower stands on the north side of the cathedral, and is supposed to have been built by the bishop, as a place of security for the treasures and archives of that church and see. Some suppose it to have been intended for a bell tower, and others for an ecclesiastical prison; but whatever might be its destination, its machicolations, its loop-hole windows, and the thickness of its walls, show that strength and defence were considered as necessary. This tower was 60 feet high, but some part has lately fallen down; the walls are six feet thick, and contain within them an area of 20 feet square: it was divided into five floors or stories of unequal height, and had a communication with the upper part of the church, by means of an arch or bridge, the steps of which are still visible. It is supposed to have been erected after the cathedral was built. For the maintenance of its bridge, certain lands are tied down by parliament, to which it has sent members from the first. The town-house, built in the year 1687, for the courts, assizes, and sessions, and the charity-school, are two of the best public buildings here.—A mathematical school was founded here, and an alms-house for lodging six poor travellers every night, and allowing them 4d. in the morning when they depart, except persons contagiously diseased, rogues, and proctors. In the summer here are always six or eight lodgers, who are admitted by tickets from the mayor. The Roman Watling street runs through this town from Shooters Hill to Dover. The mayor and citizens hold what is called an admiralty-court once a-year for regulating the oyster fishery in the creeks and branches of the Medway that are within their jurisdiction,

Rochester
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tion, and for prosecuting the cable-hangers, as they are called, who dredge and fish for oysters without being free, by having served seven years apprenticeship to a fisherman who is free of the fishery. Every licensed dredger pays 6s. 8d. a year to the support of the courts, and the fishery is now in a flourishing way. Part of the castle is kept in repair, and is used as a magazine, where a party of soldiers do constant duty. The bridge was repaired in 1744, and pallisadoed with new iron rails. Rochester contains about 700 houses, and 2000 inhabitants. It consists of only one principal street, which is wide, and paved with flints. The houses are generally well built with brick, and inhabited by tradesmen and innkeepers. It has also four narrow streets; but no sort of manufactory is carried on here. Stroud is at the west end of this place, and Chatham at the east. It is 27 miles north-west by west of Canterbury, and 30 south-east by east of London. Long. o. 36. E. Lat. 51. 23. N.

ROCHESTER, *Earl of*. See WILMOT.

ROCK, a large mass of stone. See GEOLOGY.

ROCK, a species of VULTURE. See ORNITHOLOGY *Index*.

ROCK Basins are cavities or artificial basins of different sizes, from six feet to a few inches diameter, cut in the surface of the rocks for the purpose, as is supposed, of collecting the dew and rain pure as it descended from the heavens, for the use of ablutions and purifications, prescribed in the druidical religion; these, especially the dew, being deemed the purest of all fluids. There are two sorts of these basins, one with lips or communications between the different basins, the other simple cavities. The lips as low as the bottom of the basins, which are horizontal, and communicate with one somewhat lower, so contrived that the contents fell by a gradual descent through a succession of basins either to the ground, or into a vessel set to receive it. The basins without lips might be intended for reservoirs to preserve the rain or dew in its original purity without touching any other vessel, and was perhaps used for the druid to drink, or wash his hands, previous to officiating at any high ceremony, or else to mix with their milletoe.

Some of these basins are so formed as to receive the head and part of the human body; one of this kind is found on a rock called King Arthur's Bed, in the parish of North Hall in Cornwall, where are also others, called by the country people Arthur's troughs, in which they say he used to feed his dogs.

ROCK-Crystal, in *Natural History*, otherwise called *spring-crystal*, a name given to quartz or siliceous stones, when pure and regularly crystallized. See MINERALOGY *Index*.

Rock Salt. See SALT, GEOLOGY.

Rock Oil. See PETROLEUM, MINERALOGY *Index*.

Rock Fish. See GOBIUS, ICHTHYOLOGY *Index*.

ROCKET, an artificial fire-work, consisting of a cylindrical case of paper, filled with a composition of certain combustible ingredients; which, being tied to a stick, mounts into the air, and then bursts. See PYROTECHNY.

Theory of the Flight of Sky-ROCKETS. Mariotte takes the rise of rockets to be owing to the impulse or resistance of the air against the flame. Dr Desaguliers accounts for it otherwise.

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ham.

Conceive the rocket to have no vent at the choak, and to be set on fire in the conical bore; the consequence will be, either that the rocket would burst in the weakest place, or, if all its parts were equally strong, and able to sustain the impulse of the flame, the rocket would burn out immovable. Now, as the force of the flame is equable, suppose its action downwards, or that upwards, sufficient to lift 40 pounds. As these forces are equal, but their directions contrary, they will destroy each other's action.

Imagine then the rocket opened at the choak; by this means the action of the flame downwards is taken away, and there remains a force equal to 40 pounds acting upwards, to carry up the rocket, and the stick it is tied to. Accordingly, we find that if the composition of the rocket be very weak, so as not to give an impulse greater than the weight of the rocket and stick, it does not rise at all; or if the composition be slow, so that a small part of it only kindles at first, the rocket will not rise.

The stick serves to keep it perpendicular; for if the rocket should begin to stumble, moving round a point in the choak, as being the common centre of gravity of rocket and stick, there would be so much friction against the air by the stick between the centre and the point, and the point would beat against the air with so much velocity, that the friction of the medium would restore it to its perpendicularity.

When the composition is burnt out, and the impulse upwards has ceased, the common centre of gravity is brought lower towards the middle of the stick; by which means the velocity of the point of the stick is decreased, and that of the point of the rocket increased; so that the whole will tumble down, with the rocket-end foremost.

All the while the rocket burns, the common centre of gravity is shifting and getting downwards, and still the faster and the lower as the stick is the lighter, so that it sometimes begins to tumble before it be burnt out; but when the stick is a little too heavy, the weight of the rocket bearing a less proportion to that of the stick, the common centre of gravity will not get so low but that the rocket will rise straight, though not so fast.

ROCKET. See BRASSICA, BOTANY *Index*.

ROCKINGHAM, a town in Northamptonshire, in England, 87 miles from London, stands on the river Welland. It has a charity-school, a market on Thursday, and a fair on Sept. 8. for five days. Its forest was reckoned one of the largest and richest of the kingdom, in which William the Conqueror built a castle; it extended, in the time of the ancient Britains, almost from the Welland to the Nen, and was noted formerly for iron-works, great quantities of slags, *i. e.* the refuse of the iron-ore, being met with in the adjacent fields. It extended, according to a survey in 1641, near 14 miles in length, from the west end of Middleton-Woods to the town of Mansford, and five miles in breadth, from Brigstock to the Welland; but is now dismembered into parcels, by the interposition of fields and towns, and is divided into three bailiwicks. In several of its woods a great quantity of charcoal is made of the tops of trees, of which many waggon-loads are sent every year to Peterborough. There is a spacious plain in it called Rockinghamshire, which is a common to the four towns

of

Rocking of Cottingham, Rockingham, Corby, and Gretton. King William Rufus called a council here of the great men of the kingdom. W. Long. o. 46. N. Lat. 52.

Rocking
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Rodney.

32.

ROCKING STONES. See *Rocking-STONES*.

ROCKOMBOLE. See ALLIUM.

ROD, a land measure of 16 feet and a half; the same with perch and pole.

Black ROD. See *USHER of the Black Rod*.

Fishing ROD, a long taper rod or wand, to which the line is fattened for angling. See *FISHING-Rod*.

RODNEY, GEORGE BRIDGES, Lord Rodney, was born in the year 1718. Of the place of his birth and the rank of his ancestors we have not been able to procure any well authenticated account. His father was a naval officer; and commanding, at the time of his son's birth, the yacht in which the king, attended by the duke of Chandois, was passing to or from Hanover, he asked and obtained leave to have the honour of calling his infant son *George Bridges*. The royal and noble godfathers advised Captain Rodney to educate his boy for his own profession, promising, as we have been told, to promote him as rapidly as the merit he should display and the regulations of the navy would permit.

Of young Rodney's early exertions in the service of his country, nothing, however, is known to the writer of this abstract, nor, indeed, any thing of sufficient importance to be inserted in articles so circumscribed as all our biographical sketches must be, till 1751, when we find him, in the rank of a commodore, sent out to make accurate discoveries respecting an island which was supposed to lie about 50° N. L. and about 300 leagues W. of England: but he returned without having seen any such island as that which he was appointed to survey. In the war which soon followed this voyage of discovery, he was promoted to the rank of a rear-admiral, and was employed to bombard Havre-de-Grace; which in 1759 and 1760 he considerably damaged, together with some shipping. In 1761 he was sent on an expedition against Martinico, which was reduced in the beginning of the year 1762, and about the same time St Lucia surrendered to Captain Harvey. Both these islands were restored to the French at the peace of 1763.

In reward for his services, he was created a knight of the Bath; but being inattentive, as many seamen are, to the rules of economy, his circumstances became so embarrassed that he was obliged to fly from his country, with very slight hopes of ever being able to return. He was in France when the ill-advised policy of that court made them take a decided part with America against Great Britain; and it is said that some men in power, no strangers to the desperate state of Sir George's affairs, offered him a high command in the French navy, if he would carry arms against his own country. This offer he rejected with becoming indignation. Soon after this gallant behaviour, the duke de Chartres, afterwards the infamous Orleans, told Sir George that he was to have a command in the fleet which was to be opposed to that under the command of his countryman Mr Keppel; and with an insulting air asked him what he thought would be the consequence of their meeting? "That my countryman will carry your Highness with him to learn English," was the high-spirited reply.—

When the divisions, which the mutual recriminations of Admiral Keppel and Sir Hugh Palliser excited in the British navy, made it difficult for the ministry to procure experienced, and at the same time popular, commanders for their fleets, Lord Sandwich wrote to Sir George Bridges Rodney, offering him a principal command; but the difficulty was for the veteran to find money to pay his accounts in France, so that he might be permitted to leave that kingdom. The money, it has been repeatedly affirmed, was advanced to him by the courtiers whose offer he had before indignantly rejected. He arrived, therefore in England, and was again employed in the service of his country. His first exploit after his appointment was in January 1780, when he took 19 Spanish transports bound to Cadiz from Bilboa, together with a 64 gun ship and 5 frigates, their convoy. On the 16th of the same month he fell in with the Spanish fleet, consisting of 11 sail of the line, under the command of Don Juan de Langara; of which one was blown up during the engagement, five were taken and carried into Gibraltar, among which was the admiral's ship, and the rest were much shattered. In April the same year, he fell in with the French fleet, under the command of Admiral Guichen, at Martinico, whom he obliged to fight, and whom he completely beat; though from the shattered state of his own fleet, and the unwillingness of the enemy to risk another action, he took none of their ships. The successful efforts of our gallant admiral during the year 1780 were generally applauded through the nation. He received the thanks of both Houses of Parliament, and addresses of thanks from various parts of Great Britain, and the islands to which his victories were more particularly serviceable. In December the same year, he made an attempt, together with General Vaughan, on St Vincent's, but failed. In 1781, he continued his exertions, with much success, in defending the West India islands; and, along with the above named general, he conquered St Eustatius; on which occasion his conduct to the inhabitants has been much, though perhaps unjustly, censured. The island was certainly a nest of contraband traders.

On the 12th of April 1782, he came to a close action with the French fleet under Count de Grasse; during which he sunk one ship and took five, of which the admiral's ship, the *Ville de Paris*, was one. The following year brought peace; but, as a reward for his numerous services, he had a grant of 2000l. a-year for himself and his two successors. He had long before been created a baronet, was rear-admiral of Great Britain, and at length was justly promoted to the peerage, by the title of Baron Rodney of Stoke, Somersetshire, and made vice-admiral of Great Britain. He was at one time also governor of Greenwich Hospital.

Lord Rodney had been twice married; first to the sister of the earl of Northampton, and secondly to the daughter of John Clies, Esq; with whom he did not reside for several years before his death, which happened on the 24th of May 1792. He was succeeded in title and estates by his son George, who married in 1781 Martha, daughter of the Right Hon. Alderman Harley, by whom he has issue.

Of the private life of Lord Rodney we know but little. His attention to the wants of the seamen, and the warrant officers serving under him, indicated that humanity which is always allied to true courage. He has

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has often, from the number of dishes which his rank brought to his table, selected something very plain for himself, and sent the rest to the midshipmen's mess.— His public transactions will transmit his name with honour to posterity; his bravery was unquestionable, and his success has been seldom equalled. It has, indeed, been very generally said, that his skill in naval tactics was not great, and that he was indebted to the superior abilities of Capt. Young and Sir Charles Douglas for the manœuvres by which he was so successful against Langara and De Graffe. But, supposing this to be true, it detracts not from his merit. A weak or foolish commander could not always make choice of the ablest officers for his first captains, nor would such a man be guided by their advice.

Whatever was Lord Rodney's skill in the science of naval war, or however much he may have been beholden to the counsels of others, he certainly possessed himself the distinguished merit of indefatigable exertion; for he never omitted any thing within the compass of his power to bring the enemy to action. He therefore unquestionably deserves the respect and the gratitude of his country. In the year 1783 the House of Assembly in Jamaica voted 1000*l.* towards erecting a marble statue to him, as a mark of their gratitude and veneration for his gallant services, so timely and gloriously performed for the salvation of that island in particular, as well as the whole of the British West India islands and trade in general. A pillar was also erected to the memory of this gallant officer, upon the Brythen in Shropshire.

But whatever were the talents of Lord Rodney as a naval commander, there is a more splendid part of his character which it would be improper to omit. Before his success against the Spanish admiral Don Langara, the English prisoners in Spain were treated with the greatest inhumanity, and it required more than ordinary strength of constitution to exist for any length of time in a Spanish prison. When the Spanish admiral fell into the hands of Lord Rodney, both himself, his officers, and men, expected to meet with the same treatment they had been accustomed to give; but they were astonished to find in Lord Rodney a man who felt for their misfortunes, relieved their wants, and who, by his polite behaviour to his prisoners, made a powerful impression on the minds of the Spaniards, which could not fail to procure a mitigation of the sufferings of English prisoners in Spain. He represented the miserable condition of his countrymen in the enemy's country, and obtained a promise that Englishmen, when prisoners in Spain, should be made as comfortable as their situation would permit. This was doing his country a service, which will make him stand as high in the estimation of good men as the most astonishing display of courage, which is not always met with in a cultivated mind.

ROE, the seed or spawn of fish. That of the male fishes is usually distinguished by the name of *soft roe*, or *milt*; and that of the female, *hard roe*, or *spawn*. So inconceivably numerous are these ovula or small eggs, that M. Petit found 342,244 of them in a carp of 18 inches; but M. Lieuwenhoek found in a carp no more than 211,629. This last gentleman observes, that there are four times this number in a cod; and that a common one contains 9,344,000 eggs.

ROE, in *Zoology*. See CERVUS, MAMMALIA *Index*.

VOL. XVIII. Part I.

ROEBUCK, JOHN, M. D. was born at Sheffield in Yorkshire, in the year 1718. His father was a manufacturer of Sheffield goods, and by his ability and industry procured a considerable fortune. He intended John to follow his own lucrative employment; but he was powerfully attached to other pursuits, and his father did not discourage his rising genius, but gave him a liberal education.

When done with the school, he was put under the tuition of Dr Doddridge, by whose instructions he was rapidly improved in many branches of useful knowledge. During his residence in the Doctor's academy at Northampton, he became intimately acquainted with Mr Dyson and Dr Akenfide, whose friendship lasted to the close of life.

Having completed his studies at the academy, he was afterwards sent to the university of Edinburgh, where he studied medicine and chemistry in particular, which then began to attract some attention in Scotland. He was much distinguished among his fellow students by his logical and metaphysical acuteness, and by great ingenuity in his arguments. At Edinburgh he likewise formed an acquaintance with Mr Hume, Dr Robertson, and other literary characters.

Having completed his medical studies at Edinburgh, and wholly attached to the practice of physic, he spent some time at the university of Leyden, where he obtained a degree in medicine. He received his diploma in February 1743, to which were affixed the respectable names of Muschenbroek, Ofterdyk, Van Royen, Albinus, Gaubius, &c. He afterwards settled as a physician at Birmingham, a place which then began to make a rapid progress in arts, manufactures, and population, and where a favourable opening was presented to him by the death of an aged physician. In this capacity he had every thing to favour his success, such as his education, talents, and interesting manners, and he accordingly met with encouragement more rapid and extensive than his expectations had presaged. But it was soon found that his industry and studies were turned to other subjects than those of his profession, and in a particular manner to that of chemistry, the utility of which he was anxious to extend to the arts and manufactures. In the prosecution of this idea, he fitted up a laboratory in his own house, where every moment of his time was spent, not necessarily devoted to the duties of his profession. There he carried on various chemical processes of great importance, and laid the foundation of his future projects.

In this manner he was led to the discovery of certain improved methods of refining gold and silver, and an ingenious method of collecting the smaller particles of these metals, which manufacturers had formerly lost. He also discovered improved methods of making sublimate hartshorn, and many other articles of equal importance. Much of his time being still employed in the duties of his profession, he found it necessary to connect himself with some confidential person, and who might be qualified to assist him with the important establishments he had in view. He therefore made choice of Mr Samuel Garbet of Birmingham, a gentleman whose activity, abilities, and enterprising spirit, well qualified him for bearing his part in their subsequent undertakings.

In the year 1747, Dr Roebuck married Miss Ann Roe of Sheffield, a lady of a great and generous spirit,
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Roebuck. well qualified to support him under the many disappointments in business which he afterwards experienced. His chemical studies led him to the discovery of many things both of a public and private advantage.

The extensive use of sulphuric acid in chemistry led many to various methods of obtaining it, and Dr Roebuck attempted to prepare it in such a manner as to reduce the price, for which purpose he substituted leaden vessels in the room of glass; and he had the good fortune to effect his benevolent design. He established a manufacture of this useful article at Prestonpans in Scotland, in the year 1749, which was opposed by Dr Ward, but without success, as Roebuck's discovery did not come within Dr Ward's patent. By concealment and secrecy Dr Roebuck and his partner preserved the advantages of their industry and ingenuity for a number of years, supplying the public with sulphuric acid at a much cheaper rate than had been formerly done.

He found it expedient to give up his medical profession altogether, and he resided in Scotland during the greater part of the year. He made some discoveries in the smelting of iron-stone, greatly facilitating that process by using pit coal instead of charcoal. He and his partner therefore projected a very extensive manufactory of iron, for which they soon procured a sufficient capital, as their friends had much confidence in their integrity and abilities. Dr Roebuck at length made choice of a spot on the banks of the river Carron as the most advantageous situation for the establishment of their iron manufactory, abundance of iron-stone, lime-stone, and coal, being found in its immediate vicinity. The preparations for this establishment were finished in the end of the year 1759, and the first furnace was blown on the 1st of January 1760, after which a second was in a short time erected.

These works turned the attention of Dr Roebuck to the state of coal in the neighbourhood of that place, and to the means of procuring the extraordinary supplies of it which the iron-works might require in future. He therefore became lessee of the extensive coal and salt works at Borrowtownness, the property of the duke of Hamilton, in which he sunk, in the course of a few years, not only his own, and a considerable part of his wife's fortune, but the regular profits of his more successful works; and what distressed him above every thing else, the great sums of money which he borrowed from his relations and friends, without the prospect of ever being able to repay them. This ruinous adventure cut off for ever the flattering prospects of an independent fortune which his family once had; and he drew from his colliery only a moderate annual support, owing to the indulgence of his creditors. When he died, his widow was left without any provision for her immediate or future support, and without the smallest advantage from the extraordinary exertions and meritorious industry of her husband.

Some years before his death, Dr Roebuck was seized with a disorder that required a dangerous operation, and which he bore with his usual spirit and resolution. He was restored to a considerable share of his wonted health and activity; but its effects never wholly left him. He visited his works till within a few weeks of his decease, in order to give instructions to his clerks and overseers, and was confined to bed only a few days. He departed

this life on the 17th of July, 1794, retaining all his faculties, spirit, and good humour, to the last.

A life so devoted to business left little time for publications of any kind; but the few he left behind him sufficiently shew what might have been expected from his pen, had the most of his time been spent in study. All his writings that have been published, except two political pamphlets, are, a comparison of the heat of London and Edinburgh, experiments on ignited bodies, and observations on the ripening and filling of corn.

ROELLA, a genus of plants belonging to the pentandria class; and in the natural method ranking under the 29th order, *Campanacea*. See BOTANY Index.

ROEMER, OLAVUS, a celebrated Danish mathematician and astronomer, was born at Arhusen in Jutland, in the year 1644, and was sent to the university of Copenhagen at the age of 18. By his assiduous application to the study of astronomy and mathematics, he became so eminent in those sciences, that Picard was astonished and delighted with him, when making observations in the north, by the order of Lewis XIV. He was prevailed on to accompany Picard to France, and being presented to the king, he was chosen the dauphin's tutor in the study of mathematics. He was afterwards united with Picard and Cassini in making astronomical observations, and became a member of the Academy of Sciences in 1672.

His discoveries acquired him great reputation during his ten years residence at Paris; and he did not scruple to assert, that Picard and Cassini took the merit of many things which belonged exclusively to himself. Roemer was the first person who discovered the velocity with which light moves, by means of the eclipses of Jupiter's satellites, determining it to be about 7 or 8 minutes in coming from the sun to the earth. This opinion was opposed by many, but it was afterwards demonstrated in a most ingenious manner by Dr Bradley.

Christian V. king of Denmark, recalled Roemer to his native country in the year 1681, when he was appointed professor of astronomy at Copenhagen; and he was also employed in the reformation of the coin and architecture of the country, in regulating the weights and measures, and in laying out the high roads throughout the kingdom, in the discharge of which his conduct was truly creditable to himself, and gave the greatest satisfaction to his royal employer. The consequence was, that the king bestowed many dignities upon him, and among others appointed him chancellor of the exchequer. In fine, he was made counsellor of state and burgomaster of Copenhagen, under Frederic IV. who succeeded Christian already mentioned.

While Roemer was engaged in preparing to publish the result of his observations, he was taken off by death on the 19th of September 1710, when about 66 years of age. Horrebow, his disciple, made up this loss, by publishing in 4to, in 1753, when professor of astronomy at Copenhagen, various observations of Roemer, with his method of observing, under the title of *Basis Astronomica*. He had also printed various astronomical observations and pieces in several volumes of the Memoirs of the Royal Academy of Sciences at Paris, of the institution of 1666, particularly vols. 1st and 10th of that collection.

ROGA,

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ROGA, in antiquity, a present which the emperors made to the senators, magistrates, and even to the people; and the popes and patriarchs to their clergy. These rogæ were distributed by the emperors on the first day of the year, on their birth-day, or on the *natalis dies* of the cities; and by the popes and patriarchs in passion-week. Roga is also used for the common pay of the soldiers.

ROGATION, ROGATIO, in the Roman jurisprudence, a demand made by the consuls or tribunes of the Roman people, when a law was proposed to be passed. *Rogatio* is also used for the decree itself made in consequence of the people's giving their assent to this demand; to distinguish it from a *senatus consultum*, or decree of the senate.

ROGATION-Week, the week immediately succeeding Whituesday; so called from the three feasts therein, viz. on Monday, Tuesday, and Wednesday.

ROGER DE HOVEDEN, a learned man of the 13th century, was born in Yorkshire, most probably at the town of that name, now called *Howden*, some time in the reign of Henry I. After he had received the first parts of education in his native country, he studied the civil and canon law, which were then become the most fashionable and lucrative branches of learning. He became domestic chaplain to Henry II. who employed him to transact several ecclesiastical affairs; in which he acquitted himself with honour. But his most meritorious work was, his *Annals of England*, from A. D. 731, when Bede's Ecclesiastical History ends, to A. D. 1202. This work, which is one of the most voluminous of our ancient histories, is more valuable for the sincerity with which it is written, and the great variety of facts which it contains, than for the beauty of its style, or the regularity of its arrangement.

ROGUE, in Law, an idle sturdy beggar; who by ancient statutes is for the first offence called a *rogue of the first degree*, and punished by whipping, and boring through the gristle of the right ear with a hot iron; and for the second offence, is termed a *rogue of the second degree*, and if above 18 years of age, ordered to be executed as a felon.

ROHAN, PETER DE, Chevalier de Gié, and marshal of France, better known by the name of *Marshal de Gié*, was the son of Louis de Rohan, the first of the name, lord of Guémené and Montauban, and descended of one of the most ancient and most illustrious families of the kingdom. The family of Rohan, before the Revolution, held the rank of prince in France in consequence of deriving its origin from the first sovereigns of Brittany, and clearly admitted by the dukes of Brittany themselves in the states general of that province held in 1088. The house of Rohan had still another advantage, which was common to it with very few families, even the most distinguished among the princes, namely, that instead of having been aggrandised by the wealth procured from alliances, it had held in itself for seven centuries the largest possessions of any family in the kingdom.

One of the most distinguished branches of this family was Peter, the subject of the present article. Louis XI. rewarded his bravery with the staff of marshal of France in 1475. He was one of the four lords who governed the kingdom during the indisposition of that prince at Chinon in 1484. Two years afterwards he opposed the

attacks of the archduke of Austria upon Picardy. He commanded the van-guard at the battle of Fornoue in 1495, and signalized himself much in that engagement. His bravery procured him the countenance and confidence of Louis XII. who appointed him his prime counsellor, and general of the army in Italy; but these advantages he lost, by incurring the displeasure of Anne of Brittany the queen.

The marshal had stopped some of her equipage on the road to Nantz; for which that vindictive princess prevailed on her husband to enter into a process against him before the parliament of Toulouse, at that time the most rigorous and severe in the kingdom. He was on the 15th of February 1506 found guilty, banished from the court, and deprived of the privileges and emoluments of his office for five years. The expence of this prosecution amounted to more than 31,000 livres, and it did no honour either to the king or the queen. If indeed it be true, that the queen was never so much delighted as with the humiliation of her enemies, she had good reason to be satisfied here. John of Authon, who hath entered into a pretty full detail of this affair, reports that Gié, being removed to the *Chateau de Dreux*, became an object of ridicule to the witnesses who had sworn against him. He wore a long white beard, and, quite full of the thoughts of his disgrace, took it on one occasion in his hands and covered his face with it. An ape, belonging to Alain d'Albret, count of Dreux, jumped from a bed where his master was reposing himself, and attacked the beard of Gié, who, with some difficulty, extricated himself. This scene not only occasioned much laughter to the whole company who were present, but likewise became instantly the subject of the farces and mummeries which were then acting in France. Even the school-boys made a representation of it, where, alluding to the name of the queen, they said, that there was a marshal who wished to shoe an ass (*un ane*), but that he received such a blow with the foot, as threw him over the wall into the garden. Marechal de Gié died at Paris, the 22d April 1513, perfectly disgusted with courts and grandeur.

ROHAN, Henry duke of, peer of France, and prince of Leon, was born at the Chateau de Blein in Brittany in 1579. Henry IV. under whose eyes he gave distinguished proofs of his bravery at the siege of Amiens, when only 16 years of age, loved him with as much affection as if he had been his own son. After the death of Henry, he became chief of the Calvinists in France; and was equally formidable for his genius as his sword. In defence of the civil and religious rights of his party, he maintained three wars against Louis XIII. The first, which terminated to the advantage of the Protestants, broke out when that prince wished to establish the Romish religion in Le Bearn: the second, because of the siege which Cardinal De Richlieu caused to be laid to Rochelle: and the third, when that place was besieged a second time. The consequences of this war are sufficiently known: Rochelle surrendered; and the duke de Rohan perceiving, that after the taking of this place, the majority of his party were endeavouring to make up matters with the court, succeeded in procuring for them a general peace in 1629, upon very honourable and advantageous terms. The only sacrifice of importance which the Huguenots were obliged to make, was their

Rohan.

fortifications; which put it out of their power to renew the war. Some factious persons, dissatisfied with seeing their fortresses fall into their enemies hands, were ready to accuse their general of having sold them. This great man, undervaluing of such odious ingratitude, presented his breast to these enraged malcontents, and said, "Strike, strike! I wish to die by your hands, after I have hazarded my life in your service." The peace of 1629 having extinguished the flame of civil war, the duke de Rohan, no longer of use to his party, and become disagreeable at court, retired to Venice. There is a very particular anecdote of him, extracted from the Memoirs of the duchess of Rohan, Margaret of Bethune, daughter of the famous Sully. Whilst the duke de Rohan was at Venice, a proposal was made to him from the Porte, that for 200,000 crowns, and an annual tribute of 20,000, the Grand Signior would give him the island of Cyprus, and fully invest him with the dignity and prerogatives of king. The duke was warmly inclined to comply with this proposal, and to settle in the island the Protestant families of France and Germany. He negotiated this business at the Porte by means of the intervention of the patriarch Cyril, with whom he had much correspondence; but different circumstances, and in particular the death of the patriarch, occurred to break off the treaty. The republic of Venice chose Rohan for their commander in chief against the Imperialists; but Louis XIII. took him from the Venetians, and sent him ambassador into Switzerland, and into the Grisons. He wished to assist these people in bringing back La Valteline under their obedience, the revolt of which the Spaniards and Imperialists encouraged. Rohan, being declared general of the Grisons, after many victories, drove the German and Spanish troops entirely from La Valteline in 1633. He defeated the Spaniards again in 1636 at the banks of the lake of Côme. France, not thinking it proper to withdraw her troops, the Grisons rose up in arms, and the duke de Rohan, not satisfied with the conduct of the court, entered into a special treaty with them the 28th March 1637. This hero, fearing the resentment of cardinal de Richlieu, retired to Geneva, with a view to join his friend the duke of Saxe-Weimar, who wished him to undertake the command of his army, then ready to engage the Imperialists near Rhinfield. Although he declined this honour, yet he took the command of the regiment of Nassau, with which he threw the enemy into confusion; but was himself wounded, February 28. 1683, and died of his wounds the 13th of April following, at the age of 59. He was interred May 27. in the church of St Pierre in Geneva, where there is a magnificent monument of marble erected to his memory, having on it the most illustrious actions of his life. The duke de Rohan was one of the greatest generals of his time, equal to the princes of Orange, and capable, like them, of settling a commonwealth; but more zealous than they for religion, or at least appearing to be so. He was vigilant and indefatigable, not allowing himself any pleasures which might take off his attention from his necessary employments, and well qualified for being the head of a party; a post very difficult to retain, and in which he had to fear equally from his enemies and his friends. It is in this light that Voltaire has viewed this illustrious character, when he composed the following verse:

Avec tous les talens le Ciel l'avoit fait naître :

Il agit en Heros ; en Sage il écrivit.

*Il fut même grand homme en combattant son Maître,
Et plus grand lorsqu'il le servit.*

Rohan,
Rohault.

His military virtues were much heightened by the sweetness of his disposition, his affable and courteous manners, and by a generosity which had few examples. Neither ambition, pride, nor a view of gain, could ever be traced in his character. He was wont to say, that "true glory and a zeal for the public good never dwelt where self-interest reigned." Rohan had always a particular regard for Henry the Fourth: "Truly (said he, sometimes after the death of that prince) when I think of him, my heart is ready to break. A wound received in his presence would have afforded me more satisfaction than now to gain a battle. I would have valued an encomium from him in this art, of which he was the greatest master of his time, more than the united praises of all the commanders now living." He wrote several interesting performances: 1. The Interests of Princes, printed at Cologne in 1666, in 12mo: in which work he fully examines the public interests of all the princes of Europe. 2. The Perfect General, or an abridgement of the wars from Cæsar's Commentaries, in 12mo. In this he makes it appear, that a knowledge of the tactics of the ancients might be of much use to the moderns. 3. A Treatise on the Corruption of the Ancient Militia. 4. A Treatise on the Government of the Thirteen Provinces. 5. Memoirs; the best edition of which is in 2 vols 12mo. They contain the history of France from 1610 to 1629. 6. A Collection of some Political Discourses on State Affairs, from 1612 to 1629, 8vo, Paris, 1644, 1693, 1755; with the Memoirs and Letters of Henry Duke de Rohan relative to the war of La Valteline, 3 vols 12mo, Geneva, 1757. This was the first edition which appeared of these curious memoirs: We owe it to the great attention and diligence of M. le Baron de Zurlauben, who published them from different authentic manuscripts. He likewise ornamented this edition with geographical, historical, and genealogical notes, and a preface, which contains an abridged, but highly interesting life, of the duke de Rohan, author of the memoirs. The Abbé Pérau has also written a life of him, which occupies the 21st and 22d volumes of the History of the Illustrious Men of France. Some want of spirit might be excused in the detail of wars finished upwards of 140 years ago; yet the memoirs of the duke de Rohan still afford considerable pleasure in the perusal. He tells his story with humour, with sufficient exactness, and in such a style as procures the confidence of the reader.

ROHAULT, JAMES, a celebrated Cartesian philosopher, was the son of a merchant of Amiens, where he was born in 1620. He became well skilled in the mathematics, and taught them at Paris, where he became acquainted with M. Clerfelier, an advocate, who gave him his daughter in marriage. Rohault also taught philosophy in the same city with uncommon applause. He there improved the arts, and gave excellent lectures to the artists and workmen. He died at Paris in 1675. He wrote, in French, 1. A Treatise on Natural Philosophy. 2. The Elements of the Mathematics. 3. A Treatise on Mechanics, which is very curious. 4. Phi-

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lofophical Conversations; and other works. His Physics have been translated into Latin, by Dr Samuel Clarke, with notes, in which the Cartesian errors are corrected upon the Newtonian system.

ROLANDRA, a genus of plants belonging to the syngenesia class; and in the natural method ranking under the 49th order, *Compositæ*. The common calyx consists of distinct *fosculi*, between each of which are short *squamæ*, the whole forming a round head. The partial calyx is bivalved. The corolla is small and funnel-shaped, the tube small as a thread, the *lacinice* short and acute. The stamina are five; the style bifid. It has no other feed-vessel except the partial calyx, which contains a long three-sided feed. Of this there is only one species, viz. the *Argentæa*; a native of the West Indies, and found in copes and waste lands.

ROLL, in manufactories, something wound and folded up in a cylindrical form.

Few stuffs are made up in rolls, except satins, gauzes, and crapes; which are apt to break, and take plaits not easy to be got out, if folded otherwise. Ribbons, laces, gallons, and paduas of all kinds, are also thus rolled.

A roll of tobacco, is tobacco in the leaf, twisted on the mill, and wound twist over twist about a stick or roller. A great deal of tobacco is sold in America in rolls of various weights; and it is not till its arrival in England, Spain, France, and Holland, that it is cut.

A roll of parchment, properly denotes the quantity of 60 skins.

The ancients made all their books up in the form of rolls; and in Cicero's time the libraries consisted wholly of such rolls.

ROLL, in *Law*, signifies a schedule or parchment which may be rolled up by the hand into the form of a pipe.

In these schedules of parchment, all the pleadings, memorials, and acts of court, are entered and filed by the proper officer; which being done, they become records of the court. Of these there are in the exchequer several kinds, as the great wardrobe roll, the cofferer's roll, the subsidy-roll, &c.

Roll is also used for a list of the names of persons of the same condition, or of those who have entered into the same engagement. Thus a court-roll of a manor, is that in which the names, rents, and services, of each tenant are copied and enrolled.

Calves-head ROLL, a roll in the two temples in which every bench is taxed yearly at 2s. every barrister at 1s. 6d. and every gentleman under the bar at 1s. to the cook and other officers of the house, in consideration of a dinner of calves-heads provided in Easter-term.

Myfter ROLL, that in which are entered the soldiers of every troop, company, regiment, &c. As soon as a soldier's name is written down on the roll, it is death for him to desert.

ROLLS-Office, is an office in Chancery-lane, London, appointed for the custody of the rolls and records in chancery.

Master of the ROLLS. See *MASTER of the Rolls*.

Rider ROLL, a schedule of parchment frequently sewed or added to some part of a roll or record.

ROLLS of Parchment, are the manuscript registers or rolls of the proceedings of our ancient parliaments,

which before the invention of printing were all engrossed on parchment, and proclaimed openly in every county. In these rolls are also contained a great many decisions of difficult points of law, which were frequently in former times referred to the decision of that high court.

ROLL, or *Roller*, is also a piece of wood, iron, brass, &c. of a cylindrical form, used in the construction of several machines, and in several works and manufactures.

Thus in the glass manufacture they have a running-roll, which is a thick cylinder of cast brass, which serves to conduct the melted glass to the end of the table on which large looking-glasses, &c. are cast.

Founders also use a roll to work the sand which they use in making their mould.

The presses called *calendars*, as serving to calendar stuffs withal, consist, among other essential parts, of two rollers. It is also between the two rollers that the waves are given to silks, mohairs, and other stuffs proper to be tabbled.

Impressions from copper-plates are also taken by passing the plate and paper between two rollers. See *Rolling-press PRINTING*.

Rolls, in flattening-mills, &c. are two iron instruments of a cylindrical form, which serve to draw or stretch out plates of gold, silver, and other metals.

Rolls, in sugar-works, are two large iron barrels which serve to bruise the canes, and to express the juice. These are cast hollow, and their cavities are filled up with wood, the cylinders of which are properly the rollers.

ROLLER, in *Surgery*, a long and broad bandage, usually of linen-cloth, rolled round any part of the body, to keep it in, or dispose it to a state of health.

ROLLI, PAUL, an Italian poet, was born at Rome in 1687. He was the son of an architect, and a pupil of the celebrated Gravina, who inspired him with a taste for learning and poetry. An intelligent and learned English lord having brought him to London, introduced him to the royal family as a master of the Tuscan language. Rolli remained in England till the death of Queen Caroline his protector, and the patroness of literature in general. He returned to Italy in 1747, where he died in 1767, in the 80th year of his age, leaving behind him a very curious collection in natural history, &c. and a valuable and well chosen library. His principal works first appeared in London in 1735, in 8vo. They consist of Odes in blank verse, Elegies, Songs, &c. after the manner of Catullus, and a Collection of Epigrams, printed at Florence in 1776, in 8vo, to which is prefixed an account of his life by the Abbé Fondini. What Martial said of his own Collection may be said of this, "That there are few good, but many indifferent or bad, pieces in it." Rolli, however, bore the character of one of the best Italian poets of his age. During his stay in London, he procured editions of several authors of his own country. The principal of these were, the Satires of Ariosto, the Burlesque Works of Berni, Varchi, &c. 2 vols, in 8vo, which possess considerable merit. The Decameron of Boccace, 1727, in 4to and folio, in which he has faithfully copied the celebrated and valuable edition published by the *Juntas* in 1527: and, lastly, of the elegant Lucretia of Marchetti, which, after the manuscript was revised, was printed at London in

Rollin.
Rollin.

in 1717, in 8vo, through the influence and attention of Rollin. This edition is beautiful; but the work is thought to be of a pernicious tendency. He likewise translated into Italian verse the *Paradise Lost* of Milton, printed at London in folio in 1735; and the *Odes of Anacreon*, London 1739, in 8vo.

ROLLIN, CHARLES, a justly celebrated French writer, was the son of a cutler at Paris, and was born there on the 30th of January 1661. He studied at the college Du Plessis, in which he obtained a bursary through the interest of a Benedictine monk of the White Mantle, whom he had served at table, and who discovered in him some marks of genius. Here he acquired the regard of M. Gobinet, principal of that college, who had a particular esteem for him. After having studied humanity and philosophy at the college of Du Plessis, he applied to divinity three years at the Sorbonne; but he did not prosecute this study, and never rose in the church higher than to the rank of a tonsured priest. He afterwards became professor of rhetoric in the same college; and, in 1688, succeeded Horfan, his master, as professor of eloquence, in the royal college. No man ever exercised the functions of it with greater éclat: he often made Latin orations, to celebrate the memorable events of the times; and frequently accompanied them with poems, which were read and esteemed by every body. In 1694, he was chosen rector of the university; and continued in that office two years, which was then a mark of distinction. By virtue of his office, he spoke the annual panegyric upon Louis XIV. He made many very useful regulations in the university; and particularly revived the study of the Greek language, which was then much neglected. He substituted academical exercises in the place of tragedies; and introduced the practice which had been formerly observed, of causing the students to get by heart passages of Scriptures. He was a man of indefatigable attention; and trained innumerable persons, who did honour to the church, the state, and the army. The first president Portail was pleased one day to reproach Rollin in a jocular strain, as if he exceeded even himself in doing business: to whom Rollin replied, with that plainness and sincerity which was natural to him, "It becomes you well, Sir, to reproach me with this: it is this habit of labour in me which has distinguished you in the place of advocate-general, which has raised you to that of first president: you owe the greatness of your fortune to me."

Upon the expiration of the rectorship, Cardinal Noailles engaged him to superintend the studies of his nephews, who were in the college of Laon; and in this office he was agreeably employed, when, in 1699, he was with great reluctance made coadjutor to the principal of the college of Beauvais. This college was then a kind of desert, inhabited by very few students, and without any manner of discipline: but Rollin's great reputation and industry soon re-peopled it, and made it that flourishing society it has ever since continued. In this situation he continued till 1712; when the war between the Jesuits and the Jansenists drawing towards a crisis, he fell a sacrifice to the prevalence of the former. Father le Tellier, the king's confessor, a furious agent of the Jesuits, infused into his master prejudices against Rollin, whose connections with Cardinal de Noailles would alone have sufficed to have made him a

Jansenist; and on this account he lost his share in the principality of Beauvais. No man, however, could have lost less in this than Rollin, who had every thing left him that was necessary to make him happy; retirement, books, and enough to live on. He now began to be employed upon *Quintilian*; an author he justly valued, and saw neglected not without uneasiness. He retrenched in him whatever he thought rather curious than useful for the instruction of youth; he placed summaries or contents at the head of each chapter; and he accompanied the text with short select notes. His edition appeared in 1715, in 2 vols 12mo, with an elegant preface, setting forth his method and views.

In 1710, the university of Paris, willing to have a head suitable to the importance of their interests in a very critical conjuncture of affairs, chose Rollin again rector: but he was displaced in about two months by a *lettre de cachet*. The university had presented to the parliament a petition, in which it protested against taking any part in the adjustment of the late disputes; and their being congratulated in a public oration by Rollin on this step, occasioned the letter which ordered them to choose a rector of more moderation. Whatever the university might suffer by the removal of Rollin, the public was probably a gainer; for he now applied himself to compose his *Treatise upon the Manner of Studying and Teaching the Belles Lettres*, which was published, two volumes in 1726, and two more in 1728, 8vo.

This work has been justly esteemed for the sentiments of religion which animate its author, whose zeal for the public good prompted him to select the choicest passages of Greek and Latin authors. The style is sufficiently elegant, but the language on some occasions is not remarkable for delicacy; and in the book altogether there is neither much order nor depth. The author has indeed spoken of common things agreeably, and has spoken as an orator on subjects which demanded the investigation of the philosopher. One can scarcely reduce any thing in him to principles.—For example, the three species of eloquence; the simple, the temperate, and the sublime, can scarcely be understood from him when we read that the one resembles a frugal table; the second a beautiful ruin, with green wood growing on its banks; and the third thunder and an impetuous river which overthrows every thing that opposes it.

The work, however, has been exceedingly successful, and justly so; and its success encouraged its author to undertake another work of equal use and entertainment; his *Histoire Ancienne*, &c. or "Ancient History of the Egyptians, Carthaginians, Assyrians, Babylonians, Medes and Persians, Macedonians, and Greeks," which he finished in 13 vols 8vo, and published between 1730 and 1738. M. Voltaire, after having observed that Rollin was "the first member of the university of Paris who wrote French with dignity and correctness," says of this work, that "though the last volumes, which were written in too great a hurry, are not equal to the first, it is nevertheless the best compilation that has yet appeared in any language; because it is seldom that compilers are eloquent, and Rollin was remarkably so." This is perhaps saying too much. There are indeed in this work some passages very well handled; but they are only such as he had taken from the ancient authors, in doing justice to whom he was always very bappy.

The

Rollin.

The reader will easily discover in this work the same attachment to religion, the same desire for the public good, and the same love of virtue, which appears in that on the belles lettres. But it is to be lamented that his chronology is neither exact nor corresponding; that he states facts inaccurately; that he has not sufficiently examined the exaggerations of ancient historians; that he often interrupts the most solemn narrations with mere trifles; that his style is not uniform; and this want of uniformity arises from his borrowing from writers of a modern date 40 or 50 pages at a time. Nothing can be more noble and more refined than his reflections; but they are strewed with too sparing a hand, and want that lively and laconic turn on account of which the historians of antiquity are read with so much pleasure. He transgresses the rule which he himself had established in his Treatise on Studies. "The precepts which have a respect to manners (says he) ought, in order to make an impression, to be short and lively, and pointed like a dart. That is the most certain method of making them enter and remain on the mind." There is a visible negligence in his diction with regard to grammatical custom, and the choice of his expressions, which he does not choose at all times with sufficient taste, although, on the whole, he writes well, and has preserved himself free from many of the faults of modern authors. While the last volumes of his Ancient History were printing, he published the first of his Roman History; which he lived to carry on, through the eighth and into part of the ninth, to the war against the Cimbri, about 70 years before the battle of Actium. Mr Crevier, the worthy disciple of Rollin, continued the history to the battle of Actium, which closes the tenth volume; and has since completed the original plan of Rollin in 16 vols 12mo, which was to bring it down from the foundation of the city to the reign of Constantine the Great. This history had not so great success as his Ancient History had. Indeed it is rather a moral and historical discourse than a formal history; for the author does little more than point out some more remarkable events, while he dwells with a sort of prolixity on those parts which furnish him a free field for moralizing. It is alternately diffuse and barren; and the greatest advantage of the work is, that there are several passages from T. Livy translated with great elegance into French. He also published A Latin Translation of most of the Theological Writings relative to the disputes of the Times in which he lived. Rollin was one of the most zealous adherents of Deacon Paris; and before the inclosure of the cemetery of St Medard, this distinguished character might have been often seen praying at the foot of his tomb. This he confesses in his Letters. He published also Lesser Pieces, containing different Letters, Latin Harangues, Discourses, Complimentary Addresses, &c. Paris 1771, 2 vols, 12mo. A collection which might have been contained in one volume, by keeping in only the best pieces. It is notwithstanding valuable for some good pieces which it contains, for the favourable opinion which it exhibits of solid probity, sound reason, and the zeal of the author for the progress of virtue and the preservation of taste. The Latin of Rollin is very correct, and much after the Ciceronian style, and embellished with most judicious thoughts and agreeable images. Full of the reading of the ancients, from which he brought quotations with as much pro-

priety as plenty, he expressed himself with much spirit and excellence. His Latin poems deserve the same eulogium.

This excellent person died in 1741. He had been named by the king a member of the academy of inscriptions and belles lettres in 1701: but as he had not then brought the college of Beauvais into repute, and found he had more business upon his hands than was consistent with a decent attendance upon the functions of an academician, he begged the privileges of a veteran, which were honourably granted him. Nevertheless, he maintained his connections with the academy, attended their assemblies as often as he could, laid the plan of his Ancient History before them, and demanded an academician for his censor. Rollin was a man of an admirable composition; very ingenious, consummate in polite learning, of rigid morals, and eminently pious. He was rather too religious; his religion carrying him into the territories of superstition; and he wanted nothing but a mixture of the philosophic in his nature to make him a very perfect character. Nothing could be more benign, more pacific, more sweet, more moderate, than Rollin's temper. He showed, it must be owned, some zeal for the cause of Jansenism; but in all other respects he was exceedingly moderate. The celebrated poet Rousseau conceived such a veneration for him, that he came out of banishment incognito to Paris, on purpose to visit him and pay his respects to him. He looked upon his histories, not only as the best models of the historic kind, but as a complete system of politics and morals, and a most instructive school for princes as well as subjects to learn all their duties in.

Instead of blushing at the lowness of his birth, Rollin on no occasion hesitated to speak of it. "It is from the Cyclops's shop (says he, in a Latin epigram to one of his friends, to whom he had sent a small sword) that I have taken my flight towards Parnassus." He was not, however, without some share of vanity, especially at hearing mention made of his writings, of which the well-timed praises of his adherents had given him a very high opinion. He spoke without any dissimulation what he thought; and his opinions were less the effect of presumption than of openness of heart. He was one of those men who are vain without any mixture of pride. Rollin spoke pretty well; but he had a greater readiness of writing than speaking; and much more satisfaction might be derived from his works than from his conversation. His name became famous throughout Europe; several princes sought the honour of his friendship. The duke of Cumberland and the prince-royal of Prussia (afterwards king) were among the list of his admirers. This monarch honoured with him several letters; in one of which he pays him the following compliment, "Men of your character are fit companions for kings." As to the literary merit of this author, it was, we suspect, too much extolled in his own time, and has been too much undervalued in ours.

ROLLING, the motion by which a ship rocks from side to side like a cradle, occasioned by the agitation of the waves.

Rolling, therefore, is a sort of revolution about an imaginary axis passing through the centre of gravity of a ship: so that the nearer the centre of gravity is to the keel, the more violent will be the rolling motion; because the centre about which the vibrations are made

Rollin,
Rolling.

Rolling,
Rollo.

is placed so low in the bottom, that the resistance made by the keel to the volume of water which it displaces in rolling, bears very little proportion to the force of the vibration above the centre of gravity, the radius of which extends as high as the mast-heads.

But if the centre of gravity is placed higher above the keel, the radius of vibration will not only be diminished, but an additional force to oppose the motion of rolling will be communicated to that part of the ship's bottom which is below the centre of gravity.

So far as relates to the effect of rolling, when produced by the quality or stowage of the ballast, and to the manner by which it may be prevented, viz. a change of the quantity or disposition of the ballast, we shall endeavour to explain under the article TRIM. It may, however, be necessary to remark, that the construction of the ship's bottom may also contribute to diminish this movement considerably.

Many fatal disasters have happened to ships arising from violent rollings; as the loss of the masts, loosening of the cannon, and straining violently on the decks and sides, so as to weaken the ship to a great degree. See PITCHING.

ROLLING-Press. See Rolling PRESS.

ROLLING-Tackle, a pulley or purchase fastened to that part of a sail-yard which is to the windward of the mast, in order to confine the yard close down to the leeward when the sail is furled.

It is used to prevent the yard from having a great friction against the mast in a high sea, which would be equally pernicious to both.

ROLLO, the conqueror of Normandy, was a Norwegian duke, banished from his country by Harold Harfager, who conquered Norway in 870, on account of the piracies he exercised. He first retired with his fleet among the islands of the Hebrides to the north-west of Scotland, whither the flower of the Norwegian nobility had fled for refuge ever since Harold had become master of the whole kingdom. He was there received with open arms by those warriors, who, eager for conquest and revenge, waited only for a chief to undertake some glorious enterprise. Rollo setting himself at their head, and seeing his power formidable, sailed towards England, which had been long as it were a field open on all sides to the violence of the northern nations. But the great Alfred had some years before established such order in his part of the island, that Rollo, after several fruitless attempts, despaired of forming there such a settlement as should make him amends for the loss of his own country. He pretended, therefore, to have had a supernatural dream, which promised him a glorious fortune in France, and which served at least to support the ardour of his followers. The weakness of the government in that kingdom, and the confusion in which it was involved, were still more persuasive reasons to insure them of success. Having therefore sailed up the Seine to Rouen, he immediately took that capital of the province, then called *Neustria*, and making it his magazine of arms, he advanced up to Paris, to which he laid siege in form. This war at length ended in the entire cession of *Neustria*, which Charles the Simple was obliged to give up to Rollo and his Normans in order to purchase a peace. Rollo received it in perpetuity to himself and his posterity, as a feudal duchy de-

Rolls,
Rollock.

pendant on the crown of France. A description of the interview between Charles and this new duke gives us a curious picture of the manners of these Normans (as they were called by foreigners); for the latter would not take the oath of fealty to his sovereign lord any other way than by placing his hands within those of the king; and absolutely refused to kiss his feet, as custom then required. It was with great difficulty he was prevailed on to let one of his warriors perform this ceremony in his stead; but the officer to whom Rollo deputed this service, suddenly raised the king's foot so high, that he overturned him on his back; a piece of rudeness which was only laughed at: to such a degree were the Normans feared, and Charles despised.

Soon after, Rollo was persuaded to embrace Christianity, and he was baptized with much ceremony by the archbishop of Rouen in the cathedral of that city. As soon as he saw himself in full possession of Normandy, he exhibited such virtues as rendered the province happy, and deserved to make his former outrages forgotten. Religious, wise, and liberal, this captain of pirates became, after Alfred, the greatest and most humane prince of his time.

ROLLOCK, ROBERT, the first principal of the university of Edinburgh, was the son of David Rollock of Powis, in the vicinity of Stirling. He was born in the year 1555, and was taught the rudiments of the Latin tongue by a person then eminent in his profession. He was sent from school to the university of St Andrews, where his progress was so rapid, that he was made professor of philosophy soon after he obtained the degree of master of arts.

The magistrates of Edinburgh having petitioned the king to found a university in that city, they obtained a charter under the great seal, by which they were allowed all the privileges of a university, which was built in 1582, and Mr Rollock was chosen principal and professor of divinity. He was soon famous in the university on account of his lectures, and among his countrymen at large for his persuasive mode of preaching. In the year 1593, Principal Rollock and others were appointed by parliament to confer with the popish lords; and in the following year he was one of those made choice of by the general assembly, to present his majesty with a paper, entitled, *the dangers which, through the impunity of excommunicated papists, traffickers with the Spaniards, and other enemies of the religion and estate, are imminent to the true religion professed within this realm, his majesty's person, crown, and liberty of this our native country.* His zeal against popery was carried to excess, and he seems to have been of opinion, that it was incumbent on the civil magistrate to punish idolatry with death. In the year 1595, he was empowered, along with others, to visit the different universities in Scotland, with a view to enquire into the doctrine and practice of the different masters, the discipline adopted by them, and the state of their rents and living, which they were ordered to report to the next general assembly.

He was chosen moderator of the general assembly in the year 1597, at which period he was fortunate enough to obtain the redress of several glaring abuses. The greater part of his life was spent in conducting the affairs of the church, yet Spottiswood assures us that he would rather have preferred retirement and study. Indeed,

Rollock
||
Romance.

deed, the feebleness of his constitution was not equal to the hurry and bustle of public life, which he did not love equal to the retirement of study. He was very much affected with the stone, the pains of which he bore with the fortitude and resignation of a Christian. He died at Edinburgh on the last day of February 1598, in the 43d year of his age, beseeching his brethren, in his last moments, to be more dutiful and obedient to their gracious sovereign.

Short as his life was, he published many works, of which the following is a summary. A Commentary on the first book of Beza's Questions; on St Paul's Epistle to the Ephesians; on the prophet Daniel; a Logical Analysis of St Paul's Epistle to the Romans; some Questions and Answers concerning the Covenant of Grace and the Sacraments; a treatise of Effectual Calling; a Commentary on the Epistles of Paul to the Thessalonians and Philemon; on fifteen select psalms; on the Gospel of St John, with a harmony of the four Evangelists upon the death, resurrection, and ascension of Jesus Christ; certain Sermons on several places of St Paul's epistles; a Commentary on the Epistle to the Colossians; a Logical Analysis of the Epistle to the Hebrews; of the Epistle to the Galatians; a Commentary upon the first two chapters of the first Epistle of St Peter; a Treatise of Justification, and another of Excommunication. All these, except the sermons, were written in Latin. The following epitaph seems to prove that Rollock was much esteemed in the university over which he presided.

Te Rolloce, extincto, urbs mœsta, academia mœsta est;
Et tota exequiis Scotia mœsta tuis.
Uno in te nobis dederat Deus omnia, in uno
Te Deus eripuit omnia quæ dederit.

ROMAN, in general, something belonging to the city of Rome. See ROME.

KING OF THE ROMANS, in *Modern History*, is a prince elected to be successor to the reigning emperor of Germany.

ROMANCE, in matters of literature, a fabulous relation of certain adventures designed for the entertainment and instruction of the readers, and differing from the *novel* as it always exhibits actions great, dangerous, and generally extravagant. Many authors of the first name have written on the ancient *romance*. It has exercised the pen of Hurd, of Warburton, and of some ladies, who have not thought it any derogation to the sensibility of their sex to unite antiquarian research with the cultivation of the *belles lettres*. We have not, however, seen anywhere so concise, just, and elegant an account of the origin and progress of *romances* as in D'Iraeli's *Curiosities of Literature*. "Romance (says this writer) has been elegantly defined the offspring of fiction and love. Men of learning have amused them-

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elves with tracing the epocha of romances. In this Romance. research they have displayed more ingenuity than judgment; and some have fancied that it may have existed as far back as the time of Aristotle; Dearchus, one of his disciples, having written several works of this amusing species.

"Let us, however, be satisfied in deriving it from the Theagenes and Chariclea of Heliodorus, a bishop who lived in the 4th century, and whose work has been lately translated. This elegant prelate was the Grecian Fenelon (A). Beautiful as these compositions are when the imagination of the writer is sufficiently stored with accurate observations on human nature, in their birth, like many of the fine arts, they found in the zealots of religion men who opposed their progress. However Heliodorus may have delighted those who were not insensible to the felicities of a fine imagination, and to the enchanting elegancies of style, he raised himself, among his brother ecclesiastics, enemies; who at length so far prevailed, that it was declared by a synod, that his performance was dangerous to young persons, and that if the author did not suppress it, he must resign his bishopric. We are told he preferred his romance to his bishopric. Even so late as in Racine's time, it was held a crime to peruse these unhallowed pages. He informs us, that the first effusions of his muse were in consequence of studying that ancient romance, which his master observing him to devour with the keenness of a famished man, he snatched it from his hands and flung it in the fire; a second copy experienced the same fate. What could Racine do? He bought a third, and took the precaution of devouring it secretly till he got it by heart; after which he offered it to his master with a smile to burn, if he chose, like the others.

The decision of these bigots was founded in their opinion of the immorality of such works. They alleged, that the writers paint too warmly to the imagination, address themselves too forcibly to the passions, and, in general, by the freedom of their representations, hover on the borders of indecency. This censure is certainly well-founded. Many of the old romances, and even of the dramas, acted in Scotland two centuries ago, are such as common prostitutes would in this age think indecent. But we are at present concerned with the origin of romance.

"The learned Fleury thinks that they were not known till the 12th century, and gives as their original the history of the dukes of Normandy. Verdier, whose opinion is of no great weight, says the invention of romance was owing to the Normans of France; and that these fictions being originally written in the old Norman language, they were entitled *Normances*; the name was afterwards altered to that of *Romances*. The Spaniards, who borrowed them from the French, called them *Romanzes*, which also did the Italians.

P

"Dom

(A) An ingenious and learned friend inquires, 'Is not the romance of the Golden Ass, by Apuleius, to be considered as an earlier specimen than that of Heliodorus?' To this our author has no objection; but he would not warrant any romance to be the *first* that ever was written. It is thus that some writers, more learned than sagacious, have discovered the first inventor of epistolary correspondence. A lady receives this honour: such learning is desperate! From the Asiatic Researches and other publications on Oriental literature, we are led to believe, that the native country of romance is the east; where it seems to have flourished in all its extravagant grandeur from time immemorial.

Romance.

“ Dom Rivet, one of the learned associates of the congregation of St Maur, authors of the Literary History of France, fixes their origin in the 10th century. He says, that the most ancient romance known was one which appeared in the middle of that century, under the title of *Philomena*, or *the Beloved*. This romance contains the pretended exploits of Charlemagne before Narbonne. At Toulouse, he tells us, they have preserved a copy of the *Philomena* in its original language; that is to say, the Romaunt or polished; such as was then spoken at court. They preferred this language to the Latin, which was then that of the common people, but vitiated with their corruptions.

“ So far have we travelled on the road of conjecture: we shall now turn into the path of fact. It is certain that these compositions derive their name from the language in which they were first written. Abbe Irauld has given us the character of the earliest romances, which we shall transcribe; for to add to what is well expressed, however it may please the vanity of a writer, seldom tends to the gratification of the reader.

‘ The first romances were a monstrous assemblage of histories, in which truth and fiction were equally blended, but all without probability; a composition of amorous adventures, and all the extravagant ideas of chivalry. The incidents are infinitely multiplied; destitute of connection, of order, and art. These are the ancient and miserable romances which Cervantes, in his celebrated satirical romance of *Don Quixote*, has covered with an eternal ridicule.’

“ It is, however, from these productions rather in their improved state, that poets of all nations have drawn their richest inventions. The agreeable wildness of that fancy which characterized the eastern nations was caught by the crusaders. When they returned home, they mingled in their own the customs of each country. The Saracens, who were men like themselves, because they were of another religion, and were therefore their enemies, were pictured under the tremendous form of *Paynim Giants*. The credulous reader of that day followed with trembling anxiety the *Red-cross Knight*. It was thus that fiction embellished religion, and religion invigorated fiction. Such incidents have enlivened the cantos of Ariosto, and adorned the epic of Tasso. Spenser is the child of their creation; and it is certain that we are indebted to them for some of the bold and strong touches of Milton.”

Other circumstances however have been assigned as the sources of these extravagant fictions. “ Castles were erected to repulse the vagrant attacks of the Normans; and in France (from the year 768 to 987) these places became fatal to the public repose. The petty despots who raised these castles, pillaged whoever passed, and carried off the females who pleased them. Rapine, of every kind, was the privilege of Lords! Mezeray observes, that it is from these circumstances romancers have invented their tales of knights errant, monsters, and giants.

“ De Saint Foix, in his Historical Essays on this subject, thus expresses himself: ‘ Women and girls were not in greater security when they passed by abbeys. The monks sustained an assault rather than relinquish their prey: if they saw themselves losing ground, they brought to their walls the relics of some saint. Then it generally happened that the assailants, seized with aw-

ful veneration, retired, and dared not to pursue their vengeance. This is the origin of the enchanters, of the enchantments, and of the enchanted castles, described in romances.’

“ To these may be added what the author of Northern Antiquities, vol. i. p. 243, writes, that ‘ as the walls of the castles ran winding round them, they often called them by a name which signified *serpents* or *dragons*; and in these were commonly secured the women and young maids of distinction, who were seldom safe at a time when so many bold warriors were rambling up and down in search of adventures. It was this custom which gave occasion to ancient romancers, who knew not how to describe any thing simply, to invent so many fables concerning princesses of great beauty, guarded by dragons.’

“ The Italian romances of the 14th century were spread abroad in great numbers. They formed the polite literature of the day. But if it is not permitted to authors freely to express their ideas, and give full play to the imagination, these works must never be placed in the study of the rigid moralist. They indeed pushed their indelicacy to the verge of grossness, and seemed rather to seek than to avoid scenes which a modern would blush to describe. They (to employ the expression of one of their authors) were not ashamed to name what God had created. Cinthio, Bandello, and others but chiefly Boccaccio, rendered libertinism agreeable, by the fascinating charms of a polished style, and a luxuriant imagination.

“ This however must not be admitted as an apology for immoral works; for poison is still poison, even when it is delicious. Such works were, and still continue to be, the favourites of a nation which is stigmatised from being prone to illicit pleasures and impure amours. They are still curious in their editions, and are not parsimonious in their price for what they call an uncastrated copy. There are many Italians, not literary men, who are in possession of an ample library of the old novelists.

“ If we pass over the moral irregularities of these romances, we may discover a rich vein of invention, which only requires to be released from that rubbish which disfigures it to become of an invaluable price. The Decamerons, the Hecatomiti, and the Novellas of these writers, made no inconsiderable figure in the little library of our Shakespeare. Chaucer is a notorious imitator and lover of them; his *Knights Tale* is little more than a paraphrase of Boccaccio’s *Teseoide*. Fontaine has caught all their charms with all their licentiousness. From such works, these great poets, and many of their contemporaries, frequently borrowed their plots; not uncommonly kindled at their flame the ardour of their genius; but bending too submissively to their own peculiar taste, or that of their age, in extracting the ore, they have not purified it of the alloy.

“ We must now turn our contemplation to the French romances of the last century. They were then carried to a point of perfection, which as romances they cannot exceed. To this the *Astrea* of D’Urfé greatly contributed. It was followed by the *Illustrious Bassa*, the *Great Cyrus*, *Clelia*, &c. which, though not adapted to the present age, gave celebrity to their authors. Their style, as well as that of the *Astrea*, is diffuse and insipid. *Zaide* (attributed by some to Segrais, but by Huet

Romance
||
Romano.

Huet to Madame La Fayette) and the princess of Cleves are translated, and though they are masterpieces of the kind, were never popular in our country, and are little adapted to its genius.

“ It is not surprising that romances have been regarded as pernicious to good sense, morals, taste and literature. It was in this light they were considered by Boileau; because a few had succeeded, a crowd imitated their examples. Gomberville and Scudery, and a few more were admired; but the satirist dissolved the illusion. This he did most effectually by a dialogue, in which he ridicules those citizens of a certain district, whose characters were concealed in these romances, under the names of Brutus, Horace Cocles, Lucretius, and Clelia. This dialogue he only read to his friends, and did not give it for a long time to the public, as he esteemed Mademoiselle de Scudery: but when at length it was published, it united all the romance writers against our satirist.

“ From romances, which had now exhausted the patience of the public, sprung novels. They attempted to allure attention by this inviting title, and reducing their works from ten to two volumes. The name of romance disgusted; and they substituted those of histories, lives, memoirs, and adventures. In these works (observes Iruil) they quitted the unnatural incidents, the heroic projects, the complicated and endless intrigues, and the exertion of noble passions; heroes were not now taken from the throne, they were sought for even amongst the lowest ranks of the people. On this subject, I shall just observe, that a novel is a very dangerous poison in the hand of a libertine; it may be a salutary medicine in that of a virtuous writer.” See NOVEL.

ROMAGNA, a province of Italy, in the pope's territories, bounded on the north by the Ferrarese, on the south by Tuscany and the duchy of Urbino, on the east by the gulf of Venice, and on the west by the Bolognese and a part of Tuscany. It is fertile in corn, wine, oil, fine fruits, and pastures. It has also mines, mineral waters, and salt-works, which make its principal revenue. Ravenna is the capital town.

ROMANIA, a province of Turkey in Europe, bounded on the north by Bulgaria, on the east by the Black sea, on the south by the Archipelago and the sea of Marmora, and on the west by Macedonia and Bulgaria; being 200 miles in length and 150 in breadth. It was formerly called *Thrace*, and is the principal and largest of all the provinces the Turks possess in Europe. It is a fruitful country in corn and pastures, and there are mines of silver, lead, and alum. It is divided into three great governments or sangiacates; namely, Kirkel, of which Philipoli is the capital; Galipoli, whose capital is of the same name; and Byzantium, or Byzia, or Viza, of which Constantinople is the capital. The Turks bestow the name of *Romelia* on all the territories they possess in Europe.

ROMANO, GIULIO, a famous painter, was the disciple of Raphael, who had such an affection for him, that he appointed him, with John Francis Penni, his heir. His conceptions were more extraordinary and more elevated than even those of his master, but not so natural. He was wonderful in the choice of atti-

tudes; but did not perfectly understand the lights and shades, and is frequently harsh and ungraceful. The folds of his draperies, says Du Fresnoy, are neither beautiful nor great, easy nor natural, but all extravagant, like the fantastical habits of comedians. He was, however, superior to most painters, by his profound knowledge of antiquity; and, by conversing with the works of the most excellent poets, particularly Homer, he made himself master of the qualifications necessarily required in a great designer. Julio Romano was also well skilled in architecture. He was employed by Cardinal de Medicis, who was afterwards pope under the name of *Clement VII.*; and afterwards went to Mantua, whither he was invited by Frederic Gonzaga, marquis of that city, in order to avoid his being justly punished for his having drawn at Rome the designs of 20 obscene plates, engraved by Mark Antony, to which Aretine added the same number of sonnets. Julio Romano embellished the city of Mantua with many of his performances both in painting and architecture; and died in that city in 1545, at 45 years of age, much regretted by the marquis, who had an extraordinary friendship for him.

ROME, a very ancient and celebrated city of Italy, situated on the river Tiber, in E. Long. 13^o. N. Lat. 41. 45. once the capital of the greatest empire in the world; and famous in modern history for being the centre of an ecclesiastical tyranny, by which for many ages the greatest part of the world was held in subjection.

The ancient Romans derived their origin from Æneas the Trojan hero; and though some historians pretend to treat his voyage into Italy as a mere fable, yet no sufficient reasons for rejecting this account have been offered, nor has any more probable history of the origin of the Roman name been given; so that, without entering into the dispute, we shall proceed to the history of Æneas and his successors as they are recorded by the generality of Latin writers.

When the Greeks, by the treachery of the sons of Antenor, or by whatever other means it happened, were become masters of Troy, Æneas with the forces under his command retired into the fortress of the city, and defended it bravely for some time; but yielding at length to necessity, he conveyed away his gods, his father, wife, and children, with every thing he had that was valuable, and, followed by a numerous crowd of Trojans, fled to the strong places of Mount Ida. Here all those of his countrymen, who were more anxious than the rest to preserve their liberty, flocked to him from the several towns of Troas. His army thus augmented and advantageously posted, he continued quiet, waiting for the departure of the Greeks, who it was imagined, would return home as soon as they had pillaged the country. But these, after they had enriched themselves with the spoils of Troy and of the neighbouring towns, turned their arms against the fugitives, resolving to attack them in their strong-holds upon the mountain. Æneas, to avoid the hazard of being forced in his last refuge, had recourse to negotiation; and, by his heralds, intreated the enemy not to constrain him to a battle. Peace was granted him, on condition that he with his followers quitted the Trojan territories; and the Greeks, on their part, promised

Romano,
Rome.

1
Romans descended
from Æneas.

2
Æneas flies
from Troy
to Mount
Ida.

3
Makes
peace with
the Greeks,
and leaves
his coun-
try.

Rome. fed not to molest him in his retreat, but to let him safely pass through any country within the extent of their domination.

Upon this assurance Æneas equipped a fleet, in order to seek a settlement in some foreign land. We are told, that at his departure he left his eldest son Ascanius with the Dasylires, a people of Bithynia, who desired to have him for their king; but that the young prince did not remain long with them: for when Scamandrius (Astyanax), with the rest of the Hæctoridæ whom Neoptolemus permitted to return home from Greece, repaired to him, he put himself at their head, and led them back to their native country.

The Trojan, having crossed the Hellespont, arrived in the peninsula of Pallene, where he built a city, called from him *Æneia*, and left in it a part of that multitude which had followed him. From thence he sailed to Delos; and thence to Cythera, where he erected a temple to Venus. He built another to the same goddess in Zacynthus, in which island he likewise instituted games, called the *races of Æneas and Venus*: the statues of both, says Dionysius, are standing to this day. In Leucas, where the Trojans landed, was to be seen, in the same author's time, a temple erected to Venus the mother of Æneas. Nor were Actium and Ambracia without monuments that testified his arrival in those places. At Dodona were found brazen vases, upon which the name of the Trojan hero, who had made an offering of them to Jupiter, was engraven in old characters. Not far from Buthrotos, in Epirus, a Trojan camp which had escaped the injuries of time, retained the name of *Troja*. All these antiquities, still subsisting in the reign of Augustus, were then looked upon as indisputable proofs of Æneas's voyage to Epirus: "and that he came into Italy (adds the same Dionysius) we have the concurrent testimony of all the Romans; the ceremonies they observe in their sacrifices and festivals bear witness to it, as also the Sibylline books, the Pythian oracles, and many other things which nobody can reasonably reject as invented merely for ornament."

The first land of Italy which Æneas made, after crossing the Ionian sea, was Cape Minerva, in Iapygia; and here he went on shore. Sailing afterwards from hence, and coasting along the south-east of Italy and the east and south sides of Sicily, he arrived with his fleet either by choice or by stress of weather at the port of Drepanum in that island. Elymus and Ægeus, who had escaped from Troy a little before him, had brought a Trojan colony to this place. Æneas augmented it by a good number of his followers, whom, pleased to have found a safe resting place after many dangers and fatiguing voyages, he willingly left behind him at their request; though certain authors pretend that he was constrained to it by the difficulty of transporting them, because some Trojan women, weary of the sea, had burnt a considerable part of his ships.

Æneas, leaving Drepanum, steered his course for Italy across the Tyrrhenian sea. To the cape where he first landed, he gave the name *Palinurus*, from one of his pilots who died there. The little island of Leucasia, not far distant, whither he sailed next, got its name in like manner from a daughter of Æneas's sister, who there ended her days. The port of Misenum, the island of Prochyta, and the promontory of Cajeta, where he

Rome. successively arrived, were so called from being the burial places, the first of a noble Trojan his companion, the second of his kinswoman, and the third of his nurse. At length the Trojan prince and his chosen band finished their tedious and painful voyages on the coast of the since famous Latium. This was a small territory on the east side of the river Tiber, containing a part of the present *Campagna di Roma*: Latinus was the king of it; his capital town, Laurentum; his subjects, a people who, till his time called *Aborigines*, had from him taken the name of *Latins*. Here, far removed from their implacable enemies the Greeks, Æneas and his followers undertook to raise a second Troy: they fortified a camp near the mouth of the Tyber, gave it the name of *Troy*, and flattered themselves with the hopes of a quiet settlement, and a period to all their unhappy adventures.

When Æneas arrived in Italy, Latinus was engaged in a war with the Rutuli, a neighbouring people, in which he was attended but with very indifferent success, when news was brought him that a foreign army had made a descent on his coasts, pillaged the maritime part of his dominions, and were fortifying themselves in a camp at a small distance from the sea. Hereupon he marched against them with all his forces, hoping to oblige them to reembark and abandon his dominions, without meeting with any great resistance from a band of vagabonds, as he supposed, or pirates, come only to seek for plunder: but finding them, as he drew near, well-armed, and regularly drawn up, he thought it advisable to forbear engaging troops that appeared so well disciplined; and, instead of venturing a battle, to desire a parley. In this conference Latinus understanding who they were, and being at the same time struck with terror, and touched with compassion for those brave but unfortunate men, entered into a treaty with them, and assigned them a tract of land for a settlement, on condition that they should employ their arms and exert their valour in defence of his dominions, and look upon the Rutuli as a common enemy. This condition Æneas readily accepted; and complied with his engagement so faithfully, that Latinus came at length to repose an entire confidence in the Trojan; and in proof of it gave him Lavinia, his daughter and only child, in marriage, securing to him by that means the succession to the throne of Latium. Æneas, to testify his gratitude to Latinus, and affection for Lavinia, gave her name to the camp he had pitched; and instead of Troy called it *Lavinium*. The Trojans followed the example of their leader; and by making alliances with Latin families, became, in a short time, one and the same people with the Latins.

In the mean time Turnus, the queen's nephew, who had been brought up in the palace under the eye of Latinus, and entertained hopes of marrying Lavinia and succeeding to the throne, seeing the princess bestowed on a stranger, and all his views defeated, went over to the Rutuli; and by stirring them up, brought on a battle between them and the Latins, in which both he and Latinus were killed. Thus Æneas, by the death of his father-in-law, and by that of a troublesome rival, came into the quiet possession of the kingdom of Latium, which he governed with great wisdom, and transmitted to his posterity.

Æneas is said to have reigned three years; during which

4
Lands in Italy.

5
Enters into an alliance with Latinus, and marries his daughter.

Rome. which time he established the worship of the gods of his own country, and to the religion of the Latins added that of Troy. The two Palladiums, which had been the protectors of that city, became the tutelary deities of Lavinium, and, in after ages, of the whole Roman empire. The worship of Vesta was likewise introduced by Æneas; and virgins, from her called *Vestals*, were appointed to keep a fire continually burning in honour of that goddess. Jupiter, Venus, and many other deities who had been revered in Troy, became in all likelihood, known to the Latins by means of Æneas; which gave occasion to the poets of representing him under the character of a pious hero.

6 His death. While Æneas was thus employed, the Rutuli, ancient enemies of the Latin name, entering into an alliance with Mezentius king of the Tyrrhenians, took the field with a design to drive out those new-comers, of whose power they began to conceive no small jealousy. Æneas marched out against them at the head of his Trojans and Latins. Hereupon a battle ensued, which lasted till night; when Æneas being pushed to the banks of the Numicus, which ran close by Lavinium, and forced into that river, was there drowned. The Trojans concealed his body; and pretending that he had vanished away on a sudden, made him pass for a deity among his credulous subjects, who accordingly erected a temple to him under the title of *Jupiter Indiges*.

7 Succeeded by his son Ascanius. Upon the death of Æneas, his son Euryleon, called also *Ascanius* and *Iulus*, ascended the throne; but as the young king did not think it advisable to venture a battle in the very beginning of his reign, with a formidable enemy, who promised himself great success from the death of Æneas, he had the prudence to confine himself within the walls of Lavinium, and to try whether he could, by an honourable treaty, put an end to so dangerous a war. But the haughty Mezentius demanding of the Latins, as one of the conditions of a peace, that they should pay him yearly, by way of tribute, all the wine produced in the territory of Latium, Ascanius rejected the proposal with the utmost indignation; and having caused all the vines throughout his dominions to be consecrated to Jupiter, and by that means put it out of his power to comply with the enemy's request, he resolved to make a vigorous sally, and try whether he could, by force of arms, bring the insulting Tyrrhenian to more reasonable terms. The main body of the enemy's army was encamped at some distance from Lavinium; but Lausus, the son of Mezentius, with the flower of their youth under his command, lay entrenched at the very gates of the city. The Trojans, who had been long accustomed to make vigorous sallies, marching out in the night, attacked the post where Lausus commanded, forced his entrenchments, and obliged the troops he had with him to save themselves by flying to the main body of the army encamped on the plain; but the unexpected arrival and overthrow of their advance-guard struck them with such terror, that, instead of stopping the flight of their companions, they fled with them, in great disorder, to the neighbouring mountains. The Latins pursued them, and in the pursuit Lausus was killed: whose death so discouraged Mezentius, that he immediately sued for peace; which was granted him, upon condition, that for the future the Tiber should be the boundary between the Latin and Hetrurian territories.

8 who defeats the Rutuli.

Rome. In the mean time Lavinia, who had been left with child by Æneas, entertaining a strong jealousy of the ambition of her son-in-law, retired to the woods, and was there peaceably delivered of a son, who, from his father, was named *Æneas*, and, from the place of his birth, had the surname of *Sylvius*: but as the queen's flight, who had disappeared on a sudden, raised suspicions at Lavinium prejudicial to the reputation of Ascanius, he used all possible means to remove them, caused diligent search to be made after Lavinia, calmed her fears, and prevailed upon her to return to the town with her son, whom he ever after treated as a brother. Lavinium grew every day more populous; but as it was in reality the patrimony of Lavinia, and the inheritance of her son Sylvius, Ascanius resolved to resign it to them, and build elsewhere another city for himself. This he made the place of his residence, and the capital of his new kingdom, calling it *Alba Longa*; *Alba*, from a white sow, which we are told Æneas had found in the place where it was built; and *Longa*, to distinguish it from another town of the same name in the country of the Marfi; or rather, because it extended, without having much breadth, the whole length of a lake near which it was built. It was 30 years after the building of Lavinium that Ascanius fixed his abode at Alba; and there he died, after a reign of about 38 years, 12 of which he had resided at his new settlement. He left a son called *Iulus*; so that between him and Sylvius lay the right of succession to the Latin throne; the latter being the son, and the former the grandson, of Æneas.

10 Refrains the kingdom, and founds Alba Longa. The Latins not thinking it their interest to continue divided, as it were, into two states, resolved to unite Alba and Lavinium into one sovereignty; and as Sylvius was born of Lavinia the daughter of Latinus, and had thereby an undoubted title to the kingdom of his grandfather, whereas the other was but the son of a stranger, the Latins bestowed the crown on Sylvius; and, to make Iulus some amends, decreed to him the sovereign power in affairs of religion; a power which thenceforth continued in his family. Sylvius was succeeded by 13 kings of the same race, who for near 400 years reigned at Alba; but we scarce know any thing of them besides their names, and the years of their respective reigns. Æneas Sylvius died, after a reign of 29 years. His son, called also *Æneas Sylvius*, governed Latium 31 years. *Latinus Sylvius*, who succeeded him, swayed the sceptre for the space of 51 years.—Alba reigned 39; Capetus, by Livy named *Atys*, 26; Capis, 28; and Capetus, 13. Tiberinus, who succeeded him, engaged in a war which proved fatal to him; for in a battle which was fought on the banks of the Albula, he was forced into that river and drowned. From him the river took the name of *Tiber*, which it has borne ever since. Agrippa succeeded Tiberinus after a reign of eight years; and left the throne, which he had held 41 years, to Alladius; who reigned 19, and was succeeded by Aventinus, who left his name to the hill Aventinus, where he was interred. Procas, who succeeded him, and reigned 23 years, was the father of Numitor and Amulius; and at his death bequeathed the throne to his elder son Numitor. But Amulius, who surpassed his brother in courage and understanding, drove him from the throne; and to secure it to himself, murdered Ægeustus, Numitor's only son, and consecrated

11 Both states united.

12 Origin of the name Tiber.

Rome. ¹³ crated his daughter Rhea Sylvia to the worship of
 Vestal, by which she was obliged to perpetual virginity.
 But this precaution proved ineffectual; for as the Vesta-
 l was going to a neighbouring spring to fetch water
 for the performance of a sacrifice to Mars, she was met
 and ravished by a man in a military habit, like that in
 which the god Mars is represented. Some authors
 think that this counterfeit Mars was a lover come thi-
 ther by her appointment; others charge Amulius him-
 self with using this violence to his niece, not so much to
 gratify his lust, as to have a pretence to destroy her.—
 For ever after he caused her to be carefully watched,
 till she was delivered of two sons; and then exaggerat-
 ing her crime in an assembly of the people, he prevailed
 upon them to sentence her to death, and to condemn
 the fruit of her criminal amour to be thrown into the
 Tiber. The sentence against Rhea was, according to
 some authors, changed by Amulius, at the request of
 his daughter Antho, into perpetual confinement, but
 executed against the twins; who being laid in a wooden
 trough, and carried to the foot of Mount Palatine, were
 there turned adrift on the Tiber, which at that time
 overflowed its banks. But the wind and stream proved
 both so favourable, that at the fall of the water the two
 infants were left safe on the strand, and were there hap-
 pily found by Faustulus, the chief of the king's shep-
 herds, and suckled by his wife Acca Laurentia, who
 for her disorderly life was called *Lupa*; and this proba-
 bly gave rise to the fabulous miracle of their being nur-
 fed by a wolf.

¹⁴
 Of Romu-
 lus and Re-
 mus.

As Faustulus was probably well acquainted with the
 birth of the twins, he took more than ordinary care of
 their education, and sent them to Gabii to be instructed
 there in Greek literature. As they grew up, they ap-
 peared to have something great in their mien and air
 which commanded respect; and the ascendant which
 they assumed over the other shepherds made them dread-
 ed in the forests, where they exercised a sort of empire.
 A quarrel happening between the herdsmen of Amulius
 and those of Numitor, the two brothers took the part
 of the former against the latter; and some blood being
 shed in the fray, the adverse party, to be revenged on
Romulus and *Remus* (for so the twins were called), on
 the festival of Lupercaia, surprised Remus, and carried
 him before Numitor, to be punished according to his
 deserts. But Numitor feeling himself touched in the
 prisoner's favour, asked him where he was born, and
 who were his parents. His answer immediately struck
 Numitor with a lively remembrance of his two grand-
 sons; their age, which was about 18 years, agreed with
 the time when the two infants were exposed upon the
 Tiber; and there needed no more to change his anger
 into tenderness.

In the mean time Romulus, eager to rescue his brother,
 and pursue those who had carried him off, was
 preparing to be revenged on them; but Faustulus dis-
 suaded him from it; and on that occasion, disclosing to
 him his birth, awakened in his breast sentiments worthy
 of his extraction. He resolved, at all adventures, to at-
 tempt the delivering of his mother and grandfather from
 oppression. With this view he assembled the country
 people, over whom he had assumed a kind of sovereignty,
 and engaged them to come to the city on an ap-
 pointed day, and enter it by different gates, provided
 with arms, which they were to conceal. While Romu-

lus was thus disposing every thing for the execution
 of his design, Numitor made the same discovery to Re-
 mus concerning his parents, and the oppressions they
 groaned under; which so fired him, that he was ready
 to embark in any enterprize. But Numitor took care
 to moderate the transports of his grandson, and only
 desired him to acquaint his brother with what he had
 heard from him, and to send him to his house. Romu-
 lus soon came, and was followed by Faustulus, who
 took with him the trough or skiff in which the twins had
 been exposed, to show it to Numitor: but, as the shep-
 herd betrayed an air of concern and earnestness in his
 looks, he was stopped at the gate of the city, led before
 Amulius, and examined concerning his burden. It
 was easily known by its make and inscription, which
 was still legible; and therefore Faustulus owned what it
 was, and confessed that the twins were living; but, in
 order to gain time, pretended that they were feeding
 flocks in a remote desert. In the mean time, the
 usurper's death being resolved on, Remus undertook to
 raise the city, and Romulus to invest the king's palace.
 The country people came at the time appointed, and
 formed themselves into companies each consisting of 100
 men. They had no other ensigns but bundles of hay
 hanging upon long poles, which the Latins at that time
 called *manipuli*; and hence came the name of *manipu-
 lares*, originally given to troops raised in the country.
 With this tumultuous army Romulus beset the avenues
 of the palace, forced the guard, and having killed the
 tyrant, after he had reigned 42 years, restored his
 grandfather Numitor to the throne.

Affairs being thus settled at Alba, the two brothers, ¹⁵
 by the advice of Numitor, undertook the founding of a
 new colony. The king bestowed on them those lands
 near the Tiber where they had been brought up, sup-
 plied them with all manner of instruments for breaking
 up ground, with slaves, and beasts of burden, and grant-
 ed full liberty to his subjects to join them. Hereupon
 most of the Trojans, of whom there still remained 50
 families in Augustus's time, chose to follow the fortune
 of Romulus and Remus, as did also the inhabitants of
 Pallantium and Saturnia, two small towns. For the
 more speedy carrying on of the work, it was thought
 proper to divide those who were to be employed in the
 building of the city into two companies, one under the
 command of Romulus, the other of Remus; but this di-
 vision, which was designed purely with a view to the
 public welfare, and that the two parties might work by
 way of emulation, gave birth to two factions, and pro-
 duced a jealousy between the two brothers, which broke
 out when they came to choose a place for the building
 of their new city; for Remus was for the Aventine, and
 Romulus for the Palatine mount. Upon which, the
 matter being referred to their grandfather, he advised
 the contending parties to have recourse to the gods, and
 to put an end to the dispute by augury, to which he
 was himself greatly addicted. The day appointed for
 the ceremony being come, the brothers posted them-
 selves each upon his hill; and it was agreed, that who-
 ever should see the first flight, or the greatest number,
 of vultures, should gain his cause. After the two rivals
 had waited some time for the appearance of a favourable
 omen, Romulus, before any had appeared, sent to ac-
 quaint his brother that he had seen some vultures; but
 Remus, having actually seen six, while his brother's
 messengers

Rome. messengers were yet on their way, hastened, on their arrival, to Mount Palatine, to examine the truth of what they had told him. He had no sooner got thither, than by an unexpected good fortune twelve vultures appeared to Romulus. These he immediately showed to his brother; and, transported with joy, desired him to judge himself of the truth of what his messengers had told him. However, Remus discovered the deceit; and, being told that Romulus had not seen the twelve vultures till after he had seen six, he insisted on the time of his seeing them, and the other on the number of birds he had seen. This widened the breach between the two brothers; and, their parties being divided, while each man espoused the cause of his leader, the dispute grew so warm, that, from words they came at length to blows. The shepherd Faustulus, who was equally dear to both the brothers, endeavouring to part the combatants, was, by an unknown hand, laid dead on the spot. Some writers tell us, that Remus likewise lost his life in the fray; but the greater number place his death later, and say that he was killed by one Fabius, for having, in derision, leaped over the wall of the new city: but Livy says, the more common report was, that Remus fell by the hand of his brother.

16
Death of
Remus.

17
Foundation
of Rome.

Romulus, being now head of the colony, by having got the better of his brother's party in the late engagement, applied his thoughts wholly to the building of the city, which he proposed to call after his own name. He chose Mount Palatine for its situation, and performed all those ceremonies which the superstition of the Hetrurians had introduced. He first offered sacrifices to the gods, and ordered all the people to do the same: and from that time decreed, that eagles should be the auspices of his new colony. After this, great fires were kindled before their tents, and all the people leaped through the flames to purify themselves. When this ceremony was over, they dug a trench round the spot where the assemblies of the people were afterwards held, and threw into it the first-fruits of whatever they were allowed to make use of for food: every man of the colony was ordered to cast into the same trench an handful of earth, brought either from his own or some neighbouring country. The trench they called *Mundus*, that is, *the world*, and made it the centre round which the city was to be built. Then Romulus, yoking an ox and a cow to a plough, the coulter whereof was brass, marked out, by a deep furrow, the whole compass of the city. These two animals, the symbols of marriage, by which cities are peopled, were afterwards slain upon the altar. All the people followed the plough, throwing inwards the clods of earth which the ploughshare sometimes turned outwards. Wherever a gate was to be made, the plough was lifted up, and carried; and hence came the Latin word *porta*, "a gate," derived from the verb *portare*, "to carry." As Mount Palatine stood by itself, the whole was inclosed within the line made by the plough, which formed almost the figure of a square; whence, by Dionysius Halicarnassensis, it is called *Roma Quadrata*.

As to the exact year of the foundation of Rome, there is a great disagreement among historians and chronologers. Fabius Pictor, the most ancient of all the Roman writers, places it in the end of the seventh Olympiad; that is, according to the computation of Usher, in the

year of the world 3256, of the flood 1600, and 748 before the Christian era. The Romans, if we may so call them, began to build, as Plutarch and others inform us, on the 21st of April; which day was then consecrated to Pales, goddess of the shepherds; whence the festival of Pales, and that of the foundation of the city, were afterwards jointly celebrated at Rome.

When Rome had received the utmost perfection which its poor and rude founder could give it, it consisted of about 1000 houses, or rather huts; and was, properly speaking, a beggarly village, whereof the principal inhabitants followed the plough, being obliged to cultivate with their own hands the ungrateful soil of a barren country which they had shared among themselves. Even the walls of Romulus's palace were made of rushes, and covered with thatch. As every one had chosen his ground to build upon, without any regard to the regularity and beauty of the whole, the streets, if we may so call them, were both crooked and narrow. In short, Rome, till it was rebuilt after the burning of it by the Gauls, was rather a disorderly heap of huts, than a city built with any regularity or order.

As soon as the building of the city was finished, Romulus assembled the people, and desired them to choose what kind of government they would obey. At that time monarchy was the unanimous voice of the Romans, and Romulus was elected king. Before he ascended the throne, however, he consulted the will of the gods by augury; and having received a favourable answer, it thence became an established custom to have recourse to augury before the raising any one to the dignity of king, priest, or any public employment. After this he applied himself to the establishment of good order and subordination among his subjects. He put on a habit of distinction for himself, appointed 12 lictors to attend him as guards, divided his subjects, who at this time consisted only of 33,000 men, into *curiæ*, *decuriæ*, *patricians*, *plebeians*, *patrons*, *clients*, &c. for an account of which, see these articles as they occur in the order of the alphabet. After this he formed a senate consisting of 100 persons, chosen from among the patricians; and a guard of 300 young men called *celeræ*, who attended the king, and fought either on foot or on horseback as occasion required. The king's office at home was to take care of religious affairs, to be the guardian of laws and customs; to decide the weightier causes between man and man, referring those of smaller moment to the senate; to call together the senators, and assemble the people, first delivering his own opinion concerning the affair he proposed, and then ratifying by his consent what was agreed on by the majority. Abroad, and in the time of war, he was to command the army with absolute authority, and to take care of the public money. The senate were not only to be judges in matters of small importance, but to debate and resolve upon such public affairs as the king proposed, and to determine them by a plurality of voices. The people were allowed to create magistrates, enact laws, and resolve upon any war which the king proposed; but in all these things the consent of the senate was necessary.

Romulus next proceeded to settle the religious affairs of his people. Many of the Trojan and Phrygian deities were added to those whom the Aborigines or Italian natives already worshipped. He chose priests, instituted festivals, and laid the foundation of a regular system

Rome.

18

At first but
of a poor vil-
lage.

19

Romulus-
elected
king.

Rome. system of religion; after which, as his colony was still thinly peopled, he opened an asylum for fugitive slaves, homicides, outlaws, and debtors. These, however, he did not at first receive within the walls, but appointed for their habitation the hill Saturnius, called afterwards *Capitolinus*, on which he erected a temple to a divinity of his own invention, whom he named the *Asylean god*, under whose protection all criminals were to live securely. But afterwards, when the city was enlarged, the asylum was inclosed within the walls, and those who dwelt in it included among the citizens of Rome.

20 Rape of the Sabine women When Romulus had thus settled every thing relating to his new colony, it was found that a supply of women was wanting to perpetuate its duration. This occasioned some difficulty; for the neighbouring nations refused to give their daughters in marriage to such a crew of vagabonds as had settled in Rome; wherefore Romulus at last resolved on the following expedient. By the advice of his grandfather Numitor, and with the consent of the senate, he proclaimed a solemn feast and public games in honour of the Equestrian Neptune called *Consus*. This occasioned a great concourse of people, who flocked from the adjacent parts to behold these pompous shows, together with the new city. But, in the midst of the solemnity, the Romans, rushing in with their swords drawn, seized all the young women, to the number of 683, for whom Romulus chose husbands. Among all those who were thus seized, only one married woman, named *Herfilia*, was found; and Romulus is said to have kept her for himself.

21 occasions war with the neighbouring nations. This violence soon brought on a war with the neighbouring nations. Acron, king of Cænina, a city on the confines of Latium, having entered into a league with the inhabitants of Crustumium and Antemnæ, invaded the Roman territories. Romulus marched against them without delay, defeated the confederate army, killed their king in single combat, decreed himself a triumph, and consecrated the spoils of Acron to Jupiter Feretrius, under the name of *Opima Spolia*. The city of Cænina was razed to the ground, and the inhabitants transplanted to Rome, where they were admitted to the privileges of citizens. The king then marched with one legion (consisting at this time of 3000 foot and 300 horse) against the Crustumini and Antemnates, both of whom he defeated in battle, and transplanted the inhabitants to Rome; which being incapable of holding such a number, Romulus took in the hill Saturnius above mentioned, on the top of which he built a citadel, committing the care of it to a noble Roman named *Tarpeius*. The citadel was surrounded on all sides with ramparts and towers, which equally commanded the city and country. From the foot of the hill Saturnius a wall was carried on quite to the Tiber, and a gate opened in it named *Carmentalis*, from Carmenta the mother of Evander, who either lived there, or had some chapel or altar erected to her.

22 Rome enlarged. Romulus had now become so formidable to his neighbours, and had so well established his reputation for clemency, that several cities of Hetruria voluntarily submitted to him. Cælius, an Hetrurian general, led the troops under his command to Rome, and settled on a hill near the city, which from him took the name of *Mount Cælius*. The Sabines, however, not in the least dismayed at this increase of the Roman forces, sent a deputation to Romulus, demanding restitution of the young

Rome. women who had been carried off; and, upon his refusal, marched to Rome with an army of 25,000 foot and 1000 horse, under the command of their king Titus Tatius. Romulus, having received supplies from Numitor and from Hetruria, likewise took the field, with 20,000 foot and 800 horse, with whom he seized an advantageous post, and fortified himself so strongly, that he could not be attacked. The Sabine monarch, perceiving the military skill of Romulus, began to be apprehensive of the event; but was extricated out of his difficulties by the treachery of Tarpeia daughter to the governor of the citadel, who agreed to betray that important fortress to the enemy, on condition of being rewarded with the bracelets which the Sabines wore on their left arms. But when once they became masters of this important place, they are said to have crushed Tarpeia under the weight of their bucklers, pretending that thus they discharged their promise, as they wore their bucklers also on their left arms. The possession of the citadel enabled the Sabines to carry on the war with more success; but, at last, in a general engagement, they had the misfortune to be driven back into the citadel, whither they were pursued by the Romans, who expected to have retaken that important post; but the enemy, rolling down great stones from the top of the hill, wounded Romulus on the head, so that he was carried insensible out of the field of battle, while, in the mean time, his troops were repulsed, and pursued to the very gates of Rome. However, the king soon recovering himself, encouraged his routed troops, and drove the enemy back into the citadel. But while the two nations were thus fiercely contending, the women, for whose cause the war had been commenced, undertook the office of mediators; and having obtained leave from the senate, marched in a body to the camp of the Sabines, where they pleaded the cause of their husbands so effectually, that a treaty of union between the two nations was set on foot, and a peace was at last concluded, on the following terms. 1. That the two kings should reside and reign jointly at Rome. 2. That the city should still, from Romulus, be called *Rome*; but the inhabitants *Quirites*, a name till then peculiar to the Sabines. 3. That the two nations should become one; and that the Sabines should be made free in Rome, and enjoy all the privileges of Roman citizens. As Rome was chiefly indebted for this increase of her power and splendor to the Sabine women, honourable privileges and marks of distinction were allowed them. Every one was commanded to give way to them; in capital causes they were exempted from the jurisdiction of the ordinary judges; and their children were allowed to wear a golden ball hanging from their necks, and a particular kind of robe called *prætecta*, to distinguish them from the vulgar.

23 Invasion of the Sabines. 24 The citadel besieged. 25 Peace concluded, and the two nations united. The two kings reigned with great harmony for the space of five years; during which time the only military exploit they accomplished was the reduction of the city of Cameria, at a small distance from Rome. Four thousand of the Camerini were transplanted to Rome, and a Roman colony sent to repeople Cameria; soon after which the Sabine king was murdered by the Lavinians, on account of his granting protection to some of his friends who had ravaged their territories. The Lavinians, fearing the resentment of Romulus, delivered up the assassins into his hands; but he sent them back unpunished,

Rome. punished, which gave occasion to suspect that he was not displeas'd with the death of his colleague.

Soon after the death of Tati'us, Rome was afflicted with famine and pestilence, which encouraged the Camerini to revolt; but Romulus marching against them suddenly, defeated them with the loss of 6000 men. After which he attacked the Fidenates, whose city stood about five miles from Rome, took their capital, and made it a Roman colony. This drew upon him the resentment of the Veientes, a powerful nation in the neighbourhood, who claimed Fidenæ as within their jurisdiction; but their forces being defeated in two engagements, and a great number of them taken prisoners, they were obliged to sue for peace. Romulus granted them a truce for 100 years, on condition that they delivered to him seven small towns on the Tiber, together with some salt-pits near the mouth of that river, and sent 50 of their chief citizens as hostages to Rome. The prisoners taken in this war were all sold for slaves.

The remaining part of the life of Romulus was spent in making laws for the good of his people; but towards the latter end of his reign, being elated with success, he began to enlarge the bounds formerly set to his prerogative, and to behave in an arbitrary manner. He paid no longer any regard to the voice of the senate, but assembled them only for form's sake to ratify his commands. The senate therefore conspired to destroy him, and accomplished their purpose while he was reviewing his troops. A violent storm of hail and thunder dispersed the army; and the senators taking this opportunity, when they were left alone with the king, instantly killed him, and conveyed his body out of sight. Some writers tell us, that, the better to conceal the fact, they cut his body in pieces, each of them carrying away a part under his robe; after which they told the multitude, that their king was on a sudden surrounded by flame, and snatched up into heaven. This stratagem, however, did not satisfy the soldiery, and violent disturbances were about to ensue, when Julius Proculus, a senator of great distinction, having assembled the curiæ, told them that Romulus had appeared to him, and enjoined him to acquaint the people, that their king was returned to the gods from whom he originally came, but that he would continue to be propitious to them under the name of *Quirinus*; and to the truth of this story Julius swore.

Romulus reigned, according to the common computation, 37 years: but some historians reduce the length of his reign to little more than 17; it being very unlikely, as they observe, that a prince of such an active disposition should perform nothing worthy of record during a period of 20 years. Be this as it will, however, the death of Romulus was followed by an interregnum, during which the senators, to prevent anarchy and confusion, took the government into their own hands. Tati'us added another hundred to that body; and these 200 senators divided themselves into decuries or tens. These decuries drew lots which should govern first; and the decury to whose lot it fell enjoyed the supreme authority for five days; yet in such a manner, that one person only of the governing decury had the ensigns of sovereignty at a time. To these another decury succeeded, each of them sitting on the throne in his turn, &c. But the people soon growing weary of such fre-

quent change of masters, obliged the senate to resolve on the election of a king. The senate referred the election to the people, and the people to the senate, who at last undertook the task. Some difficulties, however, occurred: the Romans did not choose to be subject to a Sabine; and the Sabines, as they had been subject to Romulus after the death of Tati'us, insisted that the king should be chosen out of their nation. At last it was agreed, that the king should be a Sabine, but that the Romans should make the choice.

In consequence of this determination, the Romans elected Numa Pompilius, an austere philosopher, who had married Tatia, the daughter of Tati'us the late king. After the death of his wife, he gave himself entirely up to philosophy and superstition, wandering from solitude to solitude, in search of sacred woods and fountains, which gave the people a great opinion of his sanctity. The philosopher at first rejected the offer of the kingdom; but being at last prevailed upon, he set out for Rome, where he was received with loud acclamations, and had his election unanimously confirmed by the senate.

The reign of Numa is by no means memorable for battles or conquests. He was averse to war; and made it his study to soften the manners of the Romans, rather than to exalt them to superiority over their neighbours. He dismissed the celeres, encouraged agriculture, and divided the citizens into distinct bodies of tradesmen. This last measure he took on purpose to abolish the distinction between Romans and Sabines, which had hitherto rent the city into two factions; and this effectually answered his end: for now all of each particular profession, whether Romans or Sabines, were obliged to associate together, and had each their respective courts and privileges. In this division the musicians held the first rank, because they were employed in the offices of religion. The goldsmiths, carpenters, curriers, dyers, tailors, &c. formed also distinct communities; and were allowed to make byelaws among themselves, to have their own festivals, particular sacrifices, &c.

Though Numa himself is said by Plutarch to have had pretty just notions of the Supreme Being, he nevertheless added innumerable superstitions to those he found in Rome. He divided the ministers of religion into eight classes, appointing to each their office with the greatest precision; he erected a temple to Janus, the symbol of prudence, which was to remain open in time of war, and to be shut in time of peace. Another temple was erected to *Bona Fides*; and he invented a new kind of deities called *Dii Termini*, or boundaries, which he caused to be placed on the borders of the Roman state, and of each man's particular lands.—The last reformation which Numa undertook, was that of the kalendar. Romulus had divided his year into ten months, which, according to Plutarch, had no certain or equal number of days; some consisting of 20, some of 35, &c. However, by other historians, we are informed that he allotted to March, May, Quintilis, and October, 31 days; to April, June, Sextilis, November, and December 30; making in all 304 days. But Numa being better acquainted with the celestial motions, added to these the two months of January and February. To compose these two months he added 50 days to the 304; and thus made the year answer to the course of

Rome.
29
Numa
Pompilius
the second
king.

Rome.

the moon. He then took six more from the months that had even days; and added one day merely out of superstition, that the year might prove fortunate; for the pagans looked upon even numbers as unlucky, but imagined odd numbers to be fortunate. However, he could make out no more than '28 for February, and therefore that month was always reckoned unlucky among the Romans. Besides this, he observed the difference between the solar and lunar year to be 11 days; and to remedy the inequality, he added an intercalary month named *Mercedinus* or *Mercedonius*, of 22 days every two years: but as he knew also that the solar year consisted of 365 days 6 hours, he ordered that every fourth year the month *Mercedinus* should consist of 23 days. The care of these intercalations was left to the priests, who left out or put in the intercalary day or month as they imagined it to be lucky or unlucky; and by that means created such confusion, that the festivals came in process of time to be kept at a season quite opposite to what they had been formerly.

30
Succeeded
by Tullus
Hostilius.

These are all the remarkable transactions of the reign of Numa, which is said to have continued 43 years; though some think that its duration could not be above 15 or 16. His death was followed by a short interregnum; after which Tullus Hostilius, the son or grandson of the famous Herfilius, was unanimously chosen king. Being of a bold and fiery temper, he did not long continue to imitate his peaceful predecessor. The Albans, indeed, soon gave him an opportunity of exercising his martial disposition. Caelius, or, as he is called by Livy, *Cluilus*, who was at the head of the Alban republic, jealous of the growing greatness of Rome, privately commissioned some of the most indigent of his subjects to waste the Roman territory; in consequence of which, a Roman army entered the territories of Alba, engaged the robbers, killed many, and took a great number prisoners. A war soon commenced, in consequence of this, between the two nations; but when the armies came in sight of each other, their ardour cooled, neither of them seeming inclined to come to an engagement. This inaction raised a great discontent in the Alban army against Cluilus; insomuch that he came to a resolution of giving battle to the Romans next morning, or of storming their trenches if they should decline it. Next morning, however, he was found dead in his bed; after which the Albans chose in his stead one Mettus Fuffetius, a man remarkable for his hatred to the Roman name, as Cluilus had been before him. Fuffetius, however, continued in the same state of inactivity as his predecessor, until he received certain intelligence that the Veientes and Fidenates had resolved to destroy both Romans and Albans when they should be weakened by a battle. Fuffetius then resolved to come to an accommodation with the Romans; and, having obtained a conference with Tullus, both seemed equally desirous of avoiding the calamities of war. But, in order to establish the peace on the most perfect foundation, Tullus proposed that all, or at least the chief families in Alba, should remove to Rome; or, in case they were unwilling to leave their native city, that one common council should be established to govern both cities, under the direction of one of the two sovereigns. Fuffetius took aside those who attended him, to consult with them about this proposal; but they, though willing to come to an accommodation with Rome, absolutely refused to

31
His war
with the
Albans.

leave Alba. The only difficulty remaining, then, was to settle which city should have the superiority; and, as this could not be determined by argument, Tullus proposed to determine it by single combat betwixt himself and Fuffetius. This proposal, however, the Alban general thought proper to decline; and it was at last agreed, that three champions should be chosen out of each camp to decide the difference. This produced the famous combat between the Horatii and Curiatii, by which the sovereignty was decided in favour of Rome. See HORATII.

Rome.

Tullus now resolved to call the Fidenates to an account for their treacherous behaviour during the war with Alba, and therefore cited them to appear before the senate; but they, conscious of their guilt, refused to appear, and took up arms in conjunction with the Veientes. Fuffetius, in obedience to the orders of Tullus, joined him with the Alban troops; but the day before the battle, he acquainted the principal officers with his design, which was to stand neuter till fortune had declared for one side, and then to join with the conqueror. This design being approved, Fuffetius, during the engagement, retired with his forces to a neighbouring eminence. Tullus perceived his treachery; but dissembling his uneasiness, told his men that Fuffetius had possessed himself of that hill by his order, and that he was from thence to rush down upon the enemy. The Veientes, in the mean time, who had expected that Fuffetius was to join them, were dismayed, and the Romans obtained the victory. After the battle, Tullus returned privately to Rome in the night; and having consulted with the senate about the treachery of Fuffetius, returned to the camp by break of day. He then detached Horatius, who had conquered the three Curiatii, with a chosen body of horse and foot, to demolish Alba, as had been concerted at Rome. In the mean time, he commanded both the Roman and Alban troops to attend him unarmed, but gave private orders to the Romans to bring their swords concealed under their garments. When they were assembled, he laid open the treachery of Fuffetius, and ordered him to be torn in pieces by horses. His accomplices were all put to the sword; and the inhabitants of Alba carried to Rome, where they were admitted to the privileges of citizens, and some of them even admitted to the senate.

32
Alba de-
molished,
and the in-
habitants
transported
to Rome.

Tullus now turned his arms against Fidenæ, which he again reduced under the Roman yoke; and took Medulia, a strong city of the Latins; after which he waged a successful war with the Sabines, whose union with the Romans seems to have ceased with the time of Numa. This was the last of his martial exploits; after which we hear no more of him, but that he became extremely superstitious in his advanced years, giving ear to many foolish stories, as that it rained stones, that miraculous voices were heard from heaven, &c. and for this he appointed nine days expiatory sacrifices; whence it became a custom to appoint nine days to appease the wrath of the gods as often as men were alarmed with prodigies. As to the manner of his death authors are not agreed. Some tell us that he was killed by lightning, together with his wife, children, and his whole family; while others are of opinion that he was murdered with his wife and children by Ancus Martius who succeeded him. He died after a reign of

33
Death of
Tullus,
who is suc-
ceeded by
Ancus
Martius.

Rome. 33 years, leaving the city greatly increased, but the dominions much the same as they had been in the time of Romulus.

After a short interregnum, Ancus Martius, the grandson of Numa by his daughter Pompilia and Marcus his relation, was unanimously chosen by the people and senate. Though naturally inclined to war, he began his reign with attempting to restore the ceremonies of Numa, which had been neglected under Tullus Hostilius. He endeavoured also to draw the attention of his people to husbandry and the peaceful arts; advising them to lay aside all sorts of violence, and to return to their former employments. This gained him the affections of his subjects, but brought upon him the contempt of the neighbouring nations. The Latins pretending that their treaty with Rome was expired, made inroads into the Roman territories. Ancus, after using the ceremonies directed by Numa, took the field with an army consisting entirely of new-levied troops, and reduced the cities of Politorium, Tullena, and Ficana, transplanting the inhabitants to Rome. A new colony of Latins re-peopled Politorium; but Ancus retook the place next year, and entirely demolished it. He then laid siege to Medulia; which, though it had been ruined by Tullus Hostilius, was now stronger than ever. It submitted after a siege of four years, when Ancus found himself obliged to undertake a second expedition against Ficana, which he had before reduced, as we have already related; and it was not without the utmost difficulty that he reduced it a second time. After this he defeated the Latins in a pitched battle; vanquished the Fidenates, Veientes, and Sabines; and having taken in the hill Janiculum to be included within the walls, and built the port of Ostia, he died in the 24th year of his reign.

34 His warlike exploits and death.

Ancus Martius left two sons behind him, one an infant, and the other about 15 years of age. Both of these he put under the tuition of Tarquin, the son of a rich merchant in Corinth, who had fled from that city to secure his wealth from Cypselus tyrant of the place. He settled in Tarquinii, one of the principal cities in Hetruria; but finding that he could not there attain to any of the principal posts in the city on account of his foreign extraction, he removed to Rome, where he had been gradually raised to the rank of patrician and senator. The death of Ancus Martius gave him an opportunity of assuming the regal dignity, and setting aside his pupils; and in the beginning of his reign he took care to strengthen his party in the senate by adding another hundred to that body. These were called *senatores minorum gentium*, because they were chosen out of the plebeians; however, they had the same authority in the senate as the others, and their children were called *patricians*.

35 His sons supplanted by Tarquin I.

36 Tarquin's success in war.

Tarquin was not inferior to any of his predecessors either in his inclination or abilities to carry on a war. As soon as he ascended the throne, he recommenced hostilities with the Latins; from whom he took the cities of Apiolæ, Crustumium, Nomentum, and Collatia. The inhabitants of Apiolæ were sold for slaves; but those of Crustumium and Nomentum, who had submitted after their revolt, were treated with great clemency. The inhabitants of Collatia were disarmed, and obliged to pay a large sum of money; the sovereignty of it, in the mean time, being given to Egerius,

the son of Arunx, Tarquin's brother; from whence he took the name of *Collatinus*, which he transmitted to his posterity. Corniculum, another city of Latium, was taken by storm, and reduced to ashes. This progress having greatly alarmed the Latins, several of them joined their forces in order to oppose such a formidable enemy; but being defeated in a bloody battle near Fidenæ, they were obliged to enter into an alliance with Rome; upon which the Latins having held a national conference, entered into a league with the Hetrurians, and again took the field with a very numerous army. But Tarquin, having defeated the confederate armies in two very bloody battles, obliged the Latin cities to submit to a kind of dependence on Rome; and, having entered the city in triumph, built the circus maximus with the spoils which he had taken from the enemy.

Rome.

The war with the Latins was scarcely ended, when another commenced with Hetruria. This was accounted the most powerful nation in Italy, and was at that time divided into 12 tribes or lucomones. These appointed a national assembly, in which was decreed that the whole force of Hetruria should be employed against Tarquin; and if any city presumed only to stand neuter, it should be for ever cut off from the national alliance. Thus a great army was raised, with which they ravaged the Roman territory, and took Fidenæ by the treachery of some of its inhabitants. Tarquin, not being in a condition to oppose them at first, was obliged to submit to the loss occasioned by their ravages for a whole year; after which he took the field with all the forces he could raise. The Roman army was divided into two bodies, one under the king himself, the other commanded by his nephew Collatinus. The latter, having divided his forces in order to plunder the country, was defeated; but Tarquin, in two engagements vanquished the army which opposed him. He then marched against Fidenæ, where he gained a third battle; after which he took the city. Such of the citizens as were suspected to have been concerned in betraying it to the enemy were whipped to death; the rest were sent into banishment, and their lands divided by lot among the Roman soldiers. Tarquin now hastened to oppose the new army of the Hetrurians before their forces could be properly collected; and having come up with them at Eretum, a place about 10 miles from Rome, defeated them with great slaughter, for which victory he was decreed a triumph by the senate; while the enemy, disheartened by so many misfortunes, were glad to sue for peace; which Tarquin readily granted, upon the sole condition of their owning his superiority over them. In compliance with this, the Hetrurians sent him all the ensigns of royalty which were in use among them, viz. a crown of gold, a throne of ivory, a sceptre with an eagle on the top of it, a tunic embroidered with gold, and adorned with figures of palm branches, together with a purple robe enriched with flowers of several colours. Tarquin, however, would not wear these magnificent ornaments till such time as the senate and people had consented to it by an express law. He then applied the regalia to the decoration of his triumph, and never afterwards laid them aside. In this triumph he appeared in a gilt chariot, drawn by four horses, clothed in a purple robe, and a tunic embroidered with gold, a crown on his head, and a sceptre

27 Ensigns of royalty sent him by the Hetrurians.

Rome. in his hand, attended by 12 lictors with their axes and
falces.

38
Builds the
common
sewers, and
ornaments
the city.

Tarquin, having now obtained some respite from war, applied himself to the beautifying and ornamenting the city. He built the walls of Rome with hewn stone, and erected those famous common sewers which have deservedly been accounted one of the wonders of the world. Rome at this time contained four hills within its compass, viz. the Palatinus, Tarpeius, Quirinalis, and Cœlius. In the valleys between these hills, the rain-water and springs uniting, formed great pools which laid under water the streets and public places. The mud likewise made the way impassable, infected the air, and rendered the city unhealthy. Tarquin undertook to free the city from this nuisance, by conveying off these waters by subterraneous channels into the Tiber. In doing this, it was necessary to cut through hills and rocks a channel large enough for a navigable stream, and covered with arches strong enough to bear the weight of houses, which were frequently built upon them, and stood as firm as on the most solid foundations. All these arches were made of hard stone, and neither trouble nor expence were spared to make the work durable. Their height and breadth were so considerable, that a cart loaded with hay could easily pass through them under ground. The expence of constructing these sewers was never so thoroughly understood as when it became necessary to repair them; for then the cenfors gave no less than 1000 talents to the person appointed for this purpose.

39
Adventure
of Nævius
the augur.

Besides these great works, Tarquin adorned the forum, surrounding it with galleries in which were shops for tradesmen, and building temples in it for the youth of both sexes, and halls for the administration of public justice. He next engaged in a war with the Sabines, on pretence that they had assisted the Hetrurians. Both armies took the field, and came to an engagement on the confines of Sabinia, without any considerable advantage on either side; neither was any thing of consequence done during the whole campaign. Tarquin then, considering with himself that the Roman forces were very deficient in cavalry, resolved to add some new bodies of knights to those already instituted by Romulus. But this project met with great opposition from the superstitious augurs, as the original division of horse into three bodies had been determined by auguries; and Actius Nævius, the chief of the diviners at that time, violently opposed the king's will. On this Tarquin, desirous to expose the deceit of these people, summoned Nævius before an assembly of the people, and desired him to show a specimen of his art, by telling the king if what he thought of at that time could be done or not. The augur replied, after consulting his birds, that the thing was very possible. On which Tarquin told him, that he had been thinking whether it was possible to cut a flint with a razor, pulling at the same time a razor and flint from below his robe. This set the people a-laughing; but Nævius gravely desiring the king to try it, he was surprised to find that the flint yielded to the razor; and that with so much ease as to draw blood from his hand. The people testified their surprise by loud acclamations, and Tarquin himself continued to have a great veneration for augurs ever after. A statue of brass was erected to the memory of Nævius, which continued till the

time of Augustus; the razor and flint were buried near it, under an altar, at which witnesses were afterwards sworn in civil causes.

Rome.

This adventure, whatever was the truth of it, caused Tarquin to abandon his design of increasing the number of bodies of horse, and content himself with augmenting the number in each body. He then renewed the war with the Sabines, ravaged their country, defeated them in three pitched battles, obliging them at last to submit to him and put him in possession of their country. In the decline of life he employed himself in farther decorating the city, building temples, &c. He was assassinated in his palace, in the 80th year of his age, by the sons of Ancus Martius, whom he had originally deprived of the kingdom.

40
Assassinated
by the sons
of Ancus
Martius.

After the death of Tarquin I. his wife Tanaquil preserved the kingdom to her son-in-law Servius Tullius, by artfully giving out that the king was only stunned, and would soon recover; upon which the sons of Ancus went voluntarily into banishment. The second day after his decease, Servius Tullius heard causes from the throne in the royal robes and attended by the lictors; but as he pretended only to supply the king's place till he should recover, and thought it incumbent on him to revenge the wicked attempt upon his life, he summoned the sons of Ancus to appear before his tribunal; and on their non-appearance, caused them to be declared infamous, and their estates to be confiscated. After he had thus managed manners for some time in such a manner as to engage the affections of the people, the death of Tarquin was published as a thing that had newly happened, and Servius Tullius assumed the ensigns of royalty, having none to dispute the honour with him.

41
Servius
Tullius suc-
ceeds.

The new king showed himself every way worthy of the throne. No sooner were the Hetrurians informed of Tarquin's death, than they shook off the yoke; but Servius quickly reduced them to obedience, depriving them of their lands, which he shared among the poor Roman citizens who had none. For this he was decreed a triumph by the people, in spite of the opposition of the senate, who could never be brought to approve of his election to the kingdom, though he was soon after legally chosen by the tribes.

After Servius had obtained the sanction of the popular voice, he marched a second time against the revolted Hetrurians; and having again vanquished them, was decreed another triumph. He then applied himself to the enlarging and adorning the city. To the hills Palatinus, Tarpeius, Quirinalis, Cœlius, and Aventinus, he added the Esquilinus and Viminalis, fixing his own palace on the Esquilinus, in order to draw inhabitants thither. He likewise added a fourth tribe, which he called *Tribus Esquilina*, to those instituted by Romulus. He divided also the whole Roman territory into distinct tribes, commanding that there should be at least one place of refuge in each tribe, situated on a rising ground, and strong enough to secure the effects of the peasants in case of a sudden alarm. These strong-holds he called *pagi*, that is, "villages;" and commanded that each of them should have their peculiar temple, tutelary god, and magistrates. Each of them had likewise their peculiar festival, called *paganalia*; when every person was to pay into the hands of those who presided at the sacrifices a piece of money, the

42
Enlarges
the city,
and adds a
fourth tribe
to those al-
ready in-
stituted.

Rome. the men of one kind, the women of another, and the children of a third. By this means an exact computation was made of the men, women, and children, in each tribe.

In the mean time, his two wards, Lucius Tarquinius and Arunx, the grandchildren of Tarquin, being grown up, in order to secure their fidelity, he married them to his two daughters. And though the elder of these daughters, who was of a mild and tractable disposition, resembled in character the younger of his pupils, as the elder of his pupils did the younger of his daughters, who was of a violent and vicious temper, yet he thought it advisable to give his elder daughter to Tarquin, and the younger to Arunx; for by that means he matched them according to their ages, and at the same time hoped that the elder Tullia's sweet disposition would temper Tarquin's impetuosity, and the younger Tullia's vivacity rouse the indolence of Arunx.

During the public rejoicing for this double marriage, the twelve lucumonies of Hetruria uniting their forces, attempted to shake off the Roman yoke; but were in several battles defeated by Servius, and obliged to submit to him on the same conditions on which they had submitted to his predecessor. For this success Servius was honoured with a third triumph.

The king being thus disengaged from a troublesome war, returned to the pursuit of his political schemes; and put in execution that masterpiece of policy which Rome made use of ever after, and which established a perpetual order and regularity in all the members of the state, with respect to wars, to the public revenues, and the suffrages of the comitia. The public supplies had hitherto been raised upon the people at so much a head, without any distinction of rich and poor whence it likewise followed, that when levies were made for the war, the rich and poor were equally obliged to take the field, according to the order of their tribe; and as they all served at their own expence, the poorer sort could hardly bear the charges of a campaign. Besides, as the most indigent of the people saw themselves burdened with the same taxes as the rich, they pretended to an equal authority in the comitia: so that the election of kings and magistrates, the making of peace or war, and the judging of criminals, were given up into the hands of a populace who were easily corrupted, and had nothing to lose. Servius formed a project to remedy these evils, and put it in execution, by enacting a law, enjoining all the Roman citizens to bring in an account in writing of their own names and ages, and of those of their fathers, wives, and children. By the same law, all heads of families were commanded to deliver in upon oath a just estimate of their effects, and to add to it the places of their abode, whether in town or country. Whoever did not bring in an account of his effects, was to be deprived of his estate, to be beat with rods, and publicly sold for a slave. Servius, from these particular accounts, which might be pretty well relied on, undertook to ease the poor by burdening the rich, and at the same time to please the latter by increasing their power.

To this end, he divided the Roman people into six classes: the first class consisted of those whose estates and effects amounted to the value of 10,000 drachmæ, or 100,000 ascs of brass; the first way of computing be-

ing used by the Greeks; and the latter by the Latins. This class was subdivided into 80 centuries, or companies of foot. To these Servius joined 18 centuries of Roman knights, who fought on horseback; and appointed this considerable body of horsemen to be at the head of the first class, because the estates of these knights, without all doubt, exceeded the sum necessary to be admitted into it. However, the public supplied them with horses; for which a tax was laid upon widows, who were exempt from all other tributes. This first class, including infantry and cavalry, consisted of 98 centuries. The second class comprehended those whose estates were valued at 5700 drachmæ, or 75,000 ascs of brass. It was subdivided into 20 centuries, all foot. To these were added two centuries of carpenters, smiths, and other artificers. In the third class were those who were esteemed worth 5000 drachmæ, or 50,000 ascs. This class was subdivided into 20 centuries. The fourth class was of those whose effects were rated at the value of 500 drachmæ, or 25,000 ascs, and was divided into 20 centuries; to which were added two other centuries of trumpets and blowers of the horn, who supplied the whole army with this martial music. The fifth class included those only whose whole substance did not amount to more than 1250 drachmæ, or 12,500 ascs; and this class was divided into 30 centuries. The sixth class comprehended all those who were not worth so much as those of the fifth class: they exceeded in number any other class, but nevertheless were reckoned but as one century.

The king drew from these regulations all the advantages he had expected. Levies for the army were no longer raised by tribes, nor were taxes laid at so much a-head as formerly, but all was levied by centuries. When, for instance, an army of 20,000 men, or a large supply of money, was wanted for the war, each century furnished its quota both of men and money: so that the first class, which contained more centuries, though fewer men, than all the others together, furnished more men and more money for the public service than the whole Roman state besides. And by this means the Roman armies consisted for the most part of the rich citizens of Rome; who, as they had lands and effects to defend, fought with more resolution, while their riches enabled them to bear the expence of a campaign. As it was but just the king should make the first class amends for the weight laid on it, he gave it almost the whole authority in public affairs; changing the comitia by curiæ, in which every man gave his vote, into comitia by centuries, in which the majority was not reckoned by single persons, but by centuries, how few soever there might be in a century. Hence the first class, which contained more centuries than the other five taken together, had every thing at its disposal. The votes of this class were first taken; and if the 98 centuries happened to agree, or only 97 of them, the affair was determined; because these made the majority of the 193 centuries which composed the six classes. If they disagreed, then the second, the third, and the other classes in their order, were called to vote, though there was very seldom any occasion to go so low as the fourth class for a majority of votes; so that by this good order Servius brought the affairs of the state to be determined by the judgement of the most considerable.

Rome.

43
Reforms
the state.

44
His division
of the peo-
ple into
classes.

Rome. considerable citizens, who understood the public interest much better than the blind multitude, liable to be imposed upon, and easily corrupted.

45
The census and lustrum.

And now the people being thus divided into several orders, according to the census or valuation of their estates, Servius resolved to solemnize this prudent regulation by some public act of religion, that it might be the more respected and the more lasting. Accordingly, all the citizens were commanded to appear, on a day appointed, in the Campus Martius, which was a large plain, lying between the city and the Tiber, formerly consecrated by Romulus to the god Mars. Here the centuries being drawn up in battalia, a solemn lustration or expiatory sacrifice was performed in the name of all the people. The sacrifice consisted of a sow, a sheep, and a bull, whence it took the name of *suovetaurilia*. The whole ceremony was called *lustrum*, à *luendo*; that is, from paying, expiating, clearing, or perhaps from the goddesses Lua, who presided over expiations, and to whom Servius had dedicated a temple. This wise king considering, that in the space of five years there might be such alterations in the fortunes of private persons as to entitle some to be raised to an higher class, and reduce others to a lower, enjoined that the census should be renewed every five years. As the census was usually closed by the lustrum, the Romans henceforth began to compute time by lustrums, each lustrum containing the space of five years. However, the lustrums were not always regularly observed, but often put off, though the census had been made in the fifth year. Some writers are of opinion, that Servius at this time coined the first money that had ever appeared at Rome; and add, that the circumstances of the lustrum probably led him to stamp the figures of the animals there slain on pieces of brass of a certain weight.

46
The freedmen.

The government of the city being thus established in so regular a manner, Servius, touched with compassion for those whom the misfortunes of an unsuccessful war had reduced to slavery, thought that such of them as had by long and faithful services deserved and obtained their freedom, were much more worthy of being made Roman citizens, than untractable vagabonds from foreign countries, who were admitted without distinction. He therefore gave the freedmen their choice, either to return to their own country, or continue at Rome. Those who chose to continue there, he divided into four tribes, and settled them within the city; and though they were distinguished from the plebeians by their old name of *liberti*, or *freedmen*, yet they enjoyed all the privileges of free citizens. The senate took offence at the regard which the king showed to such mean people, who had but lately shaken off their fetters; but Servius, by a most humane and judicious discourse, entirely appeased the fathers, who passed his institution into a law, which subsisted ever after.

47
Reforms the royal power.

The wise king, having thus established order among the people, undertook at last to reform the royal power itself; his equity, which was the main spring of all his resolutions, leading him to act contrary to his own interest, and to sacrifice one half of the royal authority to the public good. His predecessors had reserved to themselves the cognizance of all causes both public and private; but Servius, finding the duties of his office too much for one man to discharge well, committed the cognizance of cr-

inary suits to the senate, and reserved that only of state-crimes to himself.

All things being now regulated at home, both in the city and country, Servius turned his thoughts abroad, and formed a scheme for attaching the Sabines and Latins to the Romans, by such social ties as should be strengthened by religion. He summoned the Latin and Sabine cities to send their deputies to Rome, to consult about an affair of great importance. When they were come, he proposed to them the building of a temple in honour of Diana, where the Latins and Sabines should meet once a year, and join with the Romans in offering sacrifices to that goddess; that this festival would be followed by a council, in which all disputes between the cities should be amicably determined; that there proper measures should be taken to pursue their common interest; and, lastly, in order to draw the common people thither, a fair should be kept, at which every one might furnish himself with what he wanted. The king's design met with no opposition: the deputies only added to it, that the temple should be an inviolable asylum for the united nations; and that all the cities should contribute towards the expence of building it. It being left to the king to choose a proper place for it, he pitched upon the Aventine hill, where the temple was built, and assemblies annually held in it. The laws which were to be observed in these general meetings, were engraved on a pillar of brass, and were to be seen in Augustus's time, in the Latin tongue, but in Greek characters.

Rome. 48
Endeavours to attach the Sabines and Latins to the Romans.

But now Servius was grown old; and the ambition of Tarquin his son-in-law revived in proportion as the king advanced in years. His wife used her utmost endeavours to check the rashness and fury of her husband, and to divert him from all criminal enterprises; while her younger sister was ever instigating Arunx, who placed all his happiness in a private life, to the most villanous attempts. She was continually lamenting her fate in being tied to such an indolent husband, and wishing she had either continued unmarried, or were become a widow. Similitude of temper and manners, formed, by degrees, a great intimacy between her and Tarquin. At length she proposed nothing less to him than the murdering of her father, sister, and husband, that they two might meet and ascend the throne together. Soon after, they paved their way to an incestuous marriage, he by poisoning his wife, and she her husband; and then had the assurance to ask the king's and queen's consent to their marriage. Servius and Tarquinia, though they did not give it, were silent, through too much indulgence to a daughter in whom now was their only hope of posterity. But these criminal nuptials were only the first step towards a yet greater iniquity. The wicked ambition of the new-married couple first showed itself against the king: for they publicly declared, that the crown belonged to them; that Servius was an usurper, who, being appointed tutor to Tarquin's grandchildren, had deprived his pupils of their inheritance; that it was high time for an old man, who was but little able to support the weight of public affairs, to give place to a prince who was of a mature age, &c.

The patricians, whom Servius had taken great pleasure in humbling during the whole time of his reign, were easily gained over to Tarquin's party; and, by the help

49
Wicked intrigues of his daughter and son-in-law.

Rome. help of money, many of the poorer citizens were also brought over to his interest. The king, being informed of their treasonable practices, endeavoured to dissuade his daughter and son-in-law from such proceedings, which might end in their ruin; and exhorted them to wait for the kingdom till his death. But they, despising his counsels and paternal admonitions, resolved to lay their claim before the senate; which Servius was obliged to summon: so that the affair came to a formal process. Tarquin reproached his father-in-law with having ascended the throne without a previous interregnum; and with having bought the votes of the people, and despised the suffrages of the senate. He then urged his own right of inheritance to the crown, and injustice of Servius, who, being only his guardian, had kept possession of it, when he himself was of an age to govern. Servius answered, that he had been lawfully elected by the people; and that, if there could be an hereditary right to the kingdom, the sons of Ancus had a much better one than the grandsons of the late king, who must himself have been an usurper. He then referred the whole to an assembly of the people; which being immediately proclaimed all over the city, the forum was soon filled; and Servius harangued the multitude in such a manner as gained all their affections. They all cried out with one voice, *Let Servius reign; let him continue to make the Romans happy.* Amidst their confused clamours, these words were likewise heard: *Let Tarquin perish; let him die; let us kill him.* This language frightened him so, that he retired to his house in great haste; while the king was conducted back to his palace with the acclamations of the people.

The ill success of this attempt cooled Tarquin's ardent desire of reigning; but his ambition made him act a new part. He undertook to regain the favour of his father-in-law by caresses, submissions, and protestations of a sincere regard and affection for him; inasmuch that the king, who judged of the policy of others from his own, was sincerely reconciled to him, and tranquillity re-established in the royal family. But it was not long ere Tarquin, roused by the continual reproaches of his wife, began to renew his intrigues among the senators; of whom he had no sooner gained a considerable party, than he clothed himself in the royal robes, and causing the fasces to be carried before him by some of his domestics, crossed the Roman forum, entered the temple where the senate used to meet, and seated himself on the throne. Such of the senators as were in the faction he found already in their places (for he had given them private notice to be there early); and the rest, being summoned to assemble in Tarquin's name, made what haste they could to the appointed place, thinking that Servius was dead, since Tarquin assumed the title and functions of king. When they were all assembled, Tarquin made a long speech, reviling his father-in-law, and repeating the invectives against him, which he had so often uttered, calling him a slave, an usurper, a favourer of the populace, and an enemy to the senate and patricians. When he was yet speaking, Servius arrived; and, rashly giving way to the motions of his courage, without considering his strength, drew near the throne, to pull Tarquin down from it. This raised a great noise in the assembly, which drew the people into the temple; but nobody ventured to part the two rivals. Tarquin, therefore, being more strong

and vigorous, seized the old man by the waist, and hurrying him through the temple, threw him down from the top of the steps into the forum. The king, who was grievously wounded, raised himself up with some difficulty: but all his friends had abandoned him; only two or three of the people, touched with compassion, lent him their arms to conduct him to his palace.

As they were leading him on slowly, the cruel Tullia appeared in the forum, whither she had hastened in her chariot on the first report of what had passed in the senate. She found her husband on the top of the steps of the temple; and, transported with joy, was the first who saluted him king. The example was immediately followed by the senators of Tarquin's party. Nor was this enough for the unnatural daughter: she took aside her husband, and suggested to him, that he would never be safe so long as the usurper of his crown was alive. Hereupon Tarquin instantly dispatched some of his domestics to take away the remains of the unfortunate king's life. The orders for the wicked paricide were no sooner given than Tullia mounted her chariot again, with an air of triumph, to return home. The way to her house was through a narrow street, called *vicus cyprius*, or the *good street*. There the assassins had left the king's body, which was still panting. At this sight, the charioteer, struck with horror, checked his horses, and made a stop: but Tullia forced him to go on; and the blood of the father is said to have dyed the wheels of the chariot, and even the clothes of the inhuman daughter, whence the street was called ever after *vicus sceleratus*.

The new king proved a most despotic and cruel tyrant; receiving, in the very beginning of his reign, the surname of *proud*, on account of his capricious humour and haughty behaviour. All controversies whatever were decided by himself and his friends; and he banished, fined, and even executed, whom he pleased. The census and lustrum, the division of citizens into classes and centuries, were abolished; and all kinds of assemblies, even those for amusement and recreation, were prohibited, both in town and country. Nay, to such a height did Tarquin carry his insolence and tyranny, that the most virtuous of the senators went into voluntary banishment; while many of those who remained were cut off on various pretences, that the king might enjoy their estates.

Tarquin could not but be sensible of the extreme danger in which he stood by losing the affections of his people in such a manner. He therefore provided a sufficient number of soldiers, by way of guard, to prevent attempts upon his person; and gave his daughter to Octavius Mamilius, one of the most considerable men among the Latins, in order to strengthen his interest by this foreign alliance, in case of a revolt among his subjects. Mamilius accordingly procured many friends to his father-in-law, but he had like to have lost them again by his haughty behaviour. He had desired the Latins to call a national council at Ferentinum, where he would meet them on a day appointed by himself. The Latins accordingly met; but after waiting for several hours, Tarquin did not appear. On this, one Turnus Herdonius, an enterprising and eloquent man, who hated Tarquin, and was jealous of Mamilius, made a speech, in which he inveighed against the haughty behaviour of Tarquin, set forth the contempt which he had

Rome.

50
Servius
Tullius
murdered.51
Tarquin II.
a cruel ty-
rant.

Rome. had put upon the Latins, and concluded with desiring the council to break up and return home without taking any further notice of him. Mamilius, however, prevailed upon them to return the day following; when Tarquin made his appearance, and told the assembly that his design in calling them together was to claim his right of commanding the Latin armies, which he said was derived from his grandfather, but which he desired to be confirmed to him by them. These words were scarce out of his mouth, when Herdonius, rising up, entered into a detail of Tarquin's tyranny and arbitrary behaviour at Rome, which, he said, the Latins would soon feel in an equal degree, if they complied with Tarquin's demand. To this speech the king made no reply at that time, but promised to answer him next day. In the mean time, however, he bribed the domestics of Herdonius to admit among his baggage a large quantity of arms: and then, telling the Latins that Herdonius's opposition proceeded only from Tarquin's having refused him his daughter in marriage, accused him of having laid a plot to cut off all the deputies there present, and to usurp a jurisdiction over the Latin cities; as a proof of which he appealed to the arms hid among the baggage of Herdonius. The accused, conscious of his innocence, desired that his baggage might be searched; which being accordingly done, and the arms found, he was hurried away without being allowed to make any defence, and thrown into a basin at the head of the spring of Ferentinum, where a hurdle being laid upon him, and stones laid upon the hurdle, he was pressed down into the water and drowned.

52
His infamous stragem to destroy Herdonius.

In consequence of this monstrous treachery, Tarquin was looked upon by the Latins as their deliverer, and declared general of the Latin armies; soon after which, the Hernici and two tribes of the Volsci entered into an alliance with him on the same terms. In order to keep these confederates together, Tarquin, with their consent, erected a temple to Jupiter Latialis on a hill near the ruins of Alba, where he appointed certain feasts called *Feriae Latinae* to be held on the 27th of April, where the several nations were to sacrifice together, and on no account to commit any hostilities against each other during their continuance. The king then proceeded to make war on the rest of the Volsci who had refused to enter into an alliance with him. Some depredations which they had committed in the territories of the Latins served for a pretence to begin the war; but as Tarquin had no confidence in the Romans, his army was composed only of a small body of them who were incorporated among the Latin auxiliaries. However, he defeated the enemy, took one of their cities by storm, and gave the booty to his soldiers. He next turned his arms against the Sabines, whom he entirely defeated in two engagements, and made the whole nation tributary: for which exploits he decreed himself two triumphs, and on his return to Rome he employed the populace in finishing the sewers and circus which had been begun by his grandfather Tarquin I.

53
Institutes the *Feriae Latinae*.

54
Reduces Gabii by treachery.

In the mean time, the persecutions of Tarquin against his own subjects daily drove some of the most considerable into banishment. A great number of patricians took refuge in Gabii, a city of Latium about 13 miles from Rome; where the inhabitants, touched with

Rome. compassion for their misfortunes, not only received them with kindness, but began a war with Tarquin on their account. The Gabini seem to have been the most formidable enemies whom the Romans had hitherto met with; since Tarquin was obliged to raise a prodigious bulwark to cover the city on the side of Gabii. The war lasted seven years; during which time, by the mutual devastations committed by the two armies, a great scarcity of provisions took place in Rome. The people soon grew clamorous; and Tarquin being unable either to quiet them, or to reduce the Gabini, fell upon the following dishonourable and treacherous expedient. His son Sextus Tarquinius pretended to be on very bad terms with his father, and openly inveighed against him as a tyrant; on which he was proclaimed a rebel, and publicly beaten in the forum. This being reported at Gabii, by persons sent thither on purpose, the inhabitants became very desirous of having Sextus among them; and accordingly he soon went thither, having previously obtained a solemn promise from the inhabitants never to deliver him up to his father. Here he made frequent inroads into the Roman territories, and always came back laden with spoil, his father sending against him only such weak parties as must infallibly be worsted. By this means he soon came to have such a high degree of credit among the Gabini, that he was chosen general of their army, and was as much master at Gabii as Tarquin was at Rome. Finding then that his authority was sufficiently established, he dispatched a slave to his father for instructions; but the king, unwilling to return an explicit answer, only took the messenger into the garden, where he struck off the heads of the tallest poppies. Sextus understood that by this hint the king desired him to put to death the leading men in the city of Gabii, which he immediately put in execution; and while the city was in confusion on account of this massacre, he opened the gates to his father, who took possession of the city with all the pride of a conqueror.—The inhabitants dreaded every thing from the haughty tyranny of the Roman monarch: however, on this occasion he consulted his policy rather than his revenge; granted them their life, liberty, and estates, and even entered into a treaty of alliance with them. The articles were written on the hide of an ox, which was still to be seen in the time of Augustus, in the temple of Jupiter Fidius. After this, however, he made his son Sextus king of Gabii; sending off also his other two sons, Titus and Arunx, the one to build a city at Signia, the other at Circaeum, a promontory of the Tyrrhene sea, and both these to keep the Volsci in awe.

For some time Tarquin now enjoyed a profound peace; the Romans, being accustomed to oppression and the yoke of an imperious master, making no opposition to his will. During this interval Tarquin met with the celebrated adventure of the Sibyl*; * See *Sibyl*. whose books were ever afterwards held in high estimation at Rome, and Tarquin appointed two persons of distinction to take care of them. These were called *Duumviri*: but their number was afterwards increased to 10, when they were called *Decemviri*; and then to 15, when they were termed *Quindecemviri*. At this time also the written civil law had its origin among the Romans; all the statutes enacted by the kings being collected into one body; which, from Papirius the name

55
Books of the Sibyls.

Rome. of the collector, was called the *Papirian* law. The temple of the Capitol was also finished; for which purpose the most skilful architects and workmen were brought from *Hetruria*, the populace being obliged to serve them in the most laborious parts.

56
Downfall
of the regal
power.

We now come to the important revolution which put an end to the regal power at Rome, and introduced a new form of government, to which this city is allowed to owe the greatest part of her grandeur. Tarquin, as we have already seen, had left himself no friends among the rich citizens, by reason of the oppression under which he made them labour; and the populace were equally disaffected on account of their being obliged to labour in his public works. Among the many persons of distinction who had been sacrificed to the avarice or suspicions of Tarquin, was one *M. Junius*, who had married the daughter of Tarquin I. This nobleman had a son named *L. Junius Brutus*, who escaped the cruelty of the tyrant by pretending to be an idiot, which part he had ever since continued to act. Soon after the finishing of the works abovementioned, a violent plague happening to break out at Rome, Tarquin sent his sons *Titus* and *Arunx* to consult the oracle of *Delphi*; and the princes took *Brutus* along with them, to divert themselves with his pretended folly by the way. *Brutus* chose for his offering to the *Delphic Apollo* a stick of elder, which occasioned much laughter. However, he had the precaution to inclose a rod of gold within the stick; and to this probably it was owing, that the priests gave the princes the following riddle, that he who should first kiss his mother should succeed Tarquin in the government of Rome. This answer had been given to their inquiries concerning the succession; upon which the two brothers either drew lots which of them should kiss their mother at their return, or agreed to do it at once, that both might reign jointly: but *Brutus*, imagining the oracle had another meaning, fell down and kissed the earth, the common mother of all living. This, in all probability, the priests had meant; and had given the answer on purpose to have another proof of *Brutus's* ingenuity, which had already discovered itself, by his offering the elder stick.

On the return of the princes to Rome, they found their father engaged in a war with the *Rutuli*. The treasury being exhausted by the sums which Tarquin had expended in his public works, he had marched to *Ardea*, the capital of that nation, which lay about 20 miles from Rome, in hopes of taking it without opposition. Contrary to his expectation, however, he was obliged to besiege it in form: and this constrained him to lay a heavy tax upon his subjects, which increased the number of malcontents, and disposed every thing for a revolt. As the siege was carried on very slowly, the general officers frequently made entertainments for one another in their quarters. One day, when *Sextus Tarquinius* was entertaining his brothers, the conversation happened to turn upon their wives: every one extolled the good qualities of his own; but *Collatinus* bestowed such extravagant praises on his *Lucretia*, that the dispute ended in a kind of quarrel. It was then resolved that they should mount their horses and surprise their wives by their unexpected return. The king's daughters-in-law were employed in feasting and diversion, and seemed much disconcerted by the ap-

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pearance of their husbands; but *Lucretia*, though the night was far advanced, was found, with her maids about her, spinning and working in wool. She was not at all discomposed by the company whom her husband brought with him, and they were all pleased with the reception she gave them. As *Lucretia* was very beautiful, *Sextus Tarquinius* conceived a passion for her, which resolving to satisfy at all events, he soon returned to *Collatia* in the absence of *Lucretia's* husband, and was entertained by her with great civility and respect. In the night time he entered *Lucretia's* apartment, and threatened her with immediate death if she did not yield to his desires. But finding her not to be intimidated with this menace, he told her, that, if she still persisted in her refusal, he would kill one of her male slaves, and lay him naked by her when she was dead, and then declare to all the world that he had only revenged the injury of *Collatinus*. On this the virtuous *Lucretia* (who, it seems, dreaded prostitution less than the infamy attending it) submitted to the desires of *Sextus*; but resolved not to outlive the violence which had been offered her. She dressed herself in mourning, and took a poniard under her robe, having previously written to her husband to meet her at her father *Lucretius's* house, where she refused to discover the cause of her grief except in a full assembly of her friends and relations. Here, addressing herself to her husband *Collatinus*, she acquainted him with the whole affair; exhorted him to revenge the injury; and protested that she would not outlive the loss of her honour. Every one present gave her a solemn promise that they would revenge her quarrel; but while they endeavoured to comfort her, she suddenly stabbed herself to the heart with the dagger which she had concealed under her robe. See CHASTITY.

This extravagant action inflamed beyond measure the minds of all present. *Brutus*, laying aside his pretended folly, drew the bloody dagger out of *Lucretia's* body; and, showing it to the assembly, swore by the blood upon it that he would pursue Tarquin and his family with fire and sword: nor would he ever suffer that or any other family to reign in Rome. The same oath was taken by all the company, who were so much surprised at the apparent transition of *Brutus* from folly to wisdom, that they did whatever he desired them.—By his advice the gates of the city were shut, that nobody might go out of it to inform Tarquin of what was going forward; which, as *Lucretius* had been left governor of the city by Tarquin, was put in execution without difficulty. The corpse of *Lucretia* was then exposed to public view: and *Brutus* having made a speech to the people, in which he explained the mystery of his conduct in counterfeiting folly for many years past, proceeded to tell them that the patricians were come to a resolution of deposing the tyrant, and exhorted them to concur in the same design. The people testified their approbation, and called out for arms; but *Brutus* did not think proper to trust them with arms till he had first obtained a decree of the senate in favour of the design. This was easily procured: the senate enacted that Tarquin had forfeited all the prerogatives belonging to the regal authority, condemned him and all his posterity to perpetual banishment, and devoted to the gods of hell every Roman who should hereafter, by word or deed, endeavour his restoration;

Rome.

57
Lucretia,
ravished by
Sextus Tar-
quinius,
kills her-
self.

58
Tarquin
deposed.

R

and

Rome. and this decree was unanimously confirmed by the curiæ.

⁵⁹
The form of government changed. Tarquin being thus deposed, the form of government became the next object. Lucretius was for the present declared *Interrex*; but Brutus being again consulted, declared, that though it was by no means proper for the state to be without supreme magistrates, yet it was equally necessary that the power should not be centered in one man, and that it should not be perpetual. For this reason, he proposed, that two magistrates, called *consuls*, should be elected annually; that the state should thenceforth have the name of *republic*; that the ensigns of royalty should be abolished; and that the only ensigns of consular dignity should be an ivory chair, a white robe, and 12 lictors for their attendants. However, that he might not utterly abolish the name of *king*, he proposed that this title should be given to him who had the superintendency of religious matters, who should thenceforth be called *rex sacrorum*, or *king of sacred things*.

⁶⁰
Tullia leaves Rome.

The scheme of Brutus being approved of, Brutus and Collatinus were proposed by Lucretius as the two first consuls, and unanimously accepted by the people, who thought it was impossible to find more implacable enemies to the Tarquins. They entered on their office in the year 508 B. C.; and Tullia, perceiving that now all was lost, thought proper to leave the city, and retire to her husband at Ardea. She was suffered to depart without molestation, though the populace hooted at her, and cursed her as she went along. Tarquin, in the mean time, being informed by some who had got out of Rome before the gates were shut, that Brutus was raising commotions to his prejudice, returned in haste to the city, attended only by his sons and a few friends; but, finding the gates shut, and the people in arms on the walls, he returned again to the camp: but here again, to his surprise, he found that the consuls had taken the opportunity of gaining over the army to their interest; so that, being refused admittance into the camp also, he was forced to fly for refuge, at the age of 76, with his wife and three sons, to Gabii, where Sextus had been made king. Here he continued for some time: but not finding the Latins very forward to revenge his cause, he retired into Hetruria; where, being the country of his mother's family, he hoped to find more friends, and a readier assistance for attempting the recovery of his throne.

⁶¹
State of the Roman empire at this time.

The Romans now congratulated themselves on their happy deliverance from tyranny. However, as Tarquin had by his policy procured himself many friends abroad, these now became enemies to the Roman name; and, by the defection of their allies, the Roman dominions were left in much the same state as they had been in the time of Romulus. The territory of Rome had always been confined to a very narrow compass. Though almost constantly victorious in war for 243 years, they had not yet gained land enough to supply their city with provisions. The main strength of the state lay in the number of the citizens of Rome; which the custom of transplanting the inhabitants of the conquered cities thither had so prodigiously increased, that it put the Romans in a condition of usurping the authority over other nations, the most inconsiderable of which had an extent of territory far exceeding theirs. By frequent depredations and incursions they so harassed the petty

states of Latium and Hetruria, that many of them were constrained to enter into treaties with Rome, by which they obliged themselves to furnish her with auxiliaries whenever she should be pleased to invade and pillage the lands of her other neighbours. Submissions of this kind the Romans called *making alliances* with them, and these useful alliances supplied the want of a larger territory; but now, upon the change of her government, all the allies of Rome forsook her at once, and either stood neuter, or espoused the cause of the banished king; so that she was now obliged to maintain her liberties as she best might.

The new consuls in the mean time took the most effectual methods they could for securing the liberties of the republic. The army which had been employed in the siege of Ardea marched home under the conduct of Herminius and Horatius, who concluded a truce with the Ardeates for 15 years. The consuls then again assembled the people by centuries, and had the decree of Tarquin's banishment confirmed; a *rex sacrorum* was elected to preside at the sacrifices, and many of the laws of Servius Tullius were revived, to the great joy of the people, who were thus restored to their ancient right of voting in all important affairs. Tarquin, however, resolved not to part with his kingdom on such easy terms. Having wandered from city to city in order to move compassion, he at length made Tarquinii the seat of his residence; where he engaged the inhabitants to send an embassy to Rome, with a modest, submissive letter from himself, directed to the Roman people. The ambassadors represented in such strong terms to the senate how reasonable it was to let the king be heard before he was condemned, and the danger which threatened the state from the neighbouring powers if that common justice were refused, that the consuls inclined to bring these agents before the people, and to leave the decision thereof to the curiæ; but Valerius, who had been very active in the revolution, strenuously opposed this, and by his influence in the senate got it prevented. As that illustrious body had been greatly thinned by the murders committed by Tarquin, new members were elected from among the knights, and the ancient number of 300 again completed. The old senators had been called *patres* or "fathers;" and as the names of the new ones were now written on the same roll, the whole body received the name of *patres conscripti*.

The old king was not to be foiled by a single attempt. He prevailed on the inhabitants of Tarquinii to send a second embassy to Rome, under pretence of demanding the estates of the exiles, but with private instructions to get the consuls assassinated. The restoration of the estates of the exiles was opposed by Brutus, but Collatinus was for complying with it; whereupon Brutus accused his colleague of treachery, and of a design to bring back the tyrant. The matter was then referred to the people, where it was carried by one vote in favour of the Tarquins. But whilst the people were employed in loading carriages with the effects of the exiles, and in selling what could not be carried off, the ambassadors found means to draw some of the nearest relations of the consuls into a plot with them. These were three young noblemen of the Aquilian family (the sons of Collatinus's sister), and two of the Vitellii (whose sister Brutus had married); and these last engaged

Rome.

⁶²
Tarquin writes to the Roman people.

⁶³
A conspiracy formed in his favour.

Rome engaged Titus and Tiberius, the two sons of Brutus, in the same conspiracy. They all bound themselves by solemn oaths, with the dreadful ceremony of drinking the blood of a murdered man and touching his entrails. They met at the house of the Aquilii, where they wrote letters to Tarquin and gave them to the ambassadors. But though they used all imaginable precaution, their proceedings were overheard by one Vindicius a slave, who immediately communicated the whole to Valerius: upon which all the criminals were apprehended. Brutus stood judge over his own sons; and, notwithstanding the intercession of the whole assembly, and the tears and lamentations of his children, commanded them to be beheaded; nor would he depart till he saw the execution of the sentence. Having performed this piece of heroic barbarity, he quitted the tribunal and left Collatinus to perform the rest. Collatinus, however, being inclined to spare his nephews, allowed them a day to clear themselves; and caused Vindicius, the only witness against them, to be delivered up to his masters. This roused the indignation of the people in general, especially of Valerius, who had promised to protect the witness, and therefore he refused to deliver him up to the lictors. The multitude called aloud for Brutus to return; which when he had done, he told them that he had executed his two sons in consequence of his own paternal authority over them, but that it belonged to the people to determine the fate of the rest. Accordingly, by a decree of the curiæ, all the delinquents suffered as traitors except the ambassadors, who were spared out of respect to their character. The slave Vindicius had his liberty granted him; and was presented with 25,000 ascs of brass, in value about 80l. 14s. 7d. of our money. The decree for restoring the estates of the exiled Tarquins was annulled, their palaces were destroyed, and their lands divided among the indigent people. The public only retained a piece of ground, near the Campus Martius, which the king had usurped. This they consecrated to Mars, and it afterwards became a common field where the Roman youth exercised themselves in running and wrestling. But after this consecration, the superstitious Romans scrupled to use the corn which they found there ready reaped to their hands: so that, with some trees, it was thrown into the Tiber; and the water being low, it stopped in the middle of the river, and began to form a fine island named afterwards *Insula Sacra*.

The behaviour of Brutus towards his two sons struck such a terror into the Romans, that scarce any person durst oppose him; and therefore, as he hated Collatinus, he openly accused him before the people, and without ceremony deposed him from the consulship, banishing him at the same time from Rome. The multitude acquiesced in every thing he said, and refused to hear Collatinus speak in his own defence; so that the consul was on the point of being driven out with ignominy and disgrace, when Lucretius interposed, and prevailed upon Brutus to allow his colleague quietly to resign the saces, and retire of his own accord from the city. Brutus then, to remove all suspicions of personal enmity, procured him a present of 20 talents out of the public treasury, to which he added five of his own. Collatinus then retired to Lavinium, where he lived in peace, and at last died of old age.

64
Brutus
causes two
of his own
sons to be
beheaded.

65
Deposes his
colleague
Collatinus.

After the abdication of Collatinus, Valerius was chosen in his room; and as his temper agreed much better with Brutus than that of Collatinus, the two consuls lived in great harmony. Nothing, however, could make the dethroned king forego the hope of recovering his kingdom by force. He first engaged the Volsci and Tarquinienſes to join their forces in order to support his rights. The consuls marched out without delay to meet them. Brutus commanded the horse and Valerius the foot, drawn up in a square battalion. The two armies being in sight of each other, Brutus advanced with his cavalry, at the same time that Arunx, one of Tarquin's sons, was coming forward with the enemy's horse, the king himself following with the legions. Arunx no sooner discovered Brutus, than he made towards him with all the fury of an enraged enemy. Brutus advanced towards him with no less speed; and as both were actuated only by motives of hatred, without thoughts of self-preservation, both of them were pierced through with their lances. The death of the two generals served as a prelude to the battle, which continued with the utmost fury till night, when it could not be known which side had got the victory, or which had lost the greatest number of men. A report was spread, however, that a voice had been heard out of a neighbouring wood, declaring the Romans conquerors; and this, probably a stratagem of Valerius, operated so powerfully on the superstitious minds of the Volsci, that they left their camp in confusion, and returned to their own country. It is said that Valerius, having caused the dead to be numbered, found that the Volsci had lost 11,300 men, and the Romans only one short of that number.

Valerius being left without a colleague in the consulship, and having for some reasons delayed to choose one, began to be suspected by the people of aspiring at the sovereignty; and these suspicions were in some measure countenanced by his building a fine house on the steep part of the hill Palatinus, which overlooked the forum, and was by them considered as a citadel. But of this Valerius was no sooner informed, than he caused this house to be pulled down, and immediately called an assembly of the people for the election of a consul, in which he left them entirely free. They chose Lucretius; and, being ashamed of having suspected Valerius, they complimented him with a large ground-plot in an agreeable place, where they built him a house. The new consul died a few days after his promotion, so that Valerius was once more left sole governor. In the interval betwixt the death of Lucretius and the choice of another consul, Valerius gave the people so many striking proofs of his attachment to their interest, that they bestowed upon him the surname of *Poplicola*, or "popular;" nor was he ever called by another name afterwards.

When Poplicola's year of consulship expired, the Romans thought fit, in consequence of the critical situation of affairs, to elect him a second time, and joined with him T. Lucretius, the brother of the famous Lucretia. They began with restoring the census and lustrum; and found the number of Roman citizens, at or above the age of puberty, to amount to 130,000. As they apprehended an attack from the Latins on account of Tarquin, they were at great pains to fortify Siquirinum or Singliuria, an important post on that

Rome.

66
The Volsci
and Tarquinienſes
declare in
favour of
Tarquin.

67
Brutus and
Arunx kill
each other.

Rome.
68
Porfena in-
vades the
Roman ter-
ritories,

side. Contrary to their expectations, however, the Latins remained quiet; but an haughty embassy was received from Porfena king of Clusium in Hetruria, commanding them either to take back the Tarquins to Rome, or to restore them their estates. To the first of these demands the consuls returned an absolute refusal; and, as to the second, they answered, that it was impracticable; a part of those estates having been consecrated to Mars, and the rest divided among indigent people, from whom they could not be recovered. The imminent danger which now threatened the city, procured Valerius the honour of a third consulship; and with him was joined Horatius Pulvilius, who had enjoyed the dignity for a few months before in the interval betwixt the death of Lucretius and the expiration of the first consulate.

69
and de-
feats their
army.

While the Romans were making the most vigorous preparations for defence, Porfena, attended by his son Arunx and the exiles, marched towards the city at the head of a formidable army, which was quickly joined by a considerable body of Latins under Mamilius, the son-in-law of Tarquin. The consuls and the senate took all imaginable care to supply the common people with provisions, lest famine should induce them to open the gates to Tarquin; and they desired the country people to lodge their effects in the fort Janiculum, which overlooked the city, and which was the only fortified place possessed by the Romans on that side the Tiber. Porfena, however, soon drove the Romans out of this fort; upon which the consuls made all their troops pass the river, and drew them up in order of battle to defend the bridge, while Porfena advanced to engage them. The victory was a long time doubtful; but at last the Romans fled. Horatius Cocles, nephew to the consul, with Sp. Lartius and T. Herminius, who had commanded the right wing, posted themselves at the entrance of the bridge, and for a long time bravely defended it: but at last, the defensive arms of Lartius and Herminius being broken, they retired; and then Horatius desiring them to advise the consuls from him to cut the bridge at the other end, he for a while sustained the attack of the enemy alone. At last, being wounded in the thigh, and the signal given that the bridge was almost broken down, he leaped into the river, and swam across it through a shower of darts. The Romans, in token of gratitude for this eminent service, erected a statue to him in the temple of Vulcan, gave him as much land as he himself with one yoke of oxen could plough in one day; and each of the inhabitants, to the number of 300,000, gave him the value of as much food as each consumed in a day. But notwithstanding all this, as he had lost one eye, and from his wounds continued lame throughout the remainder of his life, these defects prevented his ever being raised to the consulate, or invested with any military command.

70
Bravery of
Horatius
Cocles.

The city was not yet fully invested; but as it was very difficult to find provisions for such a multitude, the inhabitants soon began to be in want. Porfena being informed of their difficulties, told them that he would supply them with provisions if they would take back their old masters; but to this they replied, that hunger was a less evil than slavery and oppression. The constancy of the Romans, however, was on the point of failing, when a young patrician, named *Mutius Cor-*

pus, with the consent of the senate and consuls, undertook to assassinate Porfena. He got access to the Hetrurian camp, disguised like a peasant, and made his way to the king's tent. It happened to be the day on which the troops were all reviewed and paid; and Porfena's secretary, magnificently dressed, was sitting on the same tribunal with the king. Mutius, mistaking him for Porfena, instantly leaped upon the tribunal and killed him. He then attempted to make his escape; but being seized and brought back, he owned his design; and with a countenance expressive of desperate rage and disappointment, thrust his hand which had missed the blow into a pan of burning coals which stood by, and there held it for a considerable time. On this, Porfena, changing his resentment into admiration, granted him his life and liberty, and even restored him the dagger with which he intended to have stabbed himself. Mutius took it with his left hand, having lost the use of the other; and from this time had the name of *Scævola*, or "left-handed." He then, in order to induce Porfena to break up the siege, invented a story that 300 young Romans, all of them as resolute as himself, had sworn to take away the life of the king of Hetruria, or to perish in the attempt. This had the desired effect; Porfena sent deputies to Rome, whose only demands were, that the Romans should restore the estates of the Tarquins, or give them an equivalent, and give back the seven small towns which had been formerly taken from the Veintes. The latter of these demands was cheerfully complied with; but the former was still refused, until Porfena should hear the strong reasons they had to urge against it. A truce being agreed on, deputies were sent to the Hetrurian camp to plead the Roman cause against the Tarquins, and with them ten young men, and as many virgins, by way of hostages for performing the other article.

Rome.
71
Attempt of
Mutius Cor-
pus to assassinate Por-
fena.

The reception which Porfena gave the deputies raised the jealousy of the Tarquins; who still retaining their ancient pride, refused to admit Porfena for a judge between them and the Romans. But the king, without any regard to their opposition, resolved to satisfy himself, by an exact inquiry, whether the protection he had given the Tarquins was just. But while the cause was ready to be opened before the Roman deputies, news were brought that the young women whom the Romans had sent as hostages had ventured to swim across the Tiber, and were returned to Rome. They had gone to bathe in the river, and Clælia happening to turn her eyes towards her native city, that sight raised in her a desire of returning to it. She therefore ventured to swim across the river; and having encouraged her companions to follow her, they all got safe to the opposite shore, and returned to their fathers houses. The return of the hostages gave the consul Poplicola great uneasiness; he was afraid lest this rash action might be imputed to want of fidelity in the Romans. To remove therefore all suspicions, he sent a deputation to the Hetrurian camp, assuring the king that Rome had no share in the foolish attempt of the young women; and promising to send them immediately back to the camp from whence they had fled. Porfena was easily appeased; but the news of the speedy return of the hostages being known of the Tarquins, the Tarquins, without any regard to the truce, or respect to the king their protector, lay in ambush on the road to surprise them. Poplicola having put

72
Adventure
of Clælia.

73
Treachery
of the Tar-
quins.

Rome. put himself at the head of the Roman troops who escorted them, sustained the attack of the Tarquins, though sudden and unexpected, till his daughter Valeria rode full speed to the Hetrurian camp, and gave notice of the danger her father and companions were in; and then Arunx, the king's son, flying with a great body of cavalry to their relief, put the aggressors to the rout.

74
Porfena
abandons
their cause

This notorious piece of treachery in the Tarquins gave Porfena strong suspicions of the badness of their cause. He therefore assembled the chief commanders of the Hetrurians; and having heard in their presence the complaints of the Romans, and the justification of their proceedings against the Tarquins, he was so struck with horror at the recital of the crimes the Tarquins were charged with, that he immediately ordered them to leave his camp; declaring, that he renounced his alliance with them, and would no longer continue the hospitality he had shown them. He then commanded the ten young virgins to be brought before him, and inquired who was the first author and chief manager of the enterprise. They all kept silence, till Clælia herself, with an air of intrepidity, confessed, that she alone was guilty, and that she had encouraged the others by her advice. Upon this the king, extolling her resolution above the bravery of Horatius and the intrepidity of Mutius, made her a present of a fine horse, with sumptuous furniture. After this he concluded a peace with the Romans, and restored to them all their hostages; declaring, that their bare word was to him a sufficient security for the performance of the articles.

75
Concludes
a peace
with the
Romans,
and re-
lieves them.

And now Porfena being about to return to Clusium, gave, before his departure, a further testimony of his respect and friendship for the Romans. He knew that Rome was greatly distressed for want of provisions; but being afraid to offend the inhabitants by relieving them in a direct manner, he ordered his soldiers to leave behind them their tents and provisions, and to carry nothing with them but their arms. As his camp abounded with all sorts of provisions, Rome was hereby much relieved in her wants. The moveables and corn of the Hetrurians were sold by auction to private persons; and on this occasion the Romans took up the custom of making a proclamation by an herald, whenever any effects belonging to the public were to be sold, in the following words, *These are Porfena's goods*. The design of this was to preserve the memory of that prince's kindness. The senate, not satisfied with this, erected a statue of the king near the comitium, and sent an embassy to him with a present of a throne adorned with ivory, a sceptre, a crown of gold, and a triumphal robe.

76
The Latins
declare for
Tarquin.

Thus the Romans escaped the greatest danger they had hitherto been in. However, they did not yet enjoy tranquillity. The Sabines revolted, and continued the war for some time with great obstinacy: but being defeated in several engagements, they were at last obliged to submit; and scarce was this war ended, when another began with the Latins, who now declared for King Tarquin. Before they began this war, however, an embassy was sent to Rome, the purport of which was, that the Romans should raise the siege of Fidenæ which had revolted, and receive the Tarquins; who, on their part, should grant a general amnesty. The ambassadors were to allow the Romans a whole year to consider on these overtures; and to threaten them with a war in case

they refused to comply with them. The chief view of Tarquin and his partisans in promoting this embassy was, to lay hold of that opportunity to raise a sedition in the city. To the ambassadors, therefore, of the Latins, he joined some of his own emissaries, who, on their arrival in the city, found two sorts of people disposed to enter into their measures; to wit, the slaves, and the meaner citizens.

Rome.

The slaves had formed a conspiracy the year before to seize the Capitol, and set fire to the city in several quarters at the same time. But the plot being discovered, those who were concerned in it had been all crucified, and this execution had highly provoked the whole body of slaves. As to the meaner citizens, who were for the most part overwhelmed with debt, and cruelly used by their creditors, they were well apprised that there could happen no change in the government but to their advantage. These were the conspirators pitched upon, and to them were given the following parts to act: the citizens were to make themselves masters of the ramparts and gates of the city, at an appointed hour of the night; and then to raise a great shout as a signal to the slaves, who had engaged to massacre their masters at the same instant; the gates of the city were then to be opened to the Tarquins, who were to enter Rome while it was yet reeking with the blood of the senators. The conspiracy was ripe for execution, when Tarquin's principal agents, Publius and Marcus, both of his own name and family, being terrified with frightful dreams, had not courage enough to proceed in their design till they had consulted a diviner. However, they did not discover to him the conspiracy; but only asked him in general terms, what success they might expect in a project they had formed? The soothsayer, without the least hesitation, returned the following answer: *Your project will end in your ruin; disburden yourselves of so heavy a load*. Hereupon the Tarquins, fearing lest some of the other conspirators should be beforehand with them in informing, went immediately to S. Sulpitius, the only consul then at Rome, and discovered the whole matter to him. The consul greatly commended them, and detained them in his house, till, by private inquiries, he was assured of the truth of their depositions. Then he assembled the senate, and gave the Latin ambassadors their audience of leave, with an answer to their proposals; which was, that the Romans would neither receive the Tarquins, nor raise the siege of Fidenæ, being all to a man ready to sacrifice their lives in defence of their liberties, and willing to undergo any dangers rather than submit to the government of a tyrant.

77
A danger-
ous con-
spiracy
against the
state,

78
how disco-
vered.

The ambassadors being dismissed with this answer, and conducted out of the city, Sulpitius laid open to the fathers the dreadful conspiracy. It struck them with horror: but they were all at a loss in what manner they should apprehend and punish the guilty; since, by the law of Poplicola, there was an appeal to the people in all capital cases; and the two witnesses, who were strangers, might be excepted against by Roman citizens. In this perplexity they left the whole conduct of this critical affair to Sulpitius; who took a method which he thought would equally serve to prove the guilt and punish the guilty. He engaged the two informers to assemble the conspirators, and to appoint a rendezvous at midnight in the forum, as if they designed to take

the

Rome.

the last measures for the execution of the enterprise. In the mean time he used all proper means to secure the city, and ordered the Roman knights to hold themselves ready, in the houses adjoining to the forum, to execute the orders they should receive. The conspirators met at the time and place appointed by the two Tarquins; and the knights, upon a signal agreed on beforehand, invested the forum, and blocked up all the avenues to it so closely, that it was impossible for any of the conspirators to make their escape. As soon as it was light, the two consuls appeared with a strong guard on the tribunal; for Sulpitius had sent to his colleague Manius, who was besieging Fidenæ, desiring him to hasten to the city with a chosen body of troops. The people were convened by curiæ, and acquainted with the conspiracy which had been formed against the common liberty. The accused were allowed to make their defence, if they had any thing to offer against the evidence; but not one of them denying the fact, the consuls repaired to the senate, where sentence of death was pronounced against the conspirators, in case the people approved it.

79
The conspirators punished.

This decree of the senate being read to and approved by the assembly, the people were ordered to retire, and the conspirators were delivered up to the soldiers, who put them all to the sword. The peace of Rome was thought sufficiently secured by this stroke of severity; and therefore, though all the conspirators were not punished with death, it was judged proper not to make any further inquiries. The two informers were rewarded with all the privileges of Roman citizens, 100,000 aces, and 20 acres of land. Three festival days were appointed for expiations, sacrifices, and public games, by way of thanksgiving to the gods. But the general joy was disturbed by a melancholy accident; as the people were conducting Manius Tullius the consul from the circus to his house, he fell from his chariot, and died three days after.

The city of Fidenæ was not yet reduced: it held out during the following consulship of T. Æbutius and P. Veturius; but was taken the next year by T. Lartius, who, together with Q. Clælius, was raised to the consular dignity. The Latins, enraged at the loss of this town, began to complain of their leading men; which opportunity Tarquin and Mamilius improved so far, as to make all the Latin cities, 24 in number, enter into an alliance against Rome, and to bind themselves by oath never to violate their engagements. The Latins made vast preparations, as did likewise the Romans; but the latter could procure no assistance from their neighbours. As the Latin nation was much superior to them in strength, they sent deputies to solicit succours from the several states with which they were surrounded: but their negotiations proved every where unsuccessful; and, what was worse than all, the republic had rebellious sons in her own bosom, who refused to lend their aid in defence of their country. The poorer sort of people, and the debtors, refused to take the military oaths, or to serve; alleging their poverty, and the fruitless hazards they ran in fighting for the defence of a city, where they were oppressed and enslaved by their creditors. This spirit of mutiny spread among the inferior classes, most of them refusing to lift themselves, unless their debts were all remitted by a decree of the senate; nay, they began to talk of leaving the city, and settling elsewhere.

80
Disturbances at Rome.

Rome.

The senate, apprehending a general insurrection, assembled to deliberate on the means of quieting those domestic troubles. Some were for a free remission of all debts, as the safest expedient at that juncture; others urged the dangerous consequences of such a condescension, advising them to list such only as were willing to serve, not doubting but those who refused their assistance would offer it of their own accord when it was no longer desired. Several other expedients were proposed: but at length this prevailed; to wit, that all actions for debts should be suspended till the conclusion of the war with the Latins. But this the indigent debtors thought only a suspension of their misery; and therefore it had not the intended effect on the minds of the unruly multitude. The senate might indeed have prosecuted the ringleaders of the sedition; but the law of Poplicola, called the *Valerian law*, which allowed appeals to the assembly of the people, was a protection for the seditious, who were sure of being acquitted by the accomplices of their rebellion. The senate, therefore, to elude the effect of a privilege that put such a restraint upon their power, resolved to create one supreme magistrate, who, with the title of *dictator*, should have an absolute power for a time: but as this could not be done without striking at the law of Poplicola, and transferring the power of the people in criminal cases to a magistrate superior to all laws, it was necessary to use artifice, in order to obtain the consent of the curiæ. They therefore represented to them in a public assembly, that, in so difficult a conjuncture, when they had their domestic quarrels to decide, and at the same time a powerful enemy to repulse, it would be expedient to put the commonwealth under a single governor, who, superior to the consuls themselves, should be the arbiter of the laws, and as it were the father of his country; that his power should have no limits: but, however, lest he should abuse it, they ought not to trust him with it above six months.

81
A dictator created.

The people, not foreseeing the consequences of this change, agreed to it; but the greatest difficulty was to find a man duly qualified in all respects for so great a trust. T. Lartius, one of the consuls, seemed to be of all men the most unexceptionable; but the senate, fearing to offend his colleague by an invidious preference, gave the consuls the power of choosing a dictator, and obliged them to name one of themselves, not doubting but Clælius would yield to the superior talents of his colleague; nor were they disappointed in their expectations. But Lartius, with the same readiness, named Clælius; and the only contest was, which of the two should raise the other to the supreme authority. Each persisted obstinately in remitting the dignity to his colleague, till Clælius, starting up on a sudden, abdicated the consulship, and, after the manner of an interrex, proclaimed Titus Lartius dictator, who thereupon was obliged to take upon him the government of the republic.

Lartius indeed took as much state upon him, after he had entered upon his office, as he had shown modesty in refusing it. He began by creating, without the participation either of the senate or people, a general of the Roman horse; an office which lasted only during the dictatorship, and which all subsequent dictators revived immediately after their election. Sp. Cassius, formerly consul, and honoured with a triumph, was the person he advanced

81
He chooses a general of horse.

Rome. ced to this second station in the republic. Lartius, having by this means secured the Roman knights, resolved, in the next place, to make the people respect and fear him. With this view he never appeared in public, without being attended by 24 licitors, to whose falces he again added the axes which Poplicola had caused to be taken from them. The novelty of this sight was alone sufficient to awe the seditious, and, without executions, to spread consternation throughout Rome. The murmurs of the inferior classes being by this means silenced, the dictator commanded a census to be taken, according to the institution of King Servius. Every one, without exception, brought in his name, age, the particulars of his estate, &c. and there appeared to be in Rome 150,700 men who were past the age of puberty. Out of these the dictator formed four armies: the first he commanded himself; the second he gave to Clælius his late colleague; the third to Sp. Cassius his general of the horse; and the fourth he left in Rome, under the command of his brother Sp. Lartius, who was to guard the city. The Latins not being so forward in their preparations as was expected, all their hostilities against Rome this campaign amounted to no more than the sending a detachment into the Roman territory to lay it waste. The dictator gained some advantage over that party; and the great humanity with which he treated the prisoners and wounded, disposed the Latins to listen the more readily to the overtures which he at the same time made them for a suspension of hostilities. At length a truce was agreed on for a year; and then Lartius, seeing the republic restored to its former tranquillity, resigned the dictatorship, though the time appointed for its duration was not yet expired.

The following consulship of Sempronius Atratinus and Minutius Angurinus, produced nothing memorable. But the next year the truce expired, when Aulus Posthumius and T. Virginus took possession of the consulship. Both Romans and Latins were busied in making the necessary preparations for war. The nobility of Latium, who were for the most part in the interest of the Tarquins, having found means to exclude the citizens from the Latin diets, carried all before them in those assemblies: whereupon many of the citizens removed with their families to Rome, where they were well received. The Latins being bent upon war, the senate, notwithstanding the perfect harmony that reigned between them and the people, thought it expedient to create a dictator. The two consuls were therefore impowered to name one of themselves to that dignity; whereupon Virginus readily yielded it to his colleague Posthumius, as the more able commander. The new dictator, having created Æbutius Elva his general of the horse, and divided his army into four bodies, left one of them, under the command of Sempronius, to guard the city; and with the other three, commanded by himself, Virginus, and Æbutius, marched out against the Latins, who, with an army of 40,000 foot and 3000 horse, under the command of Sextus Tarquinius, Titus Tarquinius, and Mamilius, had already made themselves masters of Corbio, a strong-hold belonging to the republic, and put the garrison to the sword. Posthumius encamped in the night on a steep hill near the lake Regillus, and Virginus on another hill over-against him. Æbutius was ordered to march silently in the night, with the

cavalry and light-armed infantry, to take possession of a third hill upon the road, by which provisions must be brought to the Latins. Rome.

Before Æbutius had fortified his new camp, he was vigorously attacked by Lucius Tarquinius, whom he repulsed three times with great loss, the dictator having sent him a timely reinforcement. After this, Æbutius intercepted two couriers sent by the Volsci to the Latin generals, and, by letters found upon them, discovered, that a considerable army of the Volsci and Hernici were to join the Latin forces in three days. Upon this intelligence, Posthumius drew his three bodies of troops together, which amounted in all to no more than 24,000 foot and 1000 horse, with a design to engage the enemy before the arrival of the succours they expected. Accordingly he encouraged his men, and, with his army in battle-array, advanced to the place where the enemy was encamped. The Latins, who were much superior to the Romans in numbers, and besides began to want provisions, did not decline the engagement. Titus Tarquinius, at the head of the Roman exiles and deserters, was in the centre, Mamilius in the right wing, and Sextus Tarquinius in the left. In the Roman army the dictator commanded in the centre, Æbutius in the left wing, and Virginus in the right.

The first body which advanced was that of the dictator; and, as soon as it began to march, T. Tarquinius, singling out the dictator, ran full speed against him. The dictator did not decline the encounter, but, flying at his adversary, wounded him with a javelin in the right side. Upon this, the first line of the Latins advanced to cover their general; but he being carried out of the field, they made but a faint resistance when charged by the troops of the dictator. They were destitute of a leader; and therefore began to retire, when Sextus Tarquinius, taking the place of his brother, brought them back to the charge, and renewed the fight with such vigour, that the victory in the centre was still doubtful. On the side of Mamilius and Æbutius, both parties, encouraged by the example of their leaders, fought with incredible bravery and resolution. After a long and bloody contest, the two generals agreed to determine the doubtful victory by a single combat. Accordingly the champions pushed on their horses against each other. Æbutius with his lance wounded Mamilius in the breast; and Mamilius with his sword Æbutius in the right arm. Neither of the wounds were mortal; but, both generals falling from their horses, put an end to the combat. Marcus Valerius, the brother of Poplicola, supplying the place of Æbutius, endeavoured, at the head of the Roman horse, to break the enemy's battalions; but was repulsed by the cavalry of the Roman royalists. At the same time Mamilius appeared again in the van, with a considerable body of horse and light-armed infantry. Valerius, with the assistance of his two nephews, the sons of Poplicola, and a chosen troop of volunteers, attempted to break through the Latin battalions, in order to engage Mamilius; but being surrounded by the Roman exiles, he received a mortal wound in his side, fell from his horse, and died. The dead body was carried off by the two sons of Poplicola, in spite of the utmost efforts of the exiles, and delivered to Valerius's servants, who conveyed it to the Roman camp; but

83
Number of
the Ro-
mans.

84
Battle of
Regillus.

Rome.

but the young heroes being afterwards invested on all sides, and overpowered by numbers, were both killed on the spot. Upon their death, the left wing of the Romans began to give ground, but were soon brought back by Posthumius; who, with a body of Roman knights, flying to their assistance, charged the royalists with such fury, that they were, after an obstinate resistance, obliged to give way, and retire in the utmost confusion. In the mean time Titus Horminius, one of the dictator's lieutenants, having rallied those who had fled, fell upon some close battalions of the enemy's left wing, which still kept their ground under the command of Mamilius, killed him with his own hand, and put that body to flight. But while he was busy in stripping the body of his enemy, he received himself a wound, of which he died soon after.

85
The Latins
entirely de-
feated, and
their camp
taken.

Sextus Tarquinius in the mean time maintained the fight with great bravery, at the head of the left wing, against the consul Virginius; and had even broke through the right wing of the Roman army, when the dictator attacked him unexpectedly with his victorious squadrons. Then Sextus, having lost at once all hopes of victory, threw himself, like one in despair, into the midst of the Roman knights, and there sunk under a multitude of wounds, after he had distinguished himself in a most eminent manner. The death of the three generals was followed by the entire defeat of the Latin army. Their camp was taken and plundered, and most of their troops cut in pieces; for, of the 43,000 men who came into the field, scarce 10,000 returned home. The next morning the Volsci and Hernici came, according to their agreement, to assist the Latins; but finding, upon their arrival, how matters had gone, some of them were for falling upon the Romans before they could recover from the fatigue of the preceding day; but others thought it more safe to send ambassadors to the dictator, to congratulate him on his victory, and assure him that they had left their own country with no other design than to assist Rome in so dangerous a war. Posthumius, by producing their couriers and letters, gave them to understand that he was well apprised of their designs and treacherous proceedings. However, out of a regard to the law of nations, he sent them back unhurt, with a challenge to their generals to fight the next day; but the Volsci, and their confederates, not caring to engage a victorious army, decamped in the night, and returned to their respective countries before break of day.

86
The whole
nation sub-
mits.

The Latins having now no remedy but an entire submission sent ambassadors to solicit a peace at Rome, yielding themselves absolutely to the judgement of the senate. As Rome had long since made it a maxim to spare the nations that submitted, the motion of Titus Lartius, the late dictator, prevailed; and the ancient treaties with the Latins were renewed, on condition, however, that they should restore the prisoners they had taken, deliver up the deserters, and drive the Roman exiles out of Latium. Thus ended the last war which the Romans waged with their neighbours on account of their banished king; who, being now abandoned by the Latins, Hetrurians, and Sabines, retired into Campania, to Aristodemus tyrant of Cumæ, and there died, in the 90th year of his age and 14th of his exile.

87
Death of
Tarquin.

The Romans were no sooner freed from these dan-

gerous wars, than they began to oppress one another; and those domestic feuds took place which continued more or less during the whole time of the republic. The first disturbances were occasioned by the oppression of the plebeians who were debtors to the patricians. The senate, who were at the head of the patricians, chose to the consulate one Appius Claudius, who violently opposed the pretensions of the plebeians; but gave him for his colleague one P. Servilius, who was of a quite contrary opinion and disposition. The consequence of this was, that the consuls disagreed; the senate did not know what to determine, and the people were ready to revolt. In the midst of these disturbances, an army of the Volsci advanced towards Rome; the people refused to serve; and had not Servilius procured some troops who served out of a personal affection to himself, the city would have been in great danger.

Rome.

88
New di-
sturbances
at Rome.

But though the Volsci were for this time driven back, they had no intention of dropping their designs; they engaged in an alliance with them the Hernici and Sabines. In the mean time, the disputes at Rome continued with as much violence as ever. Nay, though they were expressly told that the Volscian army was on its way to besiege the city, the plebeians absolutely refused to march against them; saying, that it was the same thing whether they were chained by their own countrymen or by the enemy. In this extremity Servilius promised, that when the enemy were repulsed the senate would remit all the debts of the plebeians. This having engaged them to serve, the consul marched out at their head, defeated the enemy in a pitched battle, and took their capital, giving it up to be plundered by his soldiers, without reserving any part for the public treasury.

Whatever might have been the reasons of Servilius for this step, it furnished Appius with a pretence for refusing him a triumph, as a man of a seditious disposition, who aimed at popularity by an excessive indulgence and profuseness to his soldiers. Servilius, incensed at this injustice, and encouraged by the acclamations of the people, decreed himself a triumph in spite of Appius and the senate. After this he marched against the Aurunci, who had entered Latium; and, in conjunction with Posthumius Regillens, he utterly defeated them, and obliged them to retire into their own country. But neither the services of the general nor his soldiers could mollify the senate and patrician party. Appius even doubled the severity of his judgements, and imprisoned all those who had been set at liberty during the war. The prisoners cried for relief to Servilius; but he could not obtain the accomplishment of those promises which the senate never had meant to perform; neither did he choose to quarrel openly with the whole patrician body; so that, striving to preserve the friendship of both parties, he incurred the hatred of the one and the contempt of the other. Perceiving therefore that he had lost all his interest with the plebeians, he joined with the patricians against them; but the plebeians rushing tumultuously into the forum, made such a noise, that no sentence pronounced by the judges could be heard, and the utmost confusion prevailed through the whole city. Several proposals were made to accommodate matters; but through the obstinacy of Appius and the majority of the senators, they

all

Rome. all came to nothing. In the mean time it was necessary to raise an army against the Sabines, who had invaded the territories of the republic; but the people refused to serve. Manius Valerius, however, brother to the celebrated Poplicola, once more prevailed upon them to march out against the common enemy; having previously obtained assurances from the senate that their grievances should be redressed. But no sooner had victory declared in favour of the Romans, than the senate, apprehending that the soldiers at their return would challenge Valerius, who had been nominated dictator, for the performance of their promises, desired him and the two consuls to detain them still in the field, under pretence that the war was not quite finished. The consuls obeyed; but the dictator, whose authority did not depend on the senate, disbanded his army, and declared his soldiers free from the oath which they had taken; and as a further proof of his attachment to the plebeians, he chose out of that order 400, whom he invested with the dignity of knights. After this he claimed the accomplishment of the promises made by the senate: but instead of performing them, he had the mortification to hear himself loaded with reproaches; on which he resigned his office as dictator, and acquainted the people with his inability to fulfil his engagements to them. No sooner were these transactions known in the army, than the soldiers, to a man, deserted the consuls and other officers, and retired to a hill called afterwards *Mons Sacer*, three miles from Rome, where they continued to observe an exact discipline, offering no sort of violence whatever. The senate, after taking proper measures for the defence of the city, sent a deputation to the malcontents; but it was answered with contempt. In short, all things tended to a civil war, when at last matters were compromised by the institution of tribunes of the people, who had power to prevent the passing of any law that might be prejudicial to the people, and whose persons were declared sacred, inasmuch that whoever offered the least violence to the person of a tribune was declared accursed, his effects were to be consecrated to Ceres, and he himself might be killed with impunity; and all the Romans were to engage themselves, in their own name and that of their posterity, never to repeal this law. The people, after these regulations, erected an altar to Jupiter the Terrible, on the top of the hill where their camp had stood; and when they had offered sacrifices to the god, and consecrated the place of their retreat, they returned to Rome, led by their new magistrates and the deputies of the senate.

89
The soldiers revolt, but all the troubles are ended by creating tribunes of the people.

Thus the Roman constitution, which had originally been monarchic, and from thence had passed into an aristocracy, began now to verge towards a democracy. The tribunes immediately after their election obtained permission from the senate to elect two persons as their ministers or assistants, who should ease them a little in the great multiplicity of their affairs. They were called *plebeian ædiles*; and afterwards came to have the inspection of the public baths, aqueducts, with many other offices originally belonging to the consuls, after which they were called simply *ædiles*.

All opposition to the making of regular levies being now at an end, the consul Cominius led an army against the Volsci. He defeated them in battle, and took from them Longula and Polusca; after which he

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besieged Corioli, a city strongly fortified, and which might be called their capital. He carried this place, and gained a victory over the Antiates, the same day; but Caius Marcius, an eminent patrician, had all the glory of both actions. The troops detached by the consul to scale the walls of Corioli being repulsed in their first assault, Marcius rallied the runaways, led them on afresh to the charge, drove back the enemy within their walls, and, entering the city with them, made himself master of it. This exploit achieved, he with all expedition put himself in the foremost ranks of the consul's main army, that was just going to engage with the Antiates, who were come to the relief of the place; and there he behaved with equal bravery, and had equal success.

Rome.
90
Bravery of Caius Marcius Coriolanus.

The next day, the consul, having erected his tribunal before his tent, called the soldiers together. His whole speech to them was little more than a panegyric upon Marcius. He put a crown upon his head; assigned him a tenth part of all the spoil; and, in the name of the republic, made him a present of a fine horse with stately furniture, giving him leave at the same time to choose out any ten of the prisoners for himself; and lastly, he allotted him as much money as he could carry away. Of all these offers Marcius accepted only the horse, and one captive of the ten, an old friend of his family, that he might give him his liberty. To add to the glory of the brave warrior, the consul bestowed on him the surname of *Coriolanus*, transferring thereby from himself to Marcius all the honour of the conquest of Corioli. Cominius, at his return to Rome, disbanded his army; and war was succeeded by works of religion, public games, and treaties of peace. A census and a lustrum closed the events of this memorable consulship. There appeared to be in Rome at this time no more than 110,000 men fit to bear arms; a number by many thousands less than at the last enrollment. Doubtless great numbers had run away to avoid being slaves to their creditors.

91
Diminution of the power of the Romans.

Under the following administration of T. Geganius and P. Minucius, Rome was terribly afflicted by a famine, occasioned chiefly by the neglect of ploughing and sowing during the late troubles; for the sedition had happened after the autumnal equinox, about sowing-time, and the accommodation was not made till just before the winter solstice. The senate dispatched agents into Hetruria, Campania, the country of the Volsci, and even into Sicily, to buy corn. Those who embarked for Sicily met with a tempest which retarded their arrival at Syracuse; where they were constrained to pass the winter. At Cumæ, the tyrant Aristodemus seized the money brought by the commissaries; and they themselves with difficulty saved their lives by flight. The Volsci, far from being disposed to succour the Romans, would have marched against them, if a sudden and most destructive pestilence had not defeated their purpose. In Hetruria alone the Roman commissaries met with success. They sent a considerable quantity of grain from thence to Rome in barks: but this was in a short time consumed, and the misery became excessive: the people were reduced to eat any thing they could get; and nature in so great extremity loathed nothing.

92
A famine in the city.

During this distress a deputation came from Velitræ a Volscian city, where the Romans had formerly planted

93
A colony sent to Velitræ.

Rome. ed a colony, representing that nine parts in ten of its inhabitants had been swept away by a plague, and praying the Romans to send a new colony to re-people it. The conscript fathers without much hesitation granted the request, pressed the departure of the colony, and without delay named three leaders to conduct it.

The people at first were very well pleased with the proposal, as it gave them a prospect of relief in their hunger: but when they reflected on the terrible havoc the plague had made among the old inhabitants of Velitræ, they began to fear that the place might be still infected; and this apprehension became so universal, that not one of them would consent to go thither. Nevertheless the senate at length published a decree that all the citizens should draw lots; and that those to whose lot it fell to be of the colony should instantly march for Velitræ, or suffer the severest punishments for their disobedience: fear and hunger made the people comply; and the fathers, a few days after, sent away a second colony to Norba, a considerable city of Latium. But the patricians were disappointed as to the benefit they expected from these measures. The plebeians who remained in Rome being more and more pressed by hunger and want, grew daily more angry with the senate. At first they assembled in small companies to vent their wrath in abusive complaints; and at length, in one great body, rushed all together into the forum, calling out upon their tribunes for succour.

94
Disturbances raised by the tribunes.

The tribunes made it their business to heighten the general discontent. Having convened the people, Spurius Icilius, chief of the college of tribunes, inveighed most bitterly against the senate; and when he had ended his harangue, exhorted others to speak freely their thoughts; particularly, and by name, calling upon Brutus and Sicinius, the ringleaders of the former sedition, and now ædiles. These men, far from attempting to extinguish the fire, added fresh fuel to it: And the more to inflame the spirits of the multitude, they enumerated all the past insults which the people had suffered from the nobles. Brutus concluded his harangue with loudly threatening, that if the plebeians would follow his advice, he would soon oblige those men who had caused the present calamity to find a remedy for it; after which the assembly was dismissed.

The next day, the consuls, greatly alarmed at this commotion, and apprehending from the menaces of Brutus some very mischievous event, thought it advisable to convene the senators, that they might consider of the best means to avert the impending evil. The fathers could not agree in opinion. Some were for employing soft words and fair promises to quiet and gain over the most turbulent. But Appius's advice prevailed: which was, that the consuls should call the people together, assure them that the patricians had not brought upon them the miseries they suffered, and promise, on the part of the senate, all possible care to provide for their necessities; but at the same time should reprove the disturbers of the public peace, and threaten them with the severest punishments if they did not amend their behaviour.

When the consuls, towards the close of the day, having assembled the people, would have signified to them the disposition and intention of the senate, they were interrupted by the tribunes. A dispute ensued,

in which no order or decency was observed on either side. Several speaking at the same time, and with great vociferation, no one could be well understood by the audience. The consuls judged, that being the superior magistrates, their authority extended to all assemblies of the citizens. On the other side, it was pretended, that the assemblies of the people were the province of the tribunes, as the senate was that of the consuls.

The dispute grew warm, and both parties were ready to come to blows; when Brutus having put some questions to the consuls, ended it for that time. Next day he proposed a law which was carried, that no person whatever should interrupt a tribune when speaking in an assembly of the people; by which means the influence and power of the popular party was considerably increased, and the tribunes became formidable opponents to the consuls and patricians. An opportunity soon offered for both parties to try their strength. A great fleet of ships laden with corn from Sicily, a great part of which was a present from Gelon the king of that country to the Romans, and the rest purchased by the senate with the public money, raised their spirits once more.

But Coriolanus incurred their resentment, by insisting that it should not be distributed till the grievances of the senate were removed. For this, the tribunes summoned him to a trial before the people, under pretence that he aspired at the sovereignty.

When the appointed day was come, all persons were filled with the greatest expectations, and a vast concourse from the adjacent country assembled and filled up the forum. Coriolanus, upon this, presented himself before the people with a degree of intrepidity that merited better fortune. His graceful person, his persuasive eloquence, the cries of those whom he had saved from the enemy, inclined the auditors to relent. But being confounded with a new charge which he did not expect, of having embezzled the plunder of Antium, the tribunes immediately took the votes, and Coriolanus was condemned to perpetual exile.

This sentence against their bravest defender struck the whole body of the senate with sorrow, consternation, and regret. Coriolanus alone, in the midst of the tumult, seemed an unconcerned spectator. He returned home, followed by the lamentations of hundreds of the most respectable senators and citizens of Rome, to take a lasting leave of his wife, his children, and his mother Veturia. Thus recommending his little children to their care, he left the city, without followers or fortune, to take refuge with Tullus Attius, a man of great power among the Volscians, who took him under his protection, and espoused his quarrel.

The first thing to be done, was to induce the Volsci to break the league which had been made with Rome; and for this purpose Tullus sent many of his citizens thither, in order to see some games at that time celebrating; but at the same time gave the senate private information, that the strangers had dangerous intentions of burning the city. This had the desired effect; the senate issued an order that all strangers, whoever they were, should depart from Rome before sunset. This order Tullus represented to his countrymen as an infraction of the treaty, and procured an embassy to Rome, complaining of the breach, and demanding back all the territories

95
The power of the people increased.

96
Coriolanus banished.

97
He leaves the city, and joins the Volsci.

Rome. territories belonging to the Volscians, of which they had been violently dispossessed; declaring war in case of a refusal: but this message was treated by the senate with contempt.

98
Gains great advantages over the Romans.

War being thus declared on both sides, Coriolanus and Tullus were made generals of the Volscians: and accordingly invaded the Roman territories, ravaging and laying waste all such lands as belonged to the plebeians, but letting those of the senators remain untouched. In the mean time, the levies went on very slowly at Rome; the two consuls, who were re-elected by the people, seemed but little skilled in war, and even feared to encounter a general whom they knew to be their superior in the field. The allies also showed their fears, and slowly brought in their succours; so that Coriolanus continued to take their towns one after the other. Fortune followed him in every expedition; and he was now so famous for his victories, that the Volsci left their towns defenceless to follow him into the field. The very soldiers of his colleague's army came over to him, and would acknowledge no other general. Thus finding himself unopposed in the field, and at the head of a numerous army, he at length invested the city of Rome itself, fully resolved to besiege it. It was then that the senate and the people unanimously agreed to send deputies to him, with proposals of restoration, in case he should draw off his army. Coriolanus received their proposals at the head of his principal officers, and, with the sternness of a general that was to give the law, refused their offers.

99
Invests the city.

Another embassy was now sent forth, conjuring him not to exact from his native city aught but what became Romans to grant. Coriolanus, however, still persisted in his former demands, and granted them but three days in which to finish their deliberations. In this exigence, all that was left was another deputation still more solemn than either of the former, composed of the pontiffs, the priests, and the augurs. These, clothed in their habits of ceremony, and with a grave and mournful deportment, issued from the city, and entered the camp of the conqueror: but all in vain, they found him severe and inflexible as before.

100
But abandons the enterprise at the intercession of his mother.

When the people saw them return ineffectually, they began to give up the commonwealth as lost. Their temples were filled with old men, with women and children, who, prostrate at their altars, put up their ardent prayers for the preservation of their country. Nothing was to be heard but anguish and lamentation, nothing to be seen but scenes of affright and distress. At length it was suggested to them, that what could not be effected by the intercession of the senate or the adjuration of the priests, might be brought about by the tears of his wife, or the commands of his mother. This deputation seemed to be relished by all; and even the senate itself gave it the sanction of their authority. Veturia, the mother of Coriolanus, at first made some hesitation to undertake so pious a work: however, she at last undertook the embassy, and set forward from the city, accompanied by many of the principal matrons of Rome, with Volturnia his wife, and his two children. Coriolanus, who at a distance, discovered this mournful train of females, was resolved to give them a denial, and called his officers round him to be witness of his resolution; but, when told that his mother and his wife were among the number, he instantly came down from

his tribunal to meet and embrace them. At first, the women's tears and embraces took away the power of words; and the rough soldier himself, hard as he was, could not refrain from sharing in their distress. Coriolanus now seemed much agitated by contending passions; while his mother, who saw him moved, seconded her words by the most persuasive eloquence, her tears: his wife and children hung round him, intreating for protection and pity; while the fair train, her companions, added their lamentations, and deplored their own and their country's distress. Coriolanus for a moment was silent, feeling the strong conflict between honour and inclination: at length, as if roused from his dream, he flew to take up his mother, who had fallen at his feet, crying out, "O my mother, thou hast saved Rome, but lost thy son." He accordingly gave orders to draw off the army, pretending to the officers that the city was too strong to be taken. Tullus, who had long envied his glory, was not remiss in aggravating the lenity of his conduct to his countrymen. Upon their return, Coriolanus was slain in an insurrection of the people, and afterwards honourably buried, with late and ineffectual repentance.

Rome.
101
Is assassinated by the Volsci.

The year following, the two consuls of the former year, Manlius and Fabius, were cited by the tribunes to appear before the people. The Agrarian law, which had been proposed some time before, for equally dividing the lands of the commonwealth among the people, was the object invariably pursued, and they were accused of having made unjustifiable delays in putting it off.

102
New disturbances.

It seems the Agrarian law was a grant the senate could not think of giving up to the people. The consuls, therefore, made many delays and excuses, till at length they were once more obliged to have recourse to a dictator; and they fixed upon Quintus Cincinnatus, a man who had for some time given up all views of ambition, and retired to his little farm, where the deputies of the senate found him holding the plough, and dressed in the mean attire of a labouring husbandman. He appeared but little elevated with the addresses of ceremony and the pompous habits they brought him; and, upon declaring to him the senate's pleasure, he testified rather a concern that his aid should be wanted. However, he departed for the city, where both parties were strongly inflamed against each other: but he was resolved to side with neither; only, by a strict attention to the interests of his country, instead of gaining the confidence of faction, to obtain the esteem of all. Thus, by threats and well-timed submission, he prevailed upon the tribunes to put off their law for a time, and carried himself so as to be a terror to the multitude whenever they refused to enlist; and their greatest encourager whenever their submission deserved it. Thus, having restored that tranquillity to the people which he so much loved himself, he again gave up the splendors of ambition, to enjoy it with a greater relish in his little farm.

103
Quelled by Cincinnatus.

Cincinnatus was not long retired from his office when a fresh exigence of the state once more required his assistance. The Æqui and the Volsci, who, though still worsted, still were for renewing the war, made new inroads into the territories of Rome. Minutius, one of the consuls who succeeded Cincinnatus, was sent to oppose them; but being naturally timid, and rather more

Rome.
104
who saves
a consular
army from
destruction

afraid of being conquered than desirous of victory, his army was driven into a defile between two mountains, from which, except through the enemy, there was no egress. This, however, the Æqui had the precaution to fortify; by which the Roman army was so hemmed in on every side, that nothing remained but submission to the enemy, famine, or immediate death. Some knights, who found means of getting away privately through the enemy's camp, were the first that brought the account of this disaster to Rome. Nothing could exceed the consternation of all ranks of people when informed of it. The senate at first thought of the other consul; but not having sufficient experience of his abilities, they unanimously turned their eyes upon Cincinnatus, and resolved to make him dictator. Cincinnatus, the only person on whom Rome could now place her whole dependence, was found, as before, by the messengers of the senate, labouring in his little field with cheerful industry. He was at first astonished at the ensigns of unbounded power with which the deputies came to invest him; but still more at the approach of the principal of the senate, who came out to meet him. A dignity so unlooked for, however, had no effect upon the simplicity or the integrity of his manners; and being now possessed of absolute power, and called upon to nominate his master of the horse, he chose a poor man named *Tarquinius*, one who, like himself, despised riches when they led to dishonour. Upon entering the city, the dictator put on a serene look, and intreated all those who were able to bear arms to repair before sunset to the Campus Martius (the place where the levies were made) with necessary arms, and provisions for five days. He put himself at the head of these; and, marching all night with great expedition, he arrived before day within sight of the enemy. Upon his approach, he ordered his soldiers to raise a loud shout, to apprise the consul's army of the relief that was at hand. The Æqui were not a little amazed when they saw themselves between two enemies; but still more when they perceived Cincinnatus making the strongest entrenchments beyond them, to prevent their escape, and inclosing them as they had inclosed the consul. To prevent this, a furious combat ensued; but the Æqui, being attacked on both sides, and unable to resist or fly, begged a cessation of arms. They offered the dictator his own terms: he gave them their lives; but obliged them, in token of servitude, to pass under the yoke, which was two spears set upright, and another across, in the form of a gallows, beneath which the vanquished were to march. Their captains and generals he made prisoners of war, being reserved to adorn his triumph. As for the plunder of the enemy's camp, that he gave entirely up to his own soldiers, without reserving any part for himself, or permitting those of the delivered army to have a share. Thus, having rescued a Roman army from inevitable destruction, having defeated a powerful enemy, having taken and fortified their city, and, still more, having refused any part of the spoil, he resigned his dictatorship, after having enjoyed it but 14 days. The senate would have enriched him; but he declined their proffers, choosing to retire once more to his farm and his cottage, content with temperance and fame.

But this repose from foreign invasion did not lessen the tumults of the city within. The clamours for the

Agrarian law still continued, and still more fiercely, when *Sicinius Dentatus*, a plebeian, advanced in years, but of an admirable person and military deportment, came forward, to enumerate his hardships and his merits. This old soldier made no scruple of extolling the various merits of his youth; but indeed his achievements supported ostentation. He had served his country in the wars 40 years; he had been an officer 30, first a centurion, and then a tribune: he had fought 120 battles, in which, by the force of his single arm, he had saved a multitude of lives: he had gained 14 civic, three mural, and eight golden crowns, besides 83 chains, 60 bracelets, 18 gilt spears, and 23 horse-trappings, whereof nine were for killing the enemy in single combat: moreover, he had received 45 wounds, all before, and none behind. These were his honours: yet, notwithstanding all this, he had never received any share of those lands which were won from the enemy, but continued to drag on a life of poverty and contempt; while others were possessed of those very territories which his valour had won, without any merit to deserve them, or ever having contributed to the conquest. A case of so much hardship had a strong effect upon the multitude; they unanimously demanded that the law might be passed, and that such merit should not go unrewarded. It was in vain that some of the senators rose up to speak against it; their voices were drowned by the cries of the people. When reason, therefore, could no longer be heard, passion, as usual, succeeded; and the young patricians, running furiously into the throng, broke the balloting urns, and dispersed the multitude that offered to oppose them. For this they were some time after fined by the tribunes; but their resolution, nevertheless, for the present, put off the Agrarian law.

The commonwealth of Rome had now for near 60 years been fluctuating between the contending orders that composed it, till at length, each side, as if weary, were willing to respire a while from the mutual exertions of their claims. The citizens, now, therefore, of every rank, began to complain of the arbitrary decisions of their magistrates, and wished to be guided by a written body of laws, which being known might prevent wrongs as well as punish them. In this both the senate and the people concurred, as hoping that such laws would put an end to the commotions that so long had harassed the state. It was thereupon agreed, that ambassadors should be sent to the Greek cities in Italy, and to Athens, to bring home such laws from thence as by experience had been found most equitable and useful. For this purpose, three senators, *Posthumius*, *Sulpicius*, and *Manlius*, were fixed upon, and galleys assigned to convoy them, agreeable to the majesty of the Roman people. While they were upon this commission abroad, a dreadful plague depopulated the city at home, and supplied the interval of their absence with other anxiety than that of wishes for their return. In about a year the plague ceased, and the ambassadors returned, bringing home a body of laws, collected from the most civilized states of Greece and Italy, which being afterwards formed into ten tables, and two more being added, made that celebrated code called the *Laws of the Twelve Tables*, many fragments of which remain to this day.

The ambassadors were no sooner returned, than the Decemviri tribunes elected

Rome.
105
Bravery of
*Sicinius
Dentatus*.

106
Violent dis-
turbances.

107
Ambassa-
dors sent to
Athens to
bring new
laws from
thence.

108

Rome. tribunes required that a body of men should be chosen to digest their new laws into proper form, and to give weight to the execution of them. After long debates whether this choice should not be partly made from the people as well as the patricians, it was at last agreed that 10 of the principal senators should be elected, whose power, continuing for a year, should be equal to that of kings and consuls, and that without any appeal. The persons chosen were Appius and Genutius, who had been elected consuls for the ensuing year; Posthumius, Sulpicius, and Manlius, the three ambassadors; Sextus and Romulus, former consuls; with Julius Veturius, and Horatius, senators of the first consideration.

The decemviri being now invested with absolute power, agreed to take the reins of government by turns, and that each should dispense justice for a day.

109 They become absolute. These magistrates, for the first year, wrought with extreme application; and their work being finished, it was expected that they would be contented to give up their offices; but having known the charms of power, they were now unwilling to resign it: they therefore pretended that some laws were yet wanting to complete their design, and intreated the senate for a continuance of their offices; to which that body assented.

But they soon threw off the mask of moderation; and, regardless either of the approbation of the senate or the people, resolved to continue themselves, against all order, in the decemvirate. A conduct so notorious produced discontents; and these were as sure to produce fresh acts of tyranny. The city was become almost a desert, with respect to all who had any thing to lose; and the decemvirs rapacity was then only discontinued, when they wanted fresh objects to exercise it upon. In this state of slavery, proscription, and mutual distrust, not one citizen was found to strike for his country's freedom; these tyrants continued to rule without controul, being constantly guarded, not with their lictors alone, but a numerous crowd of dependents, clients, and even patricians, whom their vices had confederated round them.

110 Invasion of the Æqui and Volsci. In this gloomy situation of the state, the Æqui and Volsci, those constant enemies of the Romans, undertook their incursions, resolved to profit by the intestine divisions of the people, and advanced within about 10 miles of Rome.

But the decemviri, being put in possession of all the military as well as of the civil power, divided their army into three parts; whereof one continued with Appius in the city, to keep it in awe; the other two were commanded by his colleagues, and were led, one against the Æqui, and the other against the Sabines. The Roman soldiers had now got into a method of punishing the generals whom they disliked, by suffering themselves to be vanquished in the field. They put it in practice upon this occasion, and shamefully abandoned their camp upon the approach of the enemy. Never was the news of a victory more joyfully received at Rome than the tidings of this defeat: the generals, as is always the case, were blamed for the treachery of their men: some demanded that they should be deposed; others cried out for a dictator to lead the troops to conquest: but among the rest, old Sicinius Dentatus the tribune spoke his sentiments

111 The Romans defeated.

Rome. with his usual openness; and treating the generals with contempt, showed all the faults of their discipline in the camp, and of their conduct in the field. Appius, in the mean time, was not remiss in observing the disposition of the people. Dentatus, in particular, was marked out for vengeance, and, under pretence of doing him particular honour, he was appointed legate, and put at the head of the supplies which were sent from Rome to reinforce the army. The office of legate was held sacred among the Romans, as in it were united the authority of a general, with the reverence due to the priesthood. Dentatus, no way suspecting his design, went to the camp with alacrity, where he was received with all the external marks of respect. But

112 Murder of Sicinius Dentatus. the generals soon found means of indulging their desire of revenge. He was appointed at the head of 100 men to go and examine a more commodious place for encampment, as he had very candidly assured the commanders that their present situation was wrong. The soldiers, however, who were given as his attendants, were assassins; wretches who had long been ministers of the vengeance of the decemviri, and who now engaged to murder him, though with all those apprehensions which his reputation, as he was called the *Roman Achilles*, might be supposed to inspire. With these designs, they led him from the way into the hollow bosom of a retired mountain, where they began to set upon him from behind. Dentatus, now too late, perceived the treachery of the decemviri, and was resolved to sell his life as dearly as he could; he therefore put his back to a rock, and defended himself against those who pressed most closely. Though now grown old, he had still the remains of his former valour, and killed no less than 15 of the assailants, and wounded 30. The assassins now therefore, terrified at his amazing bravery, showered in their javelins upon him at a distance; all which he received in his shield with undaunted resolution. The combat, though so unequal in numbers, was managed for some time with doubtful success, till at length his assailants bethought themselves of ascending the rock against which he stood, and thus poured down stones upon him from above. This succeeded; the old soldier fell beneath their united efforts, after having shown by his death that he owed it to his fortitude, and not his fortune, that he had come off so many times victorious. The decemviri pretended to join in the general sorrow for so brave a man, and decreed him a funeral, with the first military honours: but the greatness of their apparent distress, compared with their known hatred, only rendered them still more detestable to the people.

113 Tragical story of Virginia. But a transaction still more atrocious than the former served to inspire the citizens with a resolution to break all measures of obedience, and at last to restore freedom. Appius, who still remained at Rome, sitting one day on his tribunal to dispense justice, saw a maiden of exquisite beauty, and aged about 15, passing to one of the public schools, attended by a matron her nurse. Conceiving a violent passion for her, he resolved to obtain the gratification of his desire, whatever should be the consequence, and found means to inform himself of her name and family. Her name was *Virginia*, the daughter of Virginius a centurion, then with the army in the field; and she had been contracted to Icilius, formerly a tribune of the people, who had agreed to marry her at the end of the

Rome.

the present campaign. Appius, at first, resolved to break this match, and to espouse her himself: but the laws of the Twelve Tables had forbidden the patricians to intermarry with the plebeians; and he could not infringe these, as he was the enacter of them. Nothing therefore remained but a criminal enjoyment; which, as he was long used to the indulgence of his passions, he resolved to obtain. After having vainly tried to corrupt the fidelity of her nurse, he had recourse to another expedient, still more guilty. He pitched upon one Claudius, who had long been the minister of his pleasures, to assert the beautiful maid was his slave, and to refer the cause to his tribunal for decision. Claudius behaved exactly according to his instructions; for entering into the school, where Virginia was playing among her female companions, he seized upon her as his property, and was going to drag her away by force, but was prevented by the people drawn together by her cries. At length, after the first heat of opposition was over, he led the weeping virgin to the tribunal of Appius, and there plausibly exposed his pretensions. He asserted, that she was born in his house, of a female slave, who sold her to the wife of Virginius, who had been barren. That he had several credible evidences to prove the truth of what he said; but that, until they could come together, it was but reasonable the slave should be delivered into his custody, being her proper master. Appius seemed to be struck with the justice of his claims. He observed, that if the reputed father himself were present, he might indeed be willing to delay the delivery of the maiden for some time; but that it was not lawful for him, in the present case, to detain her from her master. He therefore adjudged her to Claudius, as his slave, to be kept by him till Virginius should be able to prove his paternity. This sentence was received with loud clamours and reproaches by the multitude: the women, in particular, came round Virginia, as if willing to protect her from the judge's fury; while Icilius, her lover, boldly opposed the decree, and obliged Claudius to take refuge under the tribunal of the decemvir. All things now threatened an open insurrection; when Appius, fearing the event, thought proper to suspend his judgment till the arrival of Virginius, who was then about 11 miles from Rome, with the army. The day following was fixed for the trial; and, in the mean time, Appius sent letters to the generals to confine Virginius, as his arrival in town might only serve to kindle sedition among the people. These letters, however, were intercepted by the centurion's friends, who sent him down a full relation of the design laid against the liberty and the honour of his only daughter. Virginius, upon this, pretending the death of a near relation, got permission to leave the camp, and flew to Rome, inspired with indignation and revenge. Accordingly, the next day he appeared before the tribunal, to the astonishment of Appius, leading his weeping daughter by the hand, both habited in the deepest mourning. Claudius, the accuser, was also there, and began by making his demand. Virginius next spoke in turn: he represented that his wife had many children; that she had been seen pregnant by numbers; that, if he had intentions of adopting a supposititious child, he would have fixed upon a boy rather than a girl; that it was notorious to all, that his wife had herself suckled her own child; and that it was surprising such a claim

should be now revived, after a 15 years discontinuance. While the father spoke this with a stern air, Virginia stood trembling by, and, with looks of persuasive innocence, added weight to all his remonstrances. The people seemed entirely satisfied of the hardship of his case, till Appius, fearing what he said might have dangerous effects upon the multitude, interrupted him, under a pretence of being sufficiently instructed in the merits of the cause, and finally adjudged her to Claudius, ordering the lictors to carry her off. The lictors, in obedience to his command, soon drove off the throng that pressed round the tribunal; and now they seized upon Virginia, and were delivering her up into the hands of Claudius, when Virginius, who found that all was over, seemed to acquiesce in the sentence. He therefore mildly intreated Appius to be permitted to take a last farewell of one whom he had long considered as his child; and so satisfied, he would return to his duty with fresh alacrity. With this the decemvir complied, but upon condition that their endearments should pass in his presence. Virginius, with the most poignant anguish, took his almost expiring daughter in his arms, for a while supported her head upon his breast, and wiped away the tears that rolled down her lovely visage: and happening to be near the shops that surrounded the forum, he snatched up a knife that lay on the shambles, and buried the weapon in her breast; then holding it up, reeking with the blood of his daughter, "Appius (he cried) by this blood of innocence, I devote thy head to the infernal gods." Thus saying, with the bloody knife in his hand, and threatening destruction to whomsoever should oppose him, he ran through the city, wildly calling upon the people to strike for freedom, and from thence went to the camp, in order to spread a like flame through the army.

He no sooner arrived at the camp, followed by a number of his friends, but he informed the army of all that was done, still holding the bloody knife in his hand. He asked their pardon, and the pardon of the gods, for having committed so rash an action, but ascribed it all to the dreadful necessity of the times. The army, already predisposed, immediately with shouts echoed their approbation; and decamping, left their generals behind, to take their station once more upon Mount Aventine, whither they had retired about 40 years before. The other army, which had been to oppose the Sabines, seemed to feel a like repentment, and came over in large parties to join them.

Appius, in the mean time, did all he could to quell the disturbances in the city; but finding the tumult incapable of controul, and perceiving that his mortal enemies, Valerius and Horatius, were the most active in opposition, at first attempted to find safety by flight; nevertheless, being encouraged by Oppius, who was one of his colleagues, he ventured to assemble the senate, and urged the punishment of all deserters. The senate, however, were far from giving him the relief he sought for; they foresaw the dangers and miseries that threatened the state, in case of opposing the incensed army; they therefore dispatched messengers to them, offering to restore their former mode of government. To this proposal all the people joyfully assented, and the army gladly obeyed. Appius, and Oppius one of his colleagues, both died by their own hands in prison. The

Rome.

114
The decemvirate abolished.

Rome. other eight decemvirs went into voluntary exile; and Claudius, the pretended master of Virginia, was driven out after them.

115 New distur-
bances. The tribunes now grew more turbulent: they proposed two laws; one to permit plebeians to intermarry with patricians; and the other, to permit them to be admitted to the consulship also. The senators received these proposals with indignation, and seemed resolved to undergo the utmost extremities rather than submit to enact them. However, finding their resistance only increase the commotions of the state, they at last consented to pass the law concerning intermarriages, hoping that this concession would satisfy the people. But they were to be appeased but for a very short time: for, returning to their old custom of refusing to enlist upon the approach of an enemy, the consuls were forced to hold a private conference with the chief of the senate; where, after many debates, Claudius proposed an expedient as the most probable means of satisfying the people in the present conjuncture. This was, to create six or eight governors in the room of consuls, whereof one half at least should be patricians. This project was eagerly embraced by the people; yet so fickle were the multitude, that though many of the plebeians stood, the choice wholly fell upon the patricians who offered themselves as candidates. These new magistrates were called *military tribunes*; they were at first but three, afterwards they were increased to four, and at length to six. They had the power and ensigns of consuls; yet that power being divided among a number, each singly was of less authority. The first that were chosen only continued in office about three months, the augurs having found something amiss in the ceremonies of their election.

116 Military
tribunes
elected.

217
The office
of censor
instituted.

The military tribunes being deposed, the consuls once more came into office; and, in order to lighten the weight of business which they were obliged to sustain, a new office was erected, namely, that of *censors*, to be chosen every fifth year. Their business was to take an estimate of the number and estates of the people, and to distribute them into their proper classes; to inspect into the lives and manners of their fellow-citizens; to degrade senators for misconduct; to dismount knights; and to turn down plebeians from their tribes into an inferior, in case of misdemeanour. The two first censors were Papirius and Sempronius, both patricians; and from this order they continued to be elected for near 100 years.

This new creation served to restore peace for some time among the orders; and the triumph gained over the Volscians, by Geganius the consul, added to the universal satisfaction that reigned among the people.

This calm, however, was but of short continuance: for, some time after, a famine pressing hard upon the poor, the usual complaints against the rich were renewed; and these, as before, proving ineffectual, produced new seditions. The consuls were accused of neglect in not having laid in proper quantities of corn: they, however, disregarded the murmurs of the populace, content with exerting all their care in attempts to supply the pressing necessities. But though they did all that could be expected from active magistrates, in providing and distributing provisions to the poor; yet Spurius Mælius, a rich knight, who had bought up all the corn of Tuscany, by far outshone them in liberality. This dema-

118
Distur-
bances by
Mælius a
knight,

gogue, inflamed with a secret desire of becoming powerful by the contentions in the state, distributed corn in great quantities among the poorer sort each day, till his house became the asylum of all such as wished to exchange a life of labour for one of lazy dependence. When he had thus gained a sufficient number of partisans, he procured large quantities of arms to be brought into his house by night, and formed a conspiracy, by which he was to obtain the command, while some of the tribunes, whom he had found means to corrupt, were to act under him, in seizing upon the liberties of his country. Minucius soon discovered the plot; and informing the senate thereof, they immediately formed the resolution of creating a dictator, who should have the power of quelling the conspiracy without appealing to the people. Cincinnatus, who was now 80 years old, was chosen once more to rescue his country from impending danger. He began by summoning Mælius to appear; who refused to obey. He next sent Ahala, his master of the horse, to force him; who, meeting him in the forum, and pressing Mælius to follow him to the dictator's tribunal, upon his refusal Ahala killed him upon the spot. The dictator applauded the resolution of his officer, and commanded the conspirator's goods to be sold, and his house to be demolished, distributing his stores among the people.

The tribunes of the people were much enraged at the death of Mælius; and, in order to punish the senate, at the next election, instead of consuls, insisted upon restoring their military tribunes. With this the senate were obliged to comply. The next year, however, the government returned to its ancient channel, and consuls were chosen.

The Veientes had long been the rivals of Rome; they had ever taken the opportunity of its internal distresses to ravage its territories, and had even threatened its ambassadors, sent to complain of these injuries, with outrage. In war they had been extremely formidable, and had cut off almost all the Fabian family; who, to the number of 306 persons, had voluntarily undertaken to defend the frontiers against their incursions. It seemed now therefore determined, that the city of Veii, whatever it should cost, was to fall; and the Romans accordingly sat regularly down before it, prepared for a long and painful resistance. The strength of the place, or the unskilfulness of the besiegers, may be inferred from the continuance of the siege, which lasted for 10 years; during which time the army continued encamped round it, lying in winter under tents made of the skins of beasts, and in summer driving on the operations of the attack. Various was the success, and many were the commanders that directed the siege: sometimes all the besiegers works were destroyed, and many of their men cut off by sallies from the town; sometimes they were annoyed by an army of Veians, who attempted to bring assistance from without. A siege so bloody seemed to threaten depopulation to Rome itself, by draining its forces continually away; so that a law was obliged to be made for all the bachelors to marry the widows of the soldiers who were slain. In order to carry it on with greater vigour, Furius Camillus was created dictator, and to him was intrusted the sole power of managing the long protracted war. Camillus, who, without intrigue or any solicitation had raised himself to the first eminence

Rome.

119
who is
killed.

120
The de-
struction
of Veii re-
solved.

Rome.

eminence in the state, had been made one of the cen-
sors some time before, and was considered as the head
of that office; he was afterwards made a military tri-
bune, and had in this post gained several advantages
over the enemy. It was his great courage and abilities
in the above offices that made him thought most worthy
to serve his country on this pressing occasion. Upon
his appointment, numbers of the people flocked to his
standard, confident of success under so experienced a
commander. Conscious, however, that he was unable
to take the city by storm, he secretly wrought a mine
into it with vast labour, which opened into the midst of
the citadel. Certain thus of success, and finding the city
incapable of relief, he sent to the senate, desiring that
all who chose to share in the plunder of Veii should im-
mediately repair to the army. Then giving his men
directions how to enter at the breach, the city was in-
stantly filled with his legions, to the amazement and
consternation of the besieged, who, but a moment be-
fore, had rested in perfect security. Thus, like a second
Troy, was the city of Veii taken, after a ten years
siege, and with its spoils enriched the conquerors;
while Camillus himself, transported with the honour of
having subdued the rival of his native city, triumphed
after the manner of the kings of Rome, having his
chariot drawn by four milk-white horses; a distinction
which did not fail to disgust the majority of the specta-
tors, as they considered those as sacred, and more proper
for doing honour to their gods than their generals.

121
Is taken by
Camillus.

122
His genero-
sity to the
Falisci.

His usual good fortune attended Camillus in another
expedition against the Falisci; he routed their army,
and besieged their capital city Falerii, which threatened
a long and vigorous resistance. Here a schoolmaster,
who had the care of the children belonging to the
principal men of the city, having found means to de-
coy them into the Roman camp, offered to put them
into the hands of Camillus, as the surest means of in-
ducing the citizens to a speedy surrender. The ge-
neral was struck with the treachery of a wretch whose
duty it was to protect innocence, and not to betray
it; and immediately ordered him to be stripped, his
hands tied behind him, and in that ignominious man-
ner to be whipped into the town by his own scholars.
This generous behaviour in Camillus effected more
than his arms could do: the magistrates of the town
immediately submitted to the senate, leaving to Ca-
millus the conditions of their surrender; who only
fined them in a sum of money to satisfy his army, and
received them under the protection and into the alliance
of Rome.

Notwithstanding the veneration which the virtues of
Camillus had excited abroad, they seemed but little
adapted to bring over the respect of the turbulent tri-
bunes at home, as they raised some fresh accusation
against him every day. To their other charges they
added that of his having concealed a part of the plun-
der of Veii, particularly two brazen gates, for his own
use; and appointed him a day on which to appear be-
fore the people. Camillus, finding the multitude ex-
asperated against him upon many accounts, detesting
their ingratitude, resolved not to wait the ignominy
of a trial; but, embracing his wife and children, pre-
pared to depart from Rome. He had already passed
as far as one of the gates, unattended on his way, and
unlamented. There he could suppress his indignation

no longer; but, turning his face to the capitol, and
lifting up his hands to heaven, intreated all the gods
that his country might one day be sensible of their
injustice and ingratitude; and so saying, he passed for-
ward to take refuge at Ardea, where he afterwards
learned that he had been fined 1500 ases by the tri-
bunes at home.

Rome.

123
He goes in-
to volun-
tary exile.

The Romans indeed soon had reason to repent their
usage of Camillus; for now a more formidable enemy
than ever they had met with threatened the republic:
an inundation of Gauls, leaving their native woods, un-
der the command of one Brennus, wasted every thing
with fire and sword. It is said that one Cœditiuſ, a
man of the lowest rank, pretended to have heard a mi-
raculous voice, which pronounced distinctly these words:
“Go to the magistrates, and tell them that the Gauls
draw near.” The meanness of the man made his warn-
ing despised; though, when the event showed the truth
of his prediction, Camillus erected a temple to the un-
known Deity, and the Romans invented for him the
name of *Aius Locutius*. Messenger after messenger ar-
rived with the news of the progress and devastations of
the Gauls; but the Romans behaved with as much se-
curity as if it had been impossible for them to have felt
the effects of their depredations. At last envoys ar-
rived at Rome, imploring the assistance of the republic
against an army of Gauls, which had made an irruption
into Italy, and now besieged their city. The occasion
of the irruption and siege was this: Arunx, one of the
chief men of Clusium in Hetruria, had been guardian
to a young lucumo, or lord of a lucumony, and had
educated him in his house from his infancy. The lu-
cumo, as soon as he was of an age to feel the force of
passion, fell in love with his guardian's wife; and,
upon the first discovery of their intrigue, conveyed her
away. Arunx endeavoured to obtain reparation for the
injury he had received; but the lucumo, by his interest
and money, gained over the magistrates: so that the in-
jured guardian, finding no protectors in Hetruria, re-
solved to make his application to the Gauls. The people
among all the Celtic nations, to whom he chose to ad-
dress himself, were the Senones; and, in order to en-
gage them in his quarrel, he acquainted them with the
great plenty of Italy, and made them taste of some Ita-
lian wines. Upon this the Senones resolved to follow
him; and a numerous army was immediately formed,
which passing the Alps, under the conduct of their He-
trurian guide, and leaving the Celtæ in Italy unmolested,
fell upon Umbria, and possessed themselves of all the
country from Ravenna to Picenum. They were about
six years in settling themselves in their new acquisitions,
while the Romans were carrying on the siege of Veii.
At length Arunx brought the Senones before Clusium,
in order to besiege that place, his wife and her lover
having shut themselves up there.

124
Italy inva-
ded by the
Gauls.

125
Occasion of
their inva-
sion.

The senate, being unwilling to engage in an open
war with a nation which had never offended them, sent
an embassy of three young patricians, all brothers, and
of the Fabian family, to bring about an accommodation
between the two nations. These ambassadors, being ar-
rived at the camp of the Gauls, and conducted into the
council, offered the mediation of Rome; and demanded
of Brennus, the leader of the Gauls, What injury the
Clusini had done him; or what pretensions any people
from a remote country could have upon Hetruria?

126
Brennus.

Rome. Brennus answered proudly, that his right lay in his sword, and that all things belonged to the brave; but that, without having recourse to this primitive law of nature, he had a just complaint against the Clusians, who, having more lands than they could cultivate, had refused to yield to him those they left untill'd: And what other motives had you yourselves, Romans (said he), to conquer so many neighbouring nations? You have deprived the Sabines, the Albans, the Fidenates, the Æqui, and the Volsci, of the best part of their territories. Not that we accuse you of injustice; but it is evident, that you thought this to be the prime and most ancient of all laws, to make the weak give way to the strong. Forbear therefore to interest yourselves for the Clusini, or allow us to take the part of the people you have subdued."

127
Imprudent conduct of the ambassadors.

The Fabii were highly provoked at so haughty an answer; but, dissembling their resentment, desired leave to go into the town, under pretence of conferring with the magistrates. But they were no sooner there, than they began to stir up the inhabitants to a vigorous defence; nay, forgetting their character, they put themselves at the head of the besieged in a sally, in which Q. Fabius, the chief of the ambassadors, slew with his own hand one of the principal officers of the Gauls. Hereupon Brennus, calling the gods to witness the perfidiousness of the Romans, and their violating the law of nations, immediately broke up the siege of Clusium, and marched leisurely to Rome, having sent a herald before him to demand that those ambassadors, who had so manifestly violated the law of nations, should be delivered up to him. The Roman senate was greatly perplexed between their regard for the law of nations and their affection for the Fabii. The wisest of the senate thought the demand of the Gauls to be but just and reasonable: however, as it concerned persons of great consequence and credit, the conscript fathers referred the affair to the people assembled by curiæ. As the Fabian family was very popular, the curiæ were so far from condemning the three brothers, that, at the next election of military tribunes, they were chosen the first. Brennus, looking upon the promotion of the Fabii as a high affront on his nation, hastened his march to Rome.

128
The Gauls require them to be delivered up to them, but are refused.

As his army was very numerous, the inhabitants of the towns and villages through which he passed left their habitations at his approach; but he stopped nowhere, declaring that his design was only to be revenged on the Romans. The six military tribunes, to wit, Q. Fabius, Cæso Fabius, Caius Fabius, Q. Sulpitius, Q. Servilius, and Sextus Cornelius, marched out of Rome at the head of 40,000 men, without either sacrificing to the gods or consulting the auspices; essential ceremonies among a people that drew their courage and confidence from the propitious signs which the augurs declared to them. As most of the military tribunes were young, and men of more valour than experience, they advanced boldly against the Gauls, whose army was 70,000 strong. The two armies met near the river Allia, about 60 furlongs from Rome. The Romans that they might not be surrounded by the enemy, extended their wings so far as to make their centre very thin. Their best troops, to the number of 24,000 men, they posted between the river and the adjoining hills; the rest they placed on the hills. The Gauls first

129
The Romans entirely defeated.

attacked the latter, who being soon put into confusion, the forces in the plain were struck with such terror that they fled without drawing their swords. In this general disorder, most of the soldiers, instead of returning to Rome, fled to Veii: some were drowned as they endeavoured to swim across the Tiber; many fell in the pursuit by the sword of the conquerors; and some got to Rome, which they filled with terror and consternation, it being believed there that all the rest were cut off. The day after the battle, Brennus marched his troops into the neighbourhood of Rome, and encamped on the banks of the Anio. Thither his scouts brought him word, that the gates of the city lay open, and that not one Roman was to be seen on the ramparts. This made him apprehensive of some ambuscade, it being unreasonable to suppose that the Romans would abandon their city to be plundered and sacked without making any resistance. On this consideration he advanced slowly, which gave the Romans an opportunity to throw into the Capitol all the men who were fit to bear arms. They carried into it all the provisions they could get; and, that they might last the longer, admitted none into the place but such as were capable of defending it.

130
They retire into the Capitol.

As for the city, they had not sufficient forces to defend it; and therefore the old men, women, and children, seeing themselves abandoned, fled to the neighbouring towns. The Vestals, before they left Rome, took care to hide every thing appropriated to the gods which they could not carry off. The two palladiums, and the sacred fire, they took with them. When they came to the Janiculus, one Albinus, a plebeian, who was conveying his wife and children in a carriage to a place of safety, seeing the sacred virgins bending under their load, and their feet bloody, made his family alight, put the priestesses and their gods into the carriage, and conducted them to Cære, a city of Hetruria, where they met with a favourable reception. The Vestals remained at Cære, and there continued to perform the usual rites of religion; and hence those rites were called *ceremonies*. But while the rest of the citizens at Rome were providing for their safety, about 80 of the most illustrious and venerable old men, rather than fly from their native city, chose to devote themselves to death by a vow, which Fabius the high pontiff pronounced in their names. The Romans believed, that, by these voluntary devotements to the infernal gods, disorder and confusion was brought among the enemy. Of these brave old men some were pontifices, others had been consuls, and others generals of armies, who had been honoured with triumphs. To complete their sacrifice with a solemnity and pomp becoming the magnanimity and constancy of the Romans, they dressed themselves in their pontifical, consular, and triumphal robes; and repairing to the forum, seated themselves there in their curule chairs, expecting the enemy and death with the greatest constancy.

131
Origin of the word ceremonies.

At length Brennus, having spent three days in useless precautions, entered the city the fourth day after the battle. He found the gates open, the walls without defence, and the houses without inhabitants. Rome appeared to him like a mere desert; and this solitude increased his anxiety. He could not believe, either that all the Romans were lodged in the Capitol, or that so numerous a people should abandon the place of their nativity. On the other hand, he could nowhere see

132
Rome pillaged and burnt.

Rome. any armed men but on the walls of the citadel. However, having first secured all the avenues to the Capitol with strong bodies of guards, he gave the rest of his soldiers leave to disperse themselves all over the city and plunder it. Brennus himself advanced into the forum with the troops under his command, in good order; and there he was struck with admiration at the unexpected sight of the venerable old men who had devoted themselves to death. Their magnificent habits, the majesty of their countenances, the silence they kept, their modesty and constancy at the approach of his troops, made him take them for so many deities: for they continued as motionless as statues, and saw the enemy advance without showing the least concern. The Gauls kept a great while at an awful distance from them, being afraid to come near them. But at length one soldier bolder than the rest, having out of curiosity touched the beard of M. Papirius, the venerable old man, not being used to such familiarity, gave him a blow on the head with his ivory staff. The soldier in revenge immediately killed him; and the rest of the Gauls following his example, slaughtered all those venerable old men without mercy.

¹³³
They invest
the Capitol.

After this the enemy set no bounds to their rage and fury. They plundered all places, dragging such of the Romans as had shut themselves up in their houses into the streets, and there putting them to the sword without distinction of age or sex. Brennus then invested the Capitol; but being repulsed with great loss, in order to be revenged of the Romans for their resistance, he resolved to lay the city in ashes. Accordingly, by his command, the soldiers set fire to the houses, demolished the temples and public edifices, and rased the walls to the ground. Thus was the famous city of Rome entirely destroyed; nothing was to be seen in the place where it stood but a few little hills covered with ruins, and a wide waste, in which the Gauls who invested the Capitol were encamped. Brennus, finding he should never be able to take a place which nature had so well fortified otherwise than by famine, turned the siege into a blockade. But in the mean time, his army being distressed for want of provisions, he sent out parties to pillage the fields, and raise contributions in the neighbouring cities. One of these parties appeared before Ardea, where the great Camillus had now spent two years in a private life. Notwithstanding the affront he had received at Rome, the love he bore his country was not in the least diminished. The senate of Ardea being met to deliberate on the measures to be taken with relation to the Gauls, Camillus, more afflicted at the calamities of his country than at his own banishment, desired to be admitted into the council, where, with his eloquence, he prevailed upon the Ardeates to arm their youth in their own defence, and refuse the Gauls admittance into their city.

¹³⁴
A great
number of
them cut off
by Camil-
lus.

Hereupon the Gauls encamped before the city; and as they despised the Ardeates after they had made themselves masters of Rome, they preserved neither order nor discipline in the camp, but spent whole days in drinking. Hereupon Camillus, having easily persuaded the youth of the city to follow him, marched out of Ardea in a very dark night, surprised the Gauls drowned in wine, and made a dreadful slaughter of them. Those who made their escape under the shelter of the night fell next day into the hands of the peasants, by

whom they were massacred without mercy. This defeat of the enemy revived the courage of the Romans scattered about the country, especially of those who had retired to Veii after the unfortunate battle of Allia. There was not one of them who did not condemn himself for the exile of Camillus, as if he had been the author of it; and looking upon that great man as their last resource, they resolved to choose him for their leader. Accordingly, they sent without delay ambassadors to him, beseeching him to take into his protection the fugitive Romans, and the wrecks of the defeat at Allia. But Camillus would not accept of the command of the troops till the people assembled by curiae had legally conferred it upon him. He thought the public authority was lodged in the hands of those who were shut up in the citadel, and therefore would undertake nothing at the head of the Roman troops till a commission was brought him from thence.

To do this was very difficult, the place being invested on all sides by the enemy. However, one Pontius Cominius, a man of mean birth, but bold, and very ambitious of glory, undertook it. He put on a light habit, and, providing himself with cork to keep the loger above water, threw himself into the Tiber above Rome in the beginning of the night, and suffered himself to be carried down with the stream. At length he came to the foot of the capitol, and landed at a steep place where the Gauls had not thought it necessary to post any sentinels. There he mounted with great difficulty to the rampart of the citadel; and having made himself known to the guards, he was admitted into the place, and conducted to the magistrates. The senate being immediately assembled, Pontius gave them an account of Camillus's victory; and in the name of all the Romans at Veii demanded that great captain for their general. There was not much time spent in debates: the curiae being called together, the act of condemnation which had been passed on Camillus was abrogated, and he named dictator with one voice. Pontius was immediately dispatched with the decree; and the same good fortune which had attended him to the Capitol accompanied him in his return. Thus was Camillus, from the state of banishment, raised at once to be sovereign magistrate of his country. His promotion to the command was no sooner known, but soldiers flocked from all parts to his camp; insomuch that he soon saw himself at the head of above 40,000 men, partly Romans and partly allies, who all thought themselves invincible under so great a general.

¹³⁵
He is chosen
dictator.

While he was taking proper measures to raise the blockade of the citadel, some Gauls rambling round the place, perceived on the side of the hill the print of Pontius's hands and feet. They observed likewise, that the moss on the rocks was in several places torn up. From these marks they concluded, that somebody had lately gone up to and returned from the Capitol. The Gauls immediately made their report to Brennus of what they had observed; and that experienced commander laid a design, which he imparted to nobody, of surprising the place by the same way that the Roman had ascended. With this view he chose out of the army such soldiers as had dwelt in mountainous countries, and been accustomed from their youth to climb precipices. These he ordered, after he had well examined the nature of the place, to ascend in the night the same way that was marked

¹³⁶
The Gauls
endeavour
to surprise
the Capito-
l;

Rome. marked out for them; climbing two abreast, that one might support the other in getting up the steep parts of the precipice. By this means they advanced with much difficulty from rock to rock, till they arrived at the foot of the wall. They proceeded with such silence, that they were not discovered or heard, either by the centinels who were upon guard in the citadel, or even by the dogs, that are usually awaked and alarmed at the least noise. But though they eluded the sagacity of the dogs, they could not escape the vigilance of the geese. A flock of these birds was kept in a court of the Capitol in honour of Juno, and near her temple. Notwithstanding the want of provisions in the garrison, they had been spared out of religion; and as these creatures are naturally quick of hearing, they were alarmed at the first approach of the Gauls; so that running up and down, with their cackling and beating of their wings, they awaked Manlius, a gallant soldier, who some years before had been consul. He sounded an alarm, and was the first man who mounted the rampart, where he found two Gauls already upon the wall.

¹³⁷ But are discovered and repulsed. One of these offered to discharge a blow at him with his battle ax; but Manlius cut off his right hand at one blow, and gave the other such a push with his buckler, that he threw him headlong from the top of the rock to the bottom. He, in his fall, drew many others with him; and, in the mean time, the Romans crowding to the place, pressed upon the Gauls, and tumbled them one over another. As the nature of the ground would not suffer them to make a regular retreat, or even to fly, most of them, to avoid the swords of the enemy, threw themselves down the precipice, so that very few got safe back to their camp.

As it was the custom of the Romans at that time not suffer any commendable action to go unrewarded, the tribune Sulpitius assembled his troops the next morning, in order to bestow the military rewards on those who, the night before, had deserved them. Among these Manlius was first named; and, in acknowledgment of the important service he had just rendered the state, every soldier gave him part of the corn which he received sparingly from the public stock, and a little measure of wine out of his scanty allowance; an inconsiderable present indeed in itself, but very acceptable at that time to the person on whom it was bestowed. The tribune's next care was to punish the negligent: accordingly the captain of the guard, who ought to have had an eye over the centinels, was condemned to die, and, pursuant to his sentence, thrown down from the top of the Capitol. The Romans extended their punishments and rewards even to the animals. Geese were ever after had in honour at Rome, and a flock of them always kept at the expence of the public. A golden image of a goose was erected in memory of them, and a goose every year carried in triumph upon a soft litter finely adorned; whilst dogs were held in abhorrence by the Romans, who every year impaled one of them on a branch of elder.

The blockade of the Capitol had already lasted seven months; so that the famine began to be very sensibly felt both by the besieged and besiegers. Camillus, since his nomination to the dictatorship, being master of the country, had posted strong guards on all the roads; so that the Gauls dared not stir out for fear of being cut to pieces. Thus Brennus, who besieged

the Capitol, was besieged himself, and suffered the same inconveniences which he made the Romans undergo. Besides, a plague raged in his camp, which was placed in the midst of the ruins of the demolished city, his men lying confusedly among the dead carcases of the Romans, whom they had slain, and not buried. So great a number of them died in one quarter of the city, that it was afterwards called *Busta Gallica*, or the place where the dead bodies of the Gauls were burnt. But, in the mean time, the Romans in the Capitol were more pinched with want than the Gauls. They were reduced to the last extremity, and at the same time ignorant both of the lamentable condition to which the enemy's army was brought, and of the steps Camillus was taking to relieve them. That great general only waited for a favourable opportunity to fall upon the enemy; but, in the mean time, suffered them to pine away in their infected camp, not knowing the extreme want the Romans endured in the Capitol, where they were so destitute of all sorts of provisions, that they could no longer subsist. Matters being brought to this sad pass on both sides, the centinels of the Capitol, and those of the enemy's army, began to talk to one another of an accommodation. Their discourses came at length to the ears of their leaders, who were not averse to the design.

The senate, not knowing what was become of Camillus, and finding themselves hard pinched by hunger, resolved to enter upon a negotiation, and empowered Sulpitius, one of the military tribunes, to treat with the Gauls; who made no great difficulty in coming to terms, they being no less desirous than the Romans to put an end to the war. In a conference, therefore, between Brennus and Sulpitius, an agreement was made, and sworn to. The Romans were to pay to the Gauls 1000 pounds weight of gold, that is, 45,000l. sterling; and the latter were to raise the siege of the Capitol, and quit all the Roman territories. On the day appointed, Sulpitius brought the sum agreed on, and Brennus the scales and weights; for there were no gold or silver coins at that time, metals passing only by weight. We are told, that the weights of the Gauls were false, and their scales untrue; which Sulpitius complaining of, Brennus, instead of redressing the injustice, threw his sword and belt into the scale where the weights were; and when the tribune asked him the meaning of so extraordinary a behaviour, the only answer he gave was, *Vae victis!* "Wo to the conquered!" Sulpitius was so stung with this haughty answer, that he was for carrying the gold back into the Capitol, and sustaining the siege to the last extremity; but others thought it advisable to put up the affront, since they had submitted to a far greater one, which was to pay any thing at all.

During these disputes of the Roman deputies among themselves and with the Gauls, Camillus advanced with his army to the very gates of the city; and being there informed of what was doing, he commanded the main body to follow him slowly and in good order, while he, with the choicest of his men, hastened to the place of the parley. The Romans, overjoyed at his unexpected arrival, opened to make room for him as the supreme magistrate of the republic, gave him an account of the treaty they had made with the Gauls, and complained of the wrong Brennus did them in the execution of it.

Rome. They had scarce done speaking, when Camillus cried out, " Carry back this gold into the Capitol ; and you, Gauls, retire with your scales and weights. Rome must not be redeemed with gold, but with steel. Brennus replied, That he contravened a treaty which was concluded and confirmed with mutual oaths. " Be it so (answered Camillus) ; yet it is of no force, having been made by an inferior magistrate, without the privacy or consent of the dictator. I, who am invested with the supreme authority over the Romans, declare the contract void." At these words Brennus flew into a rage ; and both sides drawing their swords, a confused scuffle ensued among the ruins of the houses, and in the narrow lanes. The Gauls, after an inconsiderable loss, thought fit to retire within their camp ; which they abandoned in the night, not caring to engage Camillus's whole army, and, having marched eight miles, encamped on the Gabinian way. Camillus pursued them as soon as it was day, and, coming up with them, gave them a total overthrow. The Gauls, according to Livy, made but a faint resistance, being disheartened at the loss they had sustained the day before. It was not, says that author, so much a battle as a slaughter. Many of the Gauls were slain in the action, more in the pursuit ; but the greater number were cut off, as they wandered up and down in the fields, by the inhabitants of the neighbouring villages. In short, there was not one single Gaul left to carry to his countrymen the news of this fatal catastrophe. The camp of the barbarians was plundered ; and Camillus, loaded with spoils, returned in triumph to the city, the soldiers in their songs styling him, *Romulus, Father of his country, and Second founder of Rome.*

139
Camillus
drives away
the Gauls.

140
The Gauls
entirely cut
off.

141
Disputes
about re-
moving to
Veii.

As the houses of Rome were all demolished, and the walls razed, the tribunes of the people renewed, with more warmth than ever, an old project which had occasioned great disputes. They had formerly proposed a law for dividing the senate and government between the cities of Veii and Rome. Now this law was revived ; nay, most of the tribunes were for entirely abandoning their old ruined city, and making Veii the sole seat of the empire. The people were inclined to favour the project, Veii offering them a place fortified by art and nature, good houses ready built, a wholesome air, and a fruitful territory. On the other hand, they had no materials for rebuilding a whole city, were quite exhausted by misfortunes, and even their strength was greatly diminished. This gave them a reluctance to so great an undertaking, and emboldened the tribunes to utter seditious harangues against Camillus, as a man too ambitious of being the restorer of Rome. They even insinuated that the name of Romulus, which had been given him, threatened the republic with a new king. But the senate took the part of Camillus, and, being desirous to see Rome rebuilt, continued him, contrary to custom, a full year in the office of dictator ; during which time he made it his whole business to suppress the strong inclination of the people to remove to Veii. Having assembled the curies, he expostulated with them upon the matter ; and, by arguments drawn from prudence, religion, and glory, prevailed upon them to lay aside all thoughts of leaving Rome. As it was necessary to have the resolution of the people confirmed by the senate, the dictator reported it to the conscript fathers, leaving every one at full liberty to vote as he

pleased. While L. Lucretius, who was to give his opinion the first, was beginning to speak, it happened that a centurion, who with his company had been upon guard, and was then marching by the senate-house, cried out aloud, " Plant your colours, ensign ; this is the best place to stay in." These words were considered as dictated by the gods themselves ; and Lucretius, taking occasion from them to urge the necessity of staying at Rome, " An happy omen, (cried he) ; I adore the gods who gave it." The whole senate applauded his words ; and a decree was passed without opposition for rebuilding the city.

Though the tribunes of the people were defeated by Camillus in this point, they resolved to exercise their authority against another patrician, who had indeed deserved punishment. This was Q. Fabius, who had violated the laws of nations, and thereby provoked the Gauls, and occasioned the burning of Rome. His crime being notorious, he was summoned by C. Martius Rutilus before the assembly of the people, to answer for his conduct in his embassy. The criminal had reason to fear the severest punishment : but his relations gave out that he died suddenly ; which generally happened when the accused person had courage enough to prevent his condemnation, and the shame of a public punishment. On the other hand, the republic gave Marcus an house situated on the Capitol to M. Manlius, as a monument of his valour, and of the gratitude of his fellow-citizens. Camillus closed this year by laying down his dictatorship : whereupon an interregnum ensued, during which he governed the state alternately with P. Cornelius Scipio ; and it fell to his lot to preside at the election of new magistrates, when L. Valerius Poplicola, L. Virginius Tricoftus, P. Cornelius Cossus, A. Manlius Capitolinus, L. Æmilius Mamercinus, and L. Posthumius Albinus, were chosen. The first care of these new magistrates was to collect all the ancient monuments of the religion and civil laws of Rome which could be found among the ruins of the demolished city. The laws of the twelve tables, and some of the laws of the kings, had been written on brass, and fixed up in the forum ; and the treaties made with several nations had been engraved on pillars erected in the temples. Pains were therefore taken to gather up the ruins of these precious monuments ; and what could not be found was supplied by memory. The pontifices, on their part, took care to re-establish the religious ceremonies, and made also a list of lucky and unlucky days.

And now the governors of the republic applied themselves wholly to rebuild the city. Plutarch tells us, that as the workmen were digging among the ruins of the temple of Mars, they found Romulus's augural staff untouched by the flames ; and that this was looked upon as a prodigy, from whence the Romans inferred that their city would continue for ever. The expence of building private houses was partly defrayed out of the public treasure. The ædiles had the direction of the works ; but they had so little taste for order or beauty, that the city, when rebuilt, was even less regular than in the time of Romulus. And though in Augustus's time, when Rome became the capital of the known world, the temples, palaces, and private houses, were built in a more magnificent manner than before ; yet even then these new decorations did not rectify the faults of the plan

Rome.

142
Marcus
as a Manlius
rewarded.

143
The city
rebuilt.

plan

Rome plan upon which the city had been built after its first demolition.

144
A general
combina-
tion against
the Ro-
mans.

Rome was scarce restored, when her citizens were alarmed by the news that all her neighbours were combining to her destruction. The Æqui, the Volsci, the Hetrurians, and even her old friends the Latins and the Hernici, entered into an alliance against her, in hopes of oppressing her before she had recovered her strength. The republic, under this terror, nominated Camillus dictator a third time. This great commander, having appointed Servilius to be his general of horse, summoned the citizens to take arms, without excepting even the old men. He divided the new levies into three bodies. The first, under the command of A. Manlius, he ordered to encamp under the walls of Rome; the second he sent into the neighbourhood of Veii; and marched himself at the head of the third, to relieve the tribunes, who were closely besieged in their camp by the united forces of the Volsci and Latins. Finding the enemy encamped near Lanuvium, on the declivity of the hill Marcus, he posted himself behind it, and by lighting fires, gave the distressed Romans notice of his arrival. The Volsci and Latins, when they understood that Camillus was at the head of an army newly arrived, were so terrified, that they shut themselves up in their camp, which they fortified with great trees cut down in haste. The dictator, observing that this barrier was of green wood, and that every morning there arose a great wind, which blew full upon the enemy's camp, formed the design of taking it by fire. With this view he ordered one part of his army to go by break of day with fire-brands to the windward side of the camp, and the other to make a brisk attack on the opposite side. By this means the enemy were entirely defeated, and their camp taken. Camillus then commanded his men to extinguish the flames, in order to save the booty, with which he rewarded his army. He then left his son in the camp to guard the prisoners; and, entering the country of the Æqui, made himself master of their capital city Bola. From thence he marched against the Volsci; whom he entirely reduced, after they had waged war with the Romans for the space of 107 years. Having subdued this untractable people, he penetrated into Hetruria, in order to relieve Sutrium, a town in that country in alliance with Rome, and besieged by a numerous army of Hetrurians. But, notwithstanding all the expedition Camillus could use, he did not reach the place before it had capitulated. The Sutrini, being greatly distressed for want of provisions, and exhausted with labour, had surrendered to the Hetrurians, who had granted them nothing but their lives, and the clothes on their backs. In this destitute condition they had left their own country, and were going in search of new habitations, when they met Camillus leading an army to their relief.

146
and the
Hetrurians.

The unfortunate multitude no sooner saw the Romans, but they threw themselves at the dictator's feet, who, moved at this melancholy sight, desired them to take a little rest, and refresh themselves, adding, that he would soon dry up their tears, and transfer their sorrows from them to their enemies. He imagined, that the Hetrurians would be wholly taken up in plundering the city, without being upon their guard, or observing any discipline. And herein he was not mistaken. The Hetrurians did not dream that the dic-

tator could come so speedily from such a distance to surprize them; and therefore were wholly employed in plundering the houses and carrying off the booty, or feasting on the provisions they had found in them. Many of them were put to the sword, and an incredible number made prisoners; and the city was restored to its ancient inhabitants, who had not waited in vain for the performance of the dictator's promise. And now, after these glorious exploits, which were finished in so short a time, the great Camillus entered Rome in triumph a third time.

Rome.

Camillus having resigned his dictatorship, the republic chose six new military tribunes, Q. Quinctius, Q. Servius, L. Julius, L. Aquilius, L. Lucretius, and Ser. Sulpitius. During their administration the country of the Æqui was laid waste, in order to put it out of their power to revolt anew; and the two cities of Cortuosa and Contenebra, in the lucumony of the Tarquinienfes, were taken from the Hetrurians, and entirely demolished. At this time it was thought proper to repair the Capitol, and add new works to that part of the hill where the Gauls had endeavoured to scale the citadel. These works were esteemed very beautiful, as Livy informs us, even in the time of Augustus, after the city was embellished with most magnificent decorations.

And now Rome being reinstated in her former flourishing condition, the tribunes of the people, who had been for some time quiet, began to renew their seditious harangues, and revive the old quarrel about the division of the conquered land. The patricians had appropriated to themselves the Pomptin territory lately taken from the Volsci, and the tribunes laid hold of this opportunity to raise new disturbances. But the citizens being so drained of their money that they had not enough left to cultivate new farms and stock them with cattle, the declamations of the tribunes made no impression upon their minds; so that the project vanished. As for the military tribunes, they owned that their election had been defective; and, lest the irregularities of the former comitia should be continued in the succeeding ones, they voluntarily laid down their office. So that, after a short interregnum, during which M. Manlius, Ser. Sulpitius, and L. Valerius Potitus, governed the republic, six new military tribunes L. Papius, C. Sergius, L. Æmilius, L. Menenius, L. Valerius, and C. Cornelius, were chosen for the ensuing year, which was spent in works of peace. A temple, which had been vowed to Mars during the war with the Gauls, was built, and consecrated by T. Quinctius, who presided over the affairs of religion. As there had hitherto been but few Roman tribes beyond the Tiber which had a right of suffrage in the comitia, four new ones were added, under the name of the *Stellatina*, *Tramontina*, *Sabatina*, and *Arniensis*; so that the tribes were now in all 25, which enjoyed the same rights and privileges.

The expectation of an approaching war induced the centuries to choose Camillus one of the military tribunes for the next year. His colleagues were Ser. Cornelius, Q. Servilius, L. Quinctius, L. Horatius, and P. Valerius. As all these were men of moderation, they agreed to invest Camillus with the sole management of affairs in time of war; and accordingly in full senate transferred all their power into his hands; so that he became in effect dictator. It had been already determined

147

Unbounded
power con-
ferred on
Camillus.

ended.

Rome. mined in the senate to turn the arms of the republic against the Hetrurians; but, upon advice that the Antiates had entered the Pomptin territory, and obliged the Romans who had taken possession of it to retire, it was thought necessary to humble them before the republic engaged in any other enterprise. The Antiates had joined the Latins and Hernici near Satricum; so that the Romans, being terrified at their prodigious numbers, shewed themselves very backward to engage: which Camillus perceiving, he instantly mounted his horse, and riding through all the ranks of the army, encouraged them by a proper speech; after which he dismounted, took the next standard-bearer by the hand, led him towards the enemy, and cried out, *Soldiers, advance*. The soldiery were ashamed not to follow a general who exposed himself to the first attack; and therefore, having made a great shout, they fell upon the enemy with incredible fury. Camillus, in order to increase their eagerness still more, commanded a standard to be thrown into the middle of the enemy's battalions; which made the soldiers, who were fighting in the first ranks, exert all the resolution they could to recover it. The Antiates, not being able any longer to make head against the Romans, gave way, and were entirely defeated. The Latins and Hernici separated from the Volsci, and returned home. The Volsci, seeing themselves thus abandoned by their allies, took refuge in the neighbouring city of Satricum; which Camillus immediately invested, and took by assault. The Volsci threw down their arms, and surrendered at discretion. He then left his army under the command of Valerius; and returned to Rome to solicit the consent of the senate, and to make the necessary preparations for undertaking the siege of Antium.

148
who gives
the Anti-
ates, &c. a
great de-
feat.

149
His other
successes.

But, while he was proposing this affair to the senate, deputies arrived from Nepet and Sutrium, two cities in alliance with Rome in the neighbourhood of Hetruria, demanding succours against the Hetrurians, who threatened to besiege these two cities, which were the keys of Hetruria. Hereupon the expedition against Antium was laid aside, and Camillus commanded to hasten to the relief of the allied cities, with the troops which Servilius had kept in readiness at Rome in case of an emergency. Camillus immediately set out for the new war; and, upon his arrival before Sutrium, found that important place not only besieged, but almost taken, the Hetrurians having made themselves masters of some of the gates, and gained possession of all the avenues leading to the city. However, the inhabitants no sooner heard that Camillus was come to their relief, but they recovered their courage, and, by barricadoes made in the streets, prevented the enemy from making themselves masters of the whole city. Camillus in the mean time having divided his army into two bodies, ordered Valerius to march round the walls, as if he designed to scale them, while he with the other undertook to charge the Hetrurians in the rear, force his way into the city, and shut up the enemy between the besieged and his troops. The Romans no sooner appeared but the Hetrurians betook themselves to a disorderly flight through a gate which was not invested. Camillus's troops made a dreadful slaughter of them within the city, while Valerius put great numbers of them to the sword without the walls. From reconquering Sutrium, Camillus hastened to the relief of Nepet. But that city being bet-

ter affected to the Hetrurians than to the Romans, had voluntarily submitted to the former. Wherefore Camillus, having invested it with his whole army, took it by assault, put all the Hetrurian soldiers without distinction to the sword, and condemned the authors of the revolt to die by the axes of the lictors. Thus ended Camillus's military tribuneship, in which he acquired no less reputation than he had done in the most glorious of his dictatorships.

Rome.

In the following magistracy of six military tribunes, a dangerous sedition is said to have taken place through the ambition of Marcus Manlius, who had saved the capitol from the Gauls in the manner already related. Though this man had pride enough to despise all the other great men in Rome, yet he envied Camillus, and took every opportunity of magnifying his own exploits beyond those of the dictator. But not finding such a favourable reception from the nobility as he desired, he concerted measures with the tribunes of the people, and strove to gain the affections of the multitude. Not content with renewing the proposal for the distribution of conquered lands, he also made himself an advocate for insolvent debtors, of whom there was now a great number as most of the lower class had been obliged to borrow money in order to rebuild their houses. The senate, alarmed at this opposition, created A. Cornelius Cossus dictator, for which the war with the Volsci afforded them a fair pretence. Manlius, however, still continued to inflame the people against the patricians. Besides the most unbounded personal generosity, he held assemblies at his own house (in the citadel), where he confidently gave out that the senators, not content with being the possessors of those lands which ought to have been equally divided among all the citizens, had concealed, with an intent to appropriate it to their own use, all the gold which was to have been paid to the Gauls, and which would alone be sufficient to discharge the debts of all the poor plebeians; and he moreover promised to show in due time where this treasure was concealed. For this assertion he was brought before the dictator; who commanded him to discover where the pretended treasure was, or to confess openly before the whole assembly that he had slandered the senate.—Manlius replied, that the dictator himself, and the principal persons in the senate, could only give the proper intelligence of this treasure, as they had been the most active in securing it. Upon this he was committed to prison; but the people made such disturbance, that the senate were soon after fain to release him. By this he was emboldened to continue his former practices; till at last the senate gave an order to the military tribunes to take care that the commonwealth suffered no detriment from the pernicious projects of Marcus Manlius, and even gave them authority to assassinate him, if they found it necessary so to do. At last, however, he was publicly accused of aspiring to be king; however, the people, it is said, were so struck with gratitude, on account of his having delivered the capitol from the Gauls, that they could not resolve to condemn him. But the military tribunes, who, it seems, were bent on his destruction, having appointed the assembly to be held without the city, there obtained their wish. Manlius was thrown headlong from the capitol itself: it was thenceforth decreed that no patrician should dwell in the capitol or citadel; and the Manlian family resolved that

150
Ambition
of M. Man-
lius,

151
who is con-
demned
and execu-
ted.

Rome. that no member of it should ever afterwards bear the prænomen of *Marcus*. No sooner was Manlius dead, however, than the people lamented his fate; and because a plague broke out soon after, they imputed it to the anger of the gods on account of the destruction of the hero who had saved the state (A).

The Romans, having now triumphed over the Sabines, the Etrurians, the Latins, the Hernici, the Æqui, and the Volscians, began to look for greater conquests. They accordingly turned their arms against the Samnites, a people about 100 miles east from the city, descended from the Sabines, and inhabiting a large tract of southern Italy, which at this day makes a considerable part of the kingdom of Naples. Valerius Corvus and Cornelius were the two consuls, to whose care it first fell to manage this dreadful contention between the rival states.

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War with
the Sam-
nites.

Valerius was one of the greatest commanders of his time; he was surnamed Corvus, from a strange circumstance of being assisted by a crow in a single combat, in which he fought and killed a Gaul of a gigantic stature. To his colleague's care it was assigned to lead an army to Samnium, the enemy's capital; while Corvus was sent to relieve Capua, the capital of the Campanians. The Samnites were the bravest men the Romans had ever yet encountered, and the contention between the two nations was managed on both sides with the most determined resolution. But the fortune of Rome prevailed; the Samnites at length fled, averring, that they were not able to withstand the fierce looks and the fire darting eyes of the Romans. The other consul, however, was not at first so fortunate; for having unwarily led his army into a defile, he was in danger of being cut off, had not Decius, a tribune of the army, possessed himself of a hill which commanded the enemy: so that the Samnites, being attacked on either side, were defeated with great slaughter, no less than 30,000 of them being left dead upon the field of battle.

Some time after this victory, the soldiers who were stationed at Capua mutinying, forced Quintius, an old and eminent soldier, who was then residing in the country, to be their leader; and, conducted by their rage more than their general, came within eight miles of the city. So terrible an enemy, almost at the gates, not a little alarmed the senate; who immediately created Valerius Corvus dictator, and sent him forth with another army to oppose them. The two armies were now drawn up against each other, while fathers and sons beheld themselves preparing to engage in opposite causes; but Corvus, knowing his influence among the soldiery, instead of going forward to meet the mutineers in an hostile manner, went with the most cordial friendship to embrace and expostulate with his old acquaintances. His conduct had the desired effect. Quintius, as their speaker, only desired to have their defection from their duty forgiven; and as for himself, as he was innocent

of their conspiracy, he had no reason to solicit pardon for his offences.

Rome:

A war between the Romans and the Latins followed soon after; but as their habits, arms, and language, were the same, the most exact discipline was necessary to prevent confusion in the engagement. Orders, therefore, were issued by Manlius the consul, that no soldier should leave his ranks upon whatever provocation; and that he should be certainly put to death who should offer to do otherwise. With these injunctions, both armies were drawn out in array, and ready to begin; when Metius, the general of the enemy's cavalry, pushed forward from his lines, and challenged any knight in the Roman army to single combat. For some time there was a general pause, no soldier offering to disobey his orders, till Titus Manlius, the consul's own son, burning with shame to see the whole body of the Romans intimidated, boldly sallied out against his adversary. The soldiers on both sides for a while suspended the general engagement to be spectators of this fierce encounter. Manlius killed his adversary; and then despoiling him of his armour, returned in triumph to his father's tent, where he was preparing and giving orders relative to the engagement. Howsoever he might have been applauded by his fellow-soldiers, being as yet doubtful of the reception he should find from his father, he came, with hesitation, to lay the enemy's spoils at his feet, and with a modest air insinuated, that what he did was entirely from a spirit of hereditary virtue. But he was soon dreadfully made sensible of his error, when his father, turning away, ordered him to be led publicly forth before the army, and there to have his head struck off on account of his disobeying orders. The whole army was struck with horror at this unnatural mandate: fear for a while kept them in suspense; but when they saw their young champion's head struck off, and his blood streaming upon the ground, they could no longer contain their execrations and their groans. His dead body was carried forth without the camp, and being adorned with the spoils of the vanquished enemy, was buried with all the pomp of military distress.

In the mean time, the battle joined with mutual ¹⁵³ A bloody-
fury; and as the two armies had often fought under battle with
the same leaders, they combated with all the animosity the Latins,
of a civil war. The Latins chiefly depended on their bodily strength; the Romans, on their invincible courage and conduct. Forces so nearly matched seemed only to require the protection of their deities to turn the scale of victory; and, in fact, the augurs had foretold, that whatever part of the Roman army should be distressed, the commander of that part should devote himself for his country, and die as a sacrifice to the immortal gods. Manlius commanded the right wing, and Decius led on the left. Both sides fought for some time with doubtful success, as their courage was equal; but, after a time, the left wing of the Roman army began to give

(A) The above accounts are exactly conformable to what is to be found in the best Latin histories; nevertheless they are far from being reckoned universally authentic. Mr Hooke, in his annotations on the death of M. Manlius, has given very strong reasons against believing either that Camillus rescued the gold from the Gauls, or that Manlius was condemned. See *Hooke's Roman History*, vol. ii. p. 326, et seq.

Rome. give ground. It was then that Decius, who commanded there, resolved to devote himself for his country, and to offer his own life as an atonement to save his army. Thus determined, he called out to Manlius with a loud voice, and demanded his instructions, as he was the chief pontiff, how to devote himself, and the form of the words he should use. By his directions, therefore, being clothed in a long robe, his head covered, and his arms stretched forward, standing upon a javelin, he devoted himself to the celestial and infernal gods for the safety of Rome. Then arming himself, and mounting on horseback, he drove furiously into the midst of the enemy, carrying terror and consternation wherever he came, till he fell covered with wounds. In the mean time, the Roman army considered his devoting himself in this manner as an assurance of success; nor was the superstition of the Latins less powerfully influenced by his resolution; a total rout began to ensue: the Romans pressed them on every side; and so great was the carnage, that scarce a fourth part of the enemy survived the defeat. This was the last battle of any consequence that the Latins had with the Romans: they were forced to beg a peace upon hard conditions; and two years after, their strongest city, Pædum, being taken, they were brought under an entire submission to the Roman power.

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who are
totally de-
feated and
subdued.

A signal disgrace which the Romans sustained about this time in their contest with the Samnites, made a pause in their usual good fortune, and turned the scale for a while in the enemy's favour. The senate having denied the Samnites peace, Pontius their general was resolved to gain by stratagem what he had frequently lost by force. Accordingly, leading his army into a defile called *Claudium*, and taking possession of all its outlets, he sent 10 of his soldiers, habited like shepherds, with directions to throw themselves in the way the Romans were to march. The Roman consul met them, and taking them for what they appeared, demanded the route the Samnite army had taken; they, with seeming indifference, replied, that they were gone to Luceria, a town in Apulia, and were then actually besieging it. The Roman general, not suspecting the stratagem that was laid against him, marched directly by the shortest road, which lay through the defiles, to relieve the city; and was not undeceived till he saw his army surrounded, and blocked up on every side. Pontius thus having the Romans entirely in his power, first obliged the army to pass under the yoke, having been previously stripped of all but their garments; he then stipulated that they should wholly quit the territories of the Samnites, and that they should continue to live upon terms of former confederacy. The Romans were constrained to submit to this ignominious treaty, and marched into Capua disarmed and half naked. When the army arrived at Rome, the whole city was most surprisingly afflicted at their shameful return; nothing but grief and resentment was to be seen, and the whole city was put into mourning.

But this was a transitory calamity: the war was carried on as usual for many years; the power of the Samnites declining every day, while that of the Romans continually increased. Under the conduct of Papirius Cursor, who was at different times consul and dictator, repeated triumphs were gained. Fabius Maximus also had his share in the glory of conquering them; and Decius, the son of that Decius whom we saw de-

voting himself for his country about 40 years before, followed the example of his father, and rushed into the midst of the enemy, imagining that he could save the lives of his countrymen with the loss of his own.

The success of the Romans against the Samnites alarmed all Italy. The Tarentines in particular, who had long plotted underhand against the republic, now openly declared themselves; and invited into Italy Pyrrhus king of Epirus, in hopes of being able by his means to subdue the Romans. The offer was readily accepted by that ambitious monarch, who had nothing less in view than the conquest of all Italy.— Their ambassadors carried magnificent presents for the king, with instructions to acquaint him, that they only wanted a general of fame and experience; and that, as for troops, they could themselves furnish a numerous army of 20,000 horse and 350,000 foot, made up of Lucanians, Messapians, Samnites, and Tarentines. As soon as the news of this deputation were brought to the Roman camp, Æmilius, who had hitherto made war on the Tarentines but gently, in hopes of adjusting matters by way of negotiation, took other measures, and began to commit all sorts of hostilities. He took cities, stormed castles, and laid the whole country waste, burning and destroying all before him. The Tarentines brought their army into the field; but Æmilius soon obliged them to take refuge within their walls. However, to induce them to lay aside the design of receiving Pyrrhus, he used the prisoners he had taken with great moderation, and even sent them back without ransom. These highly extolled the generosity of the consul, insomuch that many of the inhabitants were brought over to the Roman party, and they all began to repent of their having rejected a peace and sent for Pyrrhus.

But, in the mean time, the Tarentine ambassadors arriving in Epirus, pursuant to the powers they had received, made an absolute treaty with the king; who immediately sent before him the famous Cyneas, with 3000 men, to take possession of the citadel of Tarentum. This eloquent minister soon found means to depose Agis, whom the Tarentines had chosen to be their general and the governor of the city, though a sincere friend to the Romans. He likewise prevailed upon the Tarentines to deliver up the citadel into his hands; which he no sooner got possession of, than he dispatched messengers to Pyrrhus, soliciting him to hasten his departure for Italy. In the mean time, the consul Æmilius, finding that he could not attempt any thing with success against the Tarentines this campaign, resolved to put his troops into winter-quarters in Apulia, which was not far from the territory of Tarentum, that was soon to become the seat of the war. As he was obliged to pass through certain defiles, with the sea on one side and high hills on the other, he was there attacked by the Tarentines and Epirots from great numbers of barks fraught with balistæ (that is, engines for throwing stones of a vast weight), and from the hills, on which were posted a great many archers and slingers. Hereupon Æmilius placed the Tarentine prisoners between him and the enemy; which the Tarentines perceiving, soon left off molesting the Romans, out of compassion to their own countrymen; so that the Romans arrived safe in Apulia, and there took up their winter-quarters.

The

Rome.

The next year Æmilius was continued in the command of his own troops, with the title of *proconsul*; and was ordered to make war upon the Salentines, who had declared for the Tarentines. The present exigence of affairs obliged the Romans to enlist the *proletarii*, who were the meanest of the people, and therefore by way of contempt called *proletarii*, as being thought incapable of doing the state any other service than that of peopling the city, and stocking the republic with subjects. Hitherto they had never been suffered to bear arms; but were now, to their great satisfaction, enrolled as well as others. In the mean time Pyrrhus arrived at Tarentum, having narrowly escaped shipwreck; and being conducted into the city by his faithful Cyneas, was received there with loud acclamations.

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Pyrrhus
obliges the
Tarentines
to learn the
art of war.

The Tarentines, who were entirely devoted to their pleasures, expected that he should take all the fatigues of the war on himself, and expose only his Epirots to danger. And indeed Pyrrhus for some days dissembled his design, and suffered the Tarentines to indulge without restraint in their usual diversions. But his ships, which had been dispersed all over the Ionian sea, arriving one after another, and with them the troops which he had put on board at Epirus, he began to reform the disorders that prevailed in the city. The theatre was the place to which the idle Tarentines resorted daily in great numbers, and where the incendiaries stirred up the people to sedition with their harangues: he therefore caused it to be shut up, as he did likewise the public gardens, porticoes, and places of exercise, where the inhabitants used to entertain themselves with news, and speak with great freedom of their governors, censuring their conduct, and settling the government according to their different humours, which occasioned great divisions, and rent the city into various factions. As they were a very voluptuous and indolent people, they spent whole days and nights in feasts, masquerades, plays, &c. These, therefore, Pyrrhus absolutely prohibited, as no less dangerous than the assemblies of prating politicians. They were utter strangers to military exercises, and the art of handling arms; but Pyrrhus having caused an exact register to be made of all the young men who were fit for war, picked out the strongest amongst them, and incorporated them among his own troops, saying, that he would take it upon himself to give them courage. He exercised them daily for several hours; and on that occasion behaved with an inexorable severity, inflicting exemplary punishment on such as did not attend or failed in their duty. By these wise measures he prevented seditions among the citizens, and inured their youth to military discipline; and because many, who had not been accustomed to such severity and rigour, withdrew from their native country, Pyrrhus, by a public proclamation, declared all those capitally guilty who should attempt to abandon their country, or absent themselves from the common musters.

The Tarentines, being now sensible that Pyrrhus was determined to be their master, began loudly to complain of his conduct; but he, being informed of whatever passed among them by his spies, who insinuated themselves into all companies, privately dispatched the most factious, and sent those whom he suspected, under various pretences, to his son's court in Epirus.

In the mean time, P. Valerius Lævinus, the Roman consul, entering the country of the Lucanians, who were in alliance with the Tarentines, committed great

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ravages there; and having taken and fortified one of their castles, waited in that neighbourhood for Pyrrhus. The king, though he had not yet received any succours from the Samnites, Messapians, and other allies of the Tarentines, thought it highly dishonourable to continue shut up in a city, while the Romans were ravaging the country of his friends. He therefore took the field with the troops he had brought with him from Epirus, some recruits of Tarentum, and a small number of Italians. But before he began hostilities, he wrote a letter to Lævinus, commanding him to disband his army; and on his refusal, immediately marched towards those parts where Lævinus was waiting for him. The Romans were encamped on the hither side of the river Siris; and Pyrrhus appearing on the opposite bank, made it his first business to reconnoitre the enemy's camp in person, and see what appearance they made. With this view he crossed the river, attended by Megacles, one of his officers and chief favourites; and having observed the consul's intrenchments, the manner in which he had posted his advanced guards, and the good order of his camp, he was greatly surprised; and addressing Megacles, "These people (said he) are not such barbarians as we take them to be: let us try them before we condemn them." On his return, he changed his resolution of attacking them; and, shutting himself up in his intrenchments, waited for the arrival of the confederate troops. In the mean time, he posted strong guards along the river, to prevent the enemy from passing it, and continually sent out scouts to discover the designs, and watch the motions of the consul. Some of these being taken by the advanced guards of the Romans, the consul himself led them through his camp, and having shewed them his army, sent them back to the king, telling them, that he had many other troops to show them in due time.

Lævinus being determined to draw the enemy to a battle before Pyrrhus received the reinforcements he expected, having harangued his troops, marched to the banks of the Siris; and there drawing up his infantry in battalia, ordered the cavalry to file off, and march a great way about, in order to find a passage at some place not defended by the enemy. Accordingly, they passed the river without being observed; and falling upon the guards which Pyrrhus had posted on the banks over-against the consular army, gave the infantry an opportunity of crossing the river on bridges which Lævinus had prepared for that purpose. But before they got over, Pyrrhus, hastening from his camp, which was at some distance from the river, hoped to cut the Roman army in pieces while they were disordered with the difficulties of passing the river, and climbing up the steep banks; but the cavalry covering the infantry, and standing between them and the Epirots, gave them time to form themselves on the banks of the river. On the other hand, Pyrrhus drew up his men as fast as they came from the camp, and performed such deeds of valour, that the Romans thought him worthy of the great reputation he had acquired.

As the cavalry alone had hitherto engaged, Pyrrhus, who confided most in his infantry, hastened back to the camp, in order to bring them to the charge; but took two precautions before he began the attack: the first was, to ride through the ranks, and show himself to the whole army; for his horse having been killed under him in the first onset, a report had been spread that he was

U

slain:

Rome.

157
His first
battle with
the Ro-
mans.

Rome. slain: the second was, to change his habit and helmet with Megacles; for having been known in the engagement of the horse by the richness of his attire and armour, many of the Romans had aimed at him in particular, so that he was with the utmost difficulty taken and saved, after his horse had been killed under him. Thus disguised, he led his phalanx against the Roman legions, and attacked them with incredible fury. Lævinus sustained the shock with great resolution, so that the victory was for many hours warmly disputed. The Romans gave several times way to the Epirots, and the Epirots to the Romans; but both parties rallied again, and were brought back to the charge by their commanders. Megacles, in the attire and helmet of Pyrrhus, was in all places, and well supported the character he had assumed. But his disguise at last proved fatal to him: for a Roman knight, by name *Dexter*, taking him for the king, followed him wherever he went; and having found an opportunity of discharging a blow at him, struck him dead on the spot, stripped him of his helmet and armour, and carried them in triumph to the consul, who, by showing to the Epirots the spoils of their king, so terrified them, that they began to give ground. But Pyrrhus, appearing bare-headed in the first files of his phalanx, and riding through all the lines, undeceived his men, and inspired them with new courage.

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The Romans defeated.

The advantage seemed to be pretty equal on both sides, when Lævinus ordered his cavalry to advance; which Pyrrhus observing, drew up 20 elephants in the front of his army, with towers on their backs full of bowmen. The very sight of those dreadful animals chilled the bravery of the Romans, who had never before seen any. However, they still advanced, till their horses, not being able to bear the smell of them, and frightened at the strange noise they made, either threw their riders, or carried them on full speed in spite of their utmost efforts. In the mean time, the archers, discharging showers of darts from the towers, wounded several of the Romans in that confusion, while others were trod to death by the elephants. Notwithstanding the disorder of the cavalry, the legionaries still kept their ranks, and could not be broken, till Pyrrhus attacked them in person at the head of the Thessalian horse. The onset was so furious, that they were forced to yield, and retire in disorder. The king of Epirus restrained the ardour of his troops, and would not suffer them to pursue the enemy: an elephant, which had been wounded by a Roman soldier named *Minucius*, having caused a great disorder in his army, this accident favoured the retreat of the Romans, and gave them time to repass the river, and take refuge in Apulia. The Epirot remained master of the field, and had the pleasure to see the Romans fly before him: but the victory cost him dear, a great number of his best officers and soldiers having been slain in the battle; whence he was heard to say after the action, that he was both conqueror and conquered, and that if he gained such another victory, he should be obliged to return to Epirus alone.

His first care after the action was to bury the dead, with which the plain was covered; and herein he made no distinction between the Romans and his own Epirots. In viewing the bodies of the former, he observed, that none of them had received dishonourable

Rome. wounds; that they had all fallen in the posts assigned them, still held their swords in their hands, and showed, even after death, a certain martial air and fierceness in their faces; and on this occasion it was that he uttered those famous words: "O that Pyrrhus had the Romans for his soldiers, or the Romans Pyrrhus for their leader! together, we should subdue the whole world."

The king of Epirus understood the art of war too well not to reap what advantage he could from his vic-¹⁵⁹ tory. He broke into the countries in alliance with the Pyrrhus reduces several towns. Romans, plundered the lands of the republic, and made incursions even into the neighbourhood of Rome. Many cities opened their gates to him, and in a short time he made himself master of the greatest part of Campania. While he was in that fruitful province, subsisting his troops there at the expence of the Romans, he was joined by the Samnites, Lucanians, and Messapians, whom he had so long expected. After having reproached them for their delay, he gave them a good share of the spoils he had taken from the enemy; and having by this means gained their affections, he marched without loss of time to lay siege to Capua: but Lævinus, having already received a reinforcement of two legions, threw some troops into the city; which obliged Pyrrhus to drop his design, and, leaving Capua, to march straight to Naples. Lævinus followed him, harassing his troops on their march; and at length, by keeping his troops in the neighbourhood, forced him to give over all thoughts of making himself master of that important city. The king then, all on a sudden, took his route towards Rome by the Latin way, surpris'd Fregellæ, and, marching through the country of the Hernici, sat down before Præneste. There, from the top of a hill, he had the pleasure of seeing Rome; and is said to have advanced so near the walls, that he drove a cloud of dust into the city. But he was soon forced to retire by the other consul T. Coruncanius, who, having reduced Hetruria, was just then returned with his victorious army to Rome. The king of Epirus, therefore, having no hopes of bringing the Hetrurians into his interest, and seeing two consular armies ready to fall upon him, raised the siege of Præneste, and hastened back into Campania; where, to his great surprize, he found Lævinus with a more numerous army than that which he had defeated on the banks of the Siris. The consul went to meet him, with a design to try the fate of another battle; which Pyrrhus being unwilling to decline, drew up his army, and, to strike terror into the Roman legions, ordered his men to beat their bucklers with their lances, and the leaders of the elephants to force them to make a hideous noise. But the noise was returned with such an universal shout by the Romans, that Pyrrhus, thinking so much alacrity on the part of the vanquished too sure a prognostic of victory, altered his mind; and, pretending that the auguries were not favourable, retired to Tarentum, and put an end to the campaign.

While Pyrrhus continued quiet at Tarentum, he had time to reflect on the valour and conduct of the Romans; which made him conclude, that the war in which he was engaged must end in his ruin and disgrace, if not terminated by an advantageous peace. He was therefore overjoyed when he heard that the senate had determined to send an honourable embassy to him, not doubting but their errand was to propose terms

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He inclines to peace.

Rome. terms of peace. The ambassadors were three men of distinguished merit; to wit, Cornelius Dolabella, who was famous for the signal victory he had gained over the Senones, Fabricius, and Æmilius Pappus, who had been his colleague in the consulate two years before. When they were admitted to an audience, the only thing they demanded was a surrender of the prisoners, either by the way of exchange, or at such a ransom as should be agreed on; for Pyrrhus, in the late battle, had made 1800 prisoners, most of them Roman knights and men of distinction in the republic. They had fought with great bravery, till their horses, frightened with the roaring of the king's elephants, had either thrown them, or obliged them to dismount; by which unforeseen accident they had fallen into the enemy's hands. The senate, therefore, pitying the condition of those brave men, had determined, contrary to their custom, to redeem them. Pyrrhus was greatly surpris'd and disappointed when he found that they had no other proposals to make; but, concealing his thoughts, he only answered, that he would consider of it, and let them know his resolution. Accordingly, he assembled his council: but his chief favourites were divided in their opinions. Milo, who commanded in the citadel of Tarentum, was for coming to no composition with the Romans; but Cyneas, who knew his master's inclination, proposed not only sending back the prisoners without ransom, but dispatching an embassy to Rome to treat with the senate of a lasting peace. His advice was approved, and he himself appointed to go on that embassy. After these resolutions, the king acquainted the ambassadors, that he intended to release the prisoners without ransom, since he had already riches enough, and desired nothing of the republic but her friendship. Afterwards he had several conferences with Fabricius, whose virtue he had tried with mighty offers of riches and grandeur; but finding him proof against all temptations, he resolv'd to try whether his intrepidity and courage were equal to his virtue. With this view, he caus'd an elephant to be plac'd behind a curtain in the hall where he receiv'd the Roman ambassador. As Fabricius had never seen one of those beasts, the king, taking a turn or two in the hall with him, brought him within the elephant's reach, and then caus'd the curtain to be drawn all on a sudden, and that monstrous animal to make his usual noise, and even lay his trunk on Fabricius's head. But the intrepid Roman, without betraying the least fear or concern, "Does the great king (said he, with surpris'ing calmness), who could not stagger me with his offers, think to frighten me with the braying of a beast?" Pyrrhus, astonish'd at his immovable constancy, invit'd him to dine with him; and on this occasion it was, that the conversation turning upon the Epicurean philosophy, Fabricius made that celebrated exclamation, "O that Pyrrhus, both for Rome's sake and his own, had plac'd his happiness in the boasted indolence of Epicurus."

Every thing Pyrrhus heard or saw of the Romans increased his earnestness for peace. He sent for the three ambassadors, released 200 of the prisoners without ransom, and suffer'd the rest, on their parole, to return to Rome to celebrate the Saturnalia, or feasts of Saturn, in their own families. Having by this obliging behaviour gain'd the good-will of the Roman ambassadors, he sent Cyneas to Rome, almost at the same time that they

left Tarentum. The instructions he gave this faithful minister, were, to bring the Romans to grant these three articles: 1. That the Tarentines should be included in the treaty made with the king of Epirus. 2. That the Greek cities in Italy should be suffer'd to enjoy their laws and liberties. 3. That the republic should restore to the Samnites, Lucanians, and Bruttians, all the places she had taken from them. Upon these conditions, Pyrrhus declar'd himself ready to forbear all further hostilities, and conclude a lasting peace. With these instructions Cyneas set out for Rome; where, partly by his eloquence, partly by rich presents to the senators and their wives, he soon gain'd a good number of voices. When he was admitted into the senate, he made a harangue worthy of a disciple of the great Demosthenes; after which, he read the conditions Pyrrhus propos'd, and, with a great deal of eloquence, endeavouring to show the reasonableness and moderation of his master's demands, ask'd leave for Pyrrhus to come to Rome to conclude and sign the treaty. The senators were generally inclin'd to agree to Pyrrhus's terms; but nevertheless, as several senators were absent, the determination of the affair was postpon'd to the next day; when Appius Claudius, the greatest orator and most learned civilian in Rome, old and blind as he was, caus'd himself to be carried to the senate, where he had not appear'd for many years; and there, partly by his eloquence, partly by his authority, so prepossess'd the minds of the senators against the king of Epirus, and the conditions he offer'd, that, when he had done speaking, the conscript fathers unanimously pass'd a decree, the substance of which was, That the war with Pyrrhus should be continued; that his ambassador should be sent back that very day; that the king of Epirus should not be permitted to come to Rome; and that they should acquaint his ambassador, that Rome would enter into no treaty of peace with his master till he had left Italy.

Cyneas, surpris'd at the answer given him, left Rome the same day, and return'd to Tarentum, to acquaint the king with the final resolution of the senate. Pyrrhus would have willingly concluded a peace with them upon honourable terms; but, as the conditions they offer'd were not by any means consistent with the reputation of his arms, he began, without loss of time, to make all due preparations for the next campaign. On the other hand, the Romans having rais'd to the consulate P. Sulpicius Saverrio, and P. Decius Mus, dispatch'd them both into Apulia, where they found Pyrrhus encamp'd near a little town call'd *Asculum*. There the consuls, joining their armies, fortified themselves at the foot of the Apennines, having between them and the enemy a large deep stream which divided the plain. Both armies continu'd a great while on the opposite banks, before either ventured to pass over to attack the other. The Epirots allow'd the Romans to cross the stream, and draw up on the plain. On the other hand, Pyrrhus plac'd his men likewise in order of battle in the same plain; and all the ancients do him the justice to say, that no commander ever understood better the art of drawing up an army and directing its motions. In the right wing he plac'd his Epirots and the Samnites; in his left the Lucanians, Bruttians, and Salentines; and his phalanx in the centre. The centre of the Roman army consist'd of four legions, which were to en-

Rome.

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The Ro-
mans refuse
to treat.

162
Another
battle.

Rome.

gaged the enemy's phalanx; on their wings were posted the light-armed auxiliaries and the Roman horse. The consuls, in order to guard their troops against the fury of the elephants had prepared chariots, armed with long points of iron in the shape of forks, and filled with soldiers carrying firebrands, which they were directed to throw at the elephants, and by that means frighten them, and set their wooden towers on fire. These chariots were posted over-against the king's elephants, and ordered not to stir till they entered upon action. To this precaution the Roman generals added another, which was, to direct a body of Apulians to attack Pyrrhus's camp in the heat of the engagement, in order to force it, or at least to draw off part of the enemy's troops to defend it. At length the attack began, both parties being pretty equal in number; for each of them consisted of about 40,000 men. The phalanx sustained, for a long time, the furious onset of the legions with incredible bravery: but at length being forced to give way, Pyrrhus commanded his elephants to advance, but not on the side where the Romans had posted their chariots; they marched round, and, falling upon the Roman horse, soon put them into confusion. Then the phalanx, returning with fresh courage to the charge, made the Roman legions in their turn give ground. On this occasion Decius was killed, so that one consul only was left to command the two Roman armies. But while all things seemed to favour Pyrrhus, the body of Apulians which we have mentioned above, falling unexpectedly on the camp of the Epirots, obliged the king to dispatch a strong detachment to defend his intrenchments. Upon the departure of these troops, some of the Epirots, imagining that the camp was taken, began to lose courage, and retire; those who were next to them followed their example, and in a short time the whole army gave way. Pyrrhus having attempted several times in vain to rally his forces, returned to the charge with a small number of his friends and the most courageous of his officers. With these he sustained the fury of the victorious legions, and covered the retreat of his own men. But being, after a most gallant behaviour, dangerously wounded, he retired at last with his small band in good order, leaving the Romans masters of the field. As the sun was near setting, the Romans, being extremely fatigued, and a great number of them wounded, the consul Sulpicius, not thinking it advisable to pursue the enemy, founded a retreat, repassed the stream, and brought his troops back to the camp. Sulpicius appeared in the field of battle the next day, with a design to bring the Epirots to a second engagement; but finding they had withdrawn in the night to Tarentum, he likewise retired, and put his troops into winter-quarters in Apulia.

163
Pyrrhus
defeated,
and
dangerously
wounded.

Both armies continued quiet in their quarters during winter; but early in the spring took the field anew.—The Romans were commanded this year by two men of great fame, whom they had raised to the consulate the second time: these were the celebrated C. Fabricius and Q. Æmilius Pappus; who no sooner arrived in Apulia, than they led their troops into the territory of Tarentum. Pyrrhus, who had received considerable reinforcements from Epirus, met them near the frontiers, and encamped at a small distance from the Roman army. While the consuls were waiting here for a favourable opportunity to give battle, a messenger from Nicias, the

king's physician, delivered a letter to Fabricius; wherein the traitor offered to take off his master by poison, provided the consul would promise him a reward proportionable to the greatness of the service. The virtuous Roman, being filled with horror at the bare proposal of such a crime, immediately communicated the affair to his colleague; who readily joined with him in writing a letter to Pyrrhus, wherein they warned him, without discovering the criminal, to take care of himself, and be upon his guard against the treacherous designs of those about him. Pyrrhus, out of a deep sense of gratitude for so great a benefit, released immediately, without ransom, all the prisoners he had taken. But the Romans, disdaining to accept either a favour from an enemy, or a recompense for not committing the blackest treachery, declared, that they would not receive their prisoners but by way of exchange; and accordingly sent to Pyrrhus an equal number of Samnite and Tarentine prisoners.

Rome.
164
The king's
physician
offers to
poison him,
but is dis-
covered by
the Ro-
mans.

As the king of Epirus grew every day more weary of a war which he feared would end in his disgrace, he sent Cyneas a second time to Rome, to try whether he could, with his artful harangues, prevail upon the conscript fathers to hearken to an accommodation, upon such terms as were consistent with his honour. But the ambassador found the senators steady in their former resolution, and determined not to enter into a treaty with his master till he had left Italy, and withdrawn from thence all his forces. This gave the king great uneasiness; for he had already lost most of his veteran troops and best officers, and was sensible that he should lose the rest if he ventured another engagement. While he was revolving these melancholy thoughts in his mind, ambassadors arrived at his camp from the Syracusans, Agrigentines, and Leontines, imploring the assistance of his arms to drive out the Carthaginians, and put an end to the troubles which threatened their respective states with utter destruction. Pyrrhus, who wanted only some honourable pretence to leave Italy, laid hold of this; and appointing Milo governor of Tarentum, with a strong garrison to keep the inhabitants in awe during his absence, he set sail for Sicily with 30,000 foot and 2500 horse, on board a fleet of 200 ships. Here he was at first attended with great success; but the Sicilians, disgusted at the resolution he had taken of passing over into Africa, and much more at the enormous exactions and extortions of his ministers and courtiers, had submitted partly to the Carthaginians and partly to the Mamertines. When Carthage heard of this change, new troops were raised all over Africa, and a numerous army sent into Sicily to recover the cities which Pyrrhus had taken. As the Sicilians daily deserted from him in crowds, he was no way in a condition, with his Epirots alone, to withstand so powerful an enemy; and therefore, when deputies came to him from the Tarentines, Samnites, Bruttians, and Lucanians, representing to him the losses they had sustained since his departure, and remonstrating, that, without his assistance, they must fall a sacrifice to the Romans, he laid hold of that opportunity to abandon the island, and return to Italy. His fleet was attacked by that of Carthage; and his army, after their landing, by the Mamertines. But Pyrrhus having, by his heroic bravery, escaped all danger, marched along the sea-shore, in order to reach Tarentum that way. As he passed through the country of the

165
Pyrrhus
goes into
Sicily.

166
He returns
into Italy.

the

Rome. the Locrians, who had not long before massacred the troops he had left there, he not only exercised all sorts of cruelty on the inhabitants, but plundered the temple of Proserpine to supply the wants of his army. The immense riches which he found there, were, by his order, sent to Tarentum by sea; but the ships that carried them being dashed against the rocks by a tempest, and the mariners all lost, this proud prince was convinced, says Livy, that the gods were not imaginary beings, and caused all the treasure, which the sea had thrown upon the shore, to be carefully gathered up, and replaced in the temple: nay, to appease the wrath of the angry goddess, he put all those to death who had advised him to plunder her temple. However, superstition made the ancients ascribe to this act of impiety all the misfortunes which afterwards befel that unhappy prince.

167
Is utterly
defeated by
Curius Den-
tatus.

Pyrrhus at length arrived at Tarentum; but of the army he had carried into Sicily, he brought back into Italy only 2000 horse and not quite 20,000 foot. He therefore reinforced them with the best troops he could raise in the countries of the Samnites, Lucanians, and Brutians; and hearing that the two new consuls, Curius Dentatus and Cornelius Lentulus, had divided their forces, the one invading Lucania and the other Samnium, he likewise divided his army into two bodies, marching with the choice of his Epirots against Dentatus, in hopes of surprising him in his camp near Beneventum. But the consul having notice of his approach, went out of his intrenchments with a strong detachment of legionaries to meet him; repulsed his vanguard, put many of the Epirots to the sword, and took some of their elephants. Curius encouraged with this success, marched his army into the Taurasian fields, and drew it up in a plain which was wide enough for his troops, but too narrow for the Epirot phalanx, the phalangites being so crowded that they could not handle their arms without difficulty. But the king's eagerness to try his strength and skill with so renowned a commander, made him engage at that great disadvantage. Upon the first signal the action began; and one of the king's wings giving way, the victory seemed to incline to the Romans. But that wing where the king fought in person repulsed the enemy, and drove them back quite to their intrenchments. This advantage was in great part owing to the elephants; which Curius perceiving, commanded a corps de reserve, which he had posted near the camp, to advance and fall upon the elephants. These carrying burning torches in one hand, and their swords in the other, threw the former at the elephants, and with the latter defended themselves against their guides; by which means they were both forced to give way. The elephants being put to flight broke into the phalanx, close as it was, and there caused a general disorder; which was increased by a remarkable accident: for it is said, that a young elephant being wounded, and thereupon making a dreadful noise, the mother quitting her rank, and hastening to the assistance of her young one, put those who still kept their ranks into the utmost confusion. But, however that be, it is certain that the Romans obtained at last a complete victory. Orosius and Eutropius tell us that Pyrrhus's army consisted of 80,000 foot and 6000 horse, including his Epirots and allies; whereas the consular army was scarcely 20,000 strong. Those who exaggerate the king's loss say, that the num-

ber of the slain on his side amounted to 30,000 men; but others reduce it to 20,000. All writers agree, that Curius took 1200 prisoners and eight elephants. This victory, which was the most decisive Rome had ever gained, brought all Italy under subjection, and paved the way for those vast conquests which afterwards made the Romans masters of the whole known world.

Pyrrhus being no way in a condition, after the great loss he had sustained, to keep the field, retired to Tarentum, attended only by a small body of horse, leaving the Romans in full possession of his camp; which they so much admired, that they made it ever after a model to form theirs by. And now the king of Epirus resolved to leave Italy as soon as possible; but concealed his design, and endeavoured to keep up the drooping spirits of his allies, by giving them hopes of speedy succours from Greece. Accordingly he dispatched ambassadors into Ætolia, Illyricum, and Macedon, demanding supplies of men and money. But the answers from those courts not proving favourable, he forged such as might please those whom he was willing to deceive; and by this means supported the courage of his friends, and kept his enemy in play. When he could conceal his departure no longer, he pretended to be on a sudden in a great passion at the dilatoriness of his friends in sending him succours; and acquainted the Tarentines, that he must go and bring them over himself. However, he left behind him a strong garrison in the citadel of Tarentum, under the command of the same Milo who had kept it for him during his stay in Sicily. In order to keep this governor in his duty, he is said to have made him a very strange present, viz. a chair covered with the skin of Nicias, the treacherous physician, who had offered Fabricius to poison his master. After all these disguises and precautions, Pyrrhus at last set sail for Epirus, and arrived safe at Acroceraunium with 8000 foot and 500 horse; after having spent to no purpose six years in Italy and Sicily.

Though, from the manner in which Pyrrhus took his leave, his Italian allies had little reason to expect any further assistance from him, yet they continued to amuse themselves with vain hopes, till certain accounts arrived of his being killed at the siege of Argos, as has been related under the article EPIRUS. This threw the Samnites into despair: so that they put all to the issue of a general battle; in which they were defeated with such dreadful slaughter, that the nation is said to have been almost exterminated. This overthrow was soon followed by the submission of the Lucanians, Brutians, Tarentines, Sarcinates, Picentes, and Salentines; so that Rome now became mistress of all the nations from the remotest parts of Hetruria to the Ionian sea, and from the Tyrrhenian sea to the Adriatic. All these nations, however, did not enjoy the same privileges. Some were entirely subject to the republic, and had no laws but what they received from thence; others retained their old laws and customs, but in subjection to the republic: some were tributary; and others allies, who were obliged to furnish troops at their own expence when the Romans required. Some had the privilege of Roman citizenship, their soldiers being incorporated in the legions; while others had a right of suffrage in the elections made by the centuries. These different degrees of honour, privileges, and liberty, were founded on the different terms granted to the conquered nations.

Rome.

168

He abandons his allies,

169

who are subdued, and the Romans become masters of all Italy.

Rome.

nations when they surrendered, and were afterwards increased according to their fidelity and the services they did the republic.

170
Other conquests made by the Romans.

The Romans now became respected by foreign nations, and received ambassadors from Ptolemy Philadelphus king of Egypt, and from Apollonia a city of Macedon. Sensible of their own importance, they now granted protection to whatever nation requested it of them; but this not with a view of serving one party, but that they might have an opportunity of subjecting both. In this manner they assisted the Mamertines against Hiero king of Syracuse, which brought on the wars with the Carthaginians, which terminated in the total destruction of that ancient republic, as has been related under the article CARTHAGE. The interval between the first and second Punic wars was by the Romans employed in reducing the Boii and Ligurians, who had revolted. These were Gaulish nations, who had always been very formidable to the Romans, and now gave one of their consuls a notable defeat. However, he soon after sufficiently revenged himself, and defeated the enemy with great slaughter; though it was not till some time after, and with a good deal of difficulty, that they were totally subdued. During this interval also, the Romans seized on the islands of Sardinia, Corsica, and Malta; and in the year 219 B. C. the two former were reduced to the form of a province. Papirius, who had subdued Corsica, demanded a triumph; but not having interest enough to obtain it, he took a method entirely new to do himself justice. He put himself at the head of his victorious army, and marched to the temple of Jupiter Latiaris, on the hill of Alba, with all the pomp that attended triumphant victors at Rome. He made no other alteration in the ceremony, but that of wearing a crown of myrtle instead of a crown of laurel, and this on account of his having defeated the Corsicans in a place where there was a grove of myrtles. The example of Papirius was afterwards followed by a great many generals to whom the senate refused triumphs.

171
Illyricum subdued.

The next year, when M. Æmilius Barbula and M. Junius Pera were consuls, a new war sprung up in a kingdom out of Italy. *Illyricum*, properly so called, which bordered upon Macedon and Epirus, was at this time governed by a woman named *Teuta*, the widow of King Agron, and guardian to her son Pinæus, who was under age. The success of her late husband against the Ætolians had flushed her to such a degree, that instead of settling the affairs of her ward in peace, she commanded her subjects to cruise along the coast, seize all the ships they met, take what places they could, and spare no nation. Her pirates had, pursuant to her orders, taken and plundered many ships belonging to the Roman merchants; and her troops were then besieging the island of Issa in the Adriatic, though the inhabitants had put themselves under the protection of the republic. Upon the complaints therefore of the Italian merchants, and to protect the people of Issa, the senate sent two ambassadors to the Illyrian queen, Lucius and Caius Coruncanus, to demand of her that she would restrain her subjects from infesting the sea with pirates. She answered them haughtily, that she could only promise that her subjects should not for the future attack the Romans in her name, and by public authority: "but as for any thing more, it is not customary with us

(said she) to lay restraints on our subjects, nor will we forbid them to reap those advantages from the sea which it offers them." "Your customs then (replied the youngest of the ambassadors) are very different from ours. At Rome we make public examples of those subjects who injure others, whether at home or abroad. Teuta, we can, by our arms, force you to reform the abuses of your bad government." These unseasonable threatenings provoked Teuta, who was naturally a proud and imperious woman, to such a degree, that, without regard to the right of nations, she caused the ambassadors to be murdered on their return home.

When so notorious an infraction of the law of nations was known at Rome, the people demanded vengeance; and the senate having first honoured the manes of the ambassadors, by erecting, as was usual in such cases, statues three feet high to their memory, ordered a fleet to be equipped, and troops raised, with all possible expedition. But now Teuta, reflecting on the enormity of her proceedings, sent an embassy to Rome, assuring the senate that she had no hand in the murder of the ambassadors, and offering to deliver up to the republic those who had committed that barbarous assassination. The Romans being at that time threatened with a war from the Gauls, were ready to accept this satisfaction: but in the mean time the Illyrian fleet having gained some advantage over that of the Achæans, and taken the island of Corcyra near Epirus, this success made Teuta believe herself invincible, and forget the promise she had made to the Romans; nay, she sent her fleet to seize on the island of Issa, which the Romans had taken under their protection.

Hereupon the consuls for the new year, P. Posthumus Albinus and Cn. Fulvius Centumalus, embarked for Illyricum; Fulvius having the command of the fleet, which consisted of 100 galleys; and Posthumus of the land forces, which amounted to 20,000 foot, besides a small body of horse. Fulvius appeared with his fleet before Corcyra in the Adriatic, and was put in possession both of the island and city by Demetrius of Pharos, governor of the place for Queen Teuta. Nor was this all; Demetrius found means to make the inhabitants of Apollonia drive out the Illyrian garrison, and admit into their city the Roman troops. As Apollonia was one of the keys of Illyricum on the side of Macedon, the consuls, who had hitherto acted jointly, no sooner saw themselves in possession of it than they separated, the fleet cruising along the coast, and the army penetrating into the heart of the queen's dominions. The Andycæans, Parthini, and Atintanes, voluntarily submitted to Posthumus, being induced by the persuasions of Demetrius to shake off the Illyrian yoke. The consul being now in possession of most of the inland towns, returned to the coast, where, with the assistance of the fleet, he took many strongholds, among which was Nutria, a place of great strength, and defended by a numerous garrison; so that it made a vigorous defence, the Romans having lost before it a great many private men, several legionary tribunes, and one quæstor. However, this loss was repaired by the taking of 40 Illyrian vessels, which were returning home laden with booty. At length the Roman fleet appeared before Issa, which, by Teuta's order, was still closely besieged, notwithstanding the losses she had sustained. However, upon the approach of the Roman fleet, the Illyrians

Rome.

Rome.

Illyrians dispersed; but the Pharians, who served among them, followed the example of their countryman Demetrius, and joined the Romans, to whom the Iffani readily submitted.

In the mean time Sp. Corvilius and Q. Fabius Maximus being raised to the consulate a second time, Posthumius was recalled from Illyricum, and refused a triumph for having been too prodigal of the Roman blood at the siege of Nutria. His colleague Fulvius was appointed to command the land forces in his room, in quality of proconsul. Hereupon Teuta, who had founded great hopes on the change of the consuls, retired to one of her strongholds called *Rhizon*, and from thence early in the spring sent an embassy to Rome. The senate refused to treat with her; but granted the young king a peace upon the following conditions: 1. That he should pay an annual tribute to the republic. 2. That he should surrender part of his dominions to the Romans. 3. That he should never suffer above three of his ships of war at a time to sail beyond Lyffus, a town on the confines of Macedon and Illyricum. The places he yielded to the Romans in virtue of this treaty, were the islands of Corcyra, Iffa, and Pharos, the city of Dyrrhachium, and the country of the Atintanes. Soon after Teuta, either out of shame, or compelled by a secret article of the treaty, abdicated the regency, and Demetrius succeeded her.

Before this war was ended, the Romans were alarmed by new motions of the Gauls, and the great progress which the Carthaginians made in Spain. At this time also the fears of the people were excited by a prophecy said to be taken out of the Sibylline books, that the Gauls and Greeks should one day be in possession of Rome. This prophecy, however, the senate found means to elude, as they pretended, by burying two Gauls and two Greeks alive, and then telling the multitude that the Gauls and Greeks were now in the possession of Rome. The difficulties which superstition had raised being thus surmounted, the Romans made vast preparations against the Gauls, whom they seem to have dreaded above all other nations. Some say that the number of forces raised by the Romans on this occasion amounted to no fewer than 800,000 men. Of this incredible multitude 248,000 foot and 26,000 horse were Romans or Campanians; nevertheless, the Gauls, with only 50,000 foot and 20,000 horse, forced a passage through Hetruria, and took the road towards Rome. Here they had the good fortune at first to defeat one of the Roman armies; but being soon after met by two others, they were utterly defeated, with the loss of more than 50,000 of their number. The Romans then entered their country, which they cruelly ravaged; but a plague breaking out in their army, obliged them to return home. This was followed by a new war, in which those Gauls who inhabited Insubria and Liguria were totally subdued, and their country reduced to a Roman province. These conquests were followed by that of Istria; Dimalum, a city of importance in Illyricum; and Pharos, an island in the Adriatic sea.

The second Punic war for some time retarded the conquests of the Romans, and even threatened their state with entire destruction; but Hannibal being at last recalled from Italy, and entirely defeated at Zama, they made peace upon such advantageous terms as gave them an entire superiority over that republic, which they not

long after entirely subverted, as has been related in the history of CARTHAGE. Rome.

The successful issue of the second Punic war had greatly increased the extent of the Roman empire. ¹⁷³ They were now masters of all Sicily, the Mediterranean islands, and great part of Spain; and, through the dissensions of the Asiatic states with the king of Macedon, a pretence was now found for carrying their arms into these parts. The Gauls in the mean time, however, continued their incursions, but now ceased to be formidable; while the kings of Macedon, through misconduct, were first obliged to submit to a disadvantageous peace, and at last totally subdued (see MACEDON). The reduction of Macedon was soon followed by that of all Greece, either by the name of allies or otherwise: while Antiochus the Great, to whom Hannibal fled for protection, by an unsuccessful war first gave the Romans a footing in Asia (see SYRIA). The Spaniards and Gauls continued to be the most obstinate enemies. The former, particularly, were rather exterminated than reduced; and even this required the utmost care and vigilance of Scipio Æmilianus, the conqueror of Carthage, to execute. See SPAIN and NUMANTIA.

Thus the Romans attained to a height of power superior to any other nation in the world; but now a sedition broke out, which we may say was never terminated but with the overthrow of the republic. This had its origin from Tiberius Sempronius Gracchus, descended from a family which, though plebeian, was as illustrious as any in the commonwealth. His father had been twice raised to the consulate, was a great general, and had been honoured with two triumphs. But he was still more renowned for his domestic virtues and probity, than for his birth or valour. He married the daughter of the first Africanus, said to be the pattern of her sex, and the prodigy of her age; and had by her several children, of whom three only arrived at maturity of age, Tiberius Gracchus, Caius Gracchus, and a daughter named *Sempronia*, who was married to the second Africanus. Tiberius, the eldest, was deemed the most accomplished youth in Rome, with respect to the qualities both of body and mind. His extraordinary talents were heightened by a noble air, an engaging countenance, and all those winning graces of nature which recommend merit. He made his first campaigns under his brother-in-law, and distinguished himself on all occasions by his courage, and by the prudence of his conduct. When he returned to Rome, he applied himself to the study of eloquence; and at 30 years old was accounted the best orator of his age. He married the daughter of Appius Claudius, who had been formerly consul and censor, and was then prince of the senate. He continued for some time in the sentiments both of his own and his wife's family, and supported the interests of the patricians; but without openly attacking the popular faction. He was the chief author and negociator of that shameful necessary peace with the Numantines; which the senate, with the utmost injustice, disannulled, and condemned the consul, the quaestor, and all the officers who had signed it, to be delivered up to the Numantines (see NUMANTIA). The people, indeed, out of esteem for Gracchus, would not suffer him to be sacrificed: but, however, he had just reason to complain, both of the senate and people, 174 Sedition of the Gracchis

¹⁷²
The Gauls
of Insubria
and Liguria
subdued.

Rome.

for passing so scandalous a decree against his general and himself, and breaking a treaty whereby the lives of so many citizens had been saved. But as the senate had chiefly promoted such base and iniquitous proceedings, he resolved in due time to show his resentment against the party which had contributed most to his disgrace.

In order to this, he stood for the tribuneship of the people; which he no sooner obtained, than he resolved to attack the nobility in the most tender part. They had usurped lands unjustly; cultivated them by slaves, to the great detriment of the public; and had lived for about 250 years in open defiance to the Licinian law, by which it was enacted that no citizen should possess more than 500 acres. This law Tib. Gracchus resolved to revive, and by that means revenge himself on the patricians. But it was not revenge alone which prompted him to embark in so dangerous an attempt. It is pretended, that his mother Cornelia animated him to undertake something worthy both of his and her family. The reproaches of his mother, the authority of some great men, namely of his father-in-law Appius Claudius, of P. Crassus the *pontifex maximus*, and of Mutius Scaevola, the most learned civilian in Rome, and his natural thirst after glory, joined with an eager desire of revenge, conspired to draw him into this most unfortunate scheme.

175
A new law
proposed by
Gracchus.

The law, as he first drew it up, was very mild: for it only enacted, that those who possessed more than 500 acres of land should part with the overplus; and that the full value of the said lands should be paid them out of the public treasury. The lands thus purchased by the public were to be divided among the poor citizens; and cultivated either by themselves or by freemen, who were upon the spot. Tiberius allowed every child of a family to hold 250 acres in his own name, over and above what was allowed to the father. Nothing could be more mild than this new law; since by the Licinian he might have absolutely deprived the rich of the lands they unjustly possessed, and made them accountable for the profits they had received from them during their long possession. But the rich patricians could not so much as bear the name of the *Licinian law*, though thus qualified. Those chiefly of the senatorial and equestrian order exclaimed against it, and were continually mounting the rostra one after another, in order to dissuade the people from accepting a law, which, they said, would raise disturbances, that might prove more dangerous than the evils which Tiberius pretended to redress by the promulgation of it. Thus the zealous tribune was obliged day after day to enter the lists with fresh adversaries; but he ever got the better of them both in point of eloquence and argument.

The people were charmed to hear him maintain the cause of the unfortunate with so much success, and bestowed on him the highest commendations. The rich therefore had recourse to violence and calumny, in order to destroy, or at least to discredit, the tribune. It is said they hired assassins to dispatch him; but they could not put their wicked design in execution, Gracchus being always attended to and from the rostra by a guard of about 4000 men. His adversaries therefore endeavoured to ruin his reputation by the blackest calumnies. They gave out that he aimed at monarchy; and published pretended plots laid for crowning him

king. But the people, without giving ear to such groundless reports, made it their whole business to encourage their tribune, who was hazarding both his life and reputation for their sakes.

Rome.

When the day came on which this law was to be accepted or rejected by the people assembled in the comitium, Gracchus began with haranguing the mighty crowd which an affair of such importance had brought together both from the city and country. In his speech he showed the justice of the law with so much eloquence, made so moving a description of the miseries of the meaner sort of people, and at the same time set forth in such odious colours the usurpation of the public lands, and the immense riches which the avarice and rapaciousness of the great had raked together, that the people, transported with fury, demanded with loud cries the billets, that they might give their suffrages. Then Gracchus, finding the minds of the citizens in that warmth and emotion which was necessary for the success of his design, ordered the law to be read.

But unluckily one of the tribunes, by name *Marcus Octavius Cæcina*, who had always professed a great friendship for Gracchus, having been gained over by the patricians, declared against the proceedings of his friend and colleague; and pronounced the word which had been always awful in the mouth of a tribune of the people, *Veto*, "I forbid it." As Octavius was a man of an unblameable character, and had hitherto been very zealous for the publication of the law, Gracchus was greatly surprised at this unexpected opposition from his friend. However, he kept his temper, and only desired the people to assemble again the next day to hear their two tribunes, one in defence of, the other in opposition to, the law proposed. The people met at the time appointed; when Gracchus addressing himself to his colleague, conjured him by the mutual duties of their function, and by the bonds of their ancient friendship, not to oppose the good of the people, whom they were bound in honour to protect against the usurpation of the great: nay, taking his colleague aside, he addressed him thus, "Perhaps you are personally concerned to oppose this law; if so, I mean, if you have more than the five hundred acres, I myself, poor as I am, engage to pay you in money what you will lose in land." But Octavius, either out of shame, or from a principle of honour, continued immovable in the party he had embraced.

176
Opposed by
the tribune
Octavius,

Gracchus therefore had recourse to another expedient; which was to suspend all the magistrates in Rome from the execution of their offices. It was lawful for any tribune to take this step, when the passing of the law which he proposed was prevented by mere chicanery. After this, he assembled the people anew, and made a second attempt to succeed in his design. When all things were got ready for collecting the suffrages, the rich privately conveyed away the urns in which the tablets were kept. This kindled the tribune's indignation, and the rage of the people. The comitium was like to become a field of battle, when two venerable senators, Manlius and Fulvius, very seasonably interposed; and throwing themselves at the tribune's feet, prevailed upon him to submit his law to the judgment of the conscript fathers. This was making the senators judges in their own cause: but Gracchus thought the law so undeniably

Rome. deniably just, that he could not persuade himself that they would reject it; and if they did, he knew that the incensed multitude would no longer keep any measures with them.

The senate, who wanted nothing but to gain time, affected delays, and came to no resolution. There were indeed some among them, who, out of a principle of equity, were for paying some regard to the complaints of the tribune, and for sacrificing their own interest to the relief of the distressed. But the far greater part would not hear of any composition whatsoever. Hereupon Gracchus brought the affair anew before the people, and earnestly intreated his colleague Octavius to drop his opposition, in compassion to the many unfortunate people for whom he interceded. He put him in mind of their ancient friendship, took him by the hand, and affectionately embraced him. But still Octavius was inflexible. Hereupon Gracchus resolved to deprive Octavius of his tribuneship, since he alone obstinately withstood the desires of the whole body of so great a people. Having therefore assembled the people, he told them, that since his colleague and he were divided in opinion, and the republic suffered by their division, it was the province of the tribes assembled in comitia to re-establish concord among their tribunes. "If the cause I maintain (said he) be, in your opinion, unjust, I am ready to give up my seat in the college. On the contrary, if you judge me worthy of being continued in your service in this station, deprive him of the tribuneship who alone obstructs my wishes. As soon as you shall have nominated one to succeed him, the law will pass without opposition." Having thus spoken, he dismissed the assembly, after having summoned them to meet again the next day.

And now Gracchus, being soured with the opposition he had met with from the rich, and from his obstinate colleague, and being well apprised that the law would pass in any form in which he should think fit to propose it, resolved to revive it as it was at first passed, without abating any thing of its severity. There was no exception in favour of the children in families; or reimbursement promised to those who should part with the lands they possessed above 5000 acres. The next day the people being assembled in vast crowds on this extraordinary occasion, Gracchus made fresh applications to Octavius, but to no purpose; he obstinately persisted in his opposition. Then Gracchus turning to the people, "Judge you, (said he), which of us deserves to be deprived of his office." At these words the first tribe voted, and declared for the deposition of Octavius. Upon which Gracchus, suspending the ardour of the tribes, made another effort to bring over his opponent by gentle methods. But all his endeavours proving ineffectual, the other tribes went on to vote in their turns, and followed the example of the first. Of 35 tribes, 17 had already declared against Octavius, and the 18th was just going to determine the affair, when Gracchus, being willing to try once more whether he could reclaim his colleague, suspended the collecting of the suffrages; and addressing Octavius in the most pressing terms, conjured him not to expose himself, by his obstinacy, to so great a disgrace, nor to give him the grief of having cast a blemish upon his colleague and friend, which neither time nor merit would ever wipe off. Octavius, however, continuing obstinate, was deposed, and the law

passed as Gracchus had proposed it the last time. The deposed tribune was dragged from the rostra by the incensed multitude, who would have insulted him further, had not the senators and his friends facilitated his escape.

The Licinian law being thus revived with one consent both by the city and country tribes, Gracchus caused the people to appoint triumvirs, or three commissioners, to hasten its execution. In this commission the people gave Gracchus the first place; and he had interest enough to get his father-in-law Appius Claudius, and his brother Caius Gracchus, appointed his colleagues. These three spent the whole summer in travelling through all the Italian provinces, to examine what lands were held by any person above 500 acres, in order to divide them among the poor citizens. When Gracchus returned from his progress, he found, by the death of his chief agent, that his absence had not abated either the hatred of the rich, or the love of the poor, toward him. As it plainly appeared that the deceased had been poisoned, the tribune took this occasion to apply himself again to his protectors, and implore their assistance against the violence and treachery of his enemies. The populace, more attached after this accident to their hero than ever, declared they would stand by him to the last drop of their blood; and thus their zeal encouraged him to add a new clause to the law, viz. that the commissioners should likewise inquire what lands had been usurped from the republic. This was touching the senators in a most tender point; for most of them had appropriated to themselves lands belonging to the republic. After all, the tribune, upon a strict inquiry, found that the lands taken from the rich would not be enough to content all the poor citizens. But the following accident eased him of this difficulty, and enabled him to stop the murmurs of the malcontents among the people.

Attalus Philometer, king of Pergamus, having bequeathed his dominions and effects to the Romans, Eudemus the Pergamean brought his treasures to Rome at this time; and Gracchus immediately got a new law passed, enacting, that this money should be divided among the poor citizens who could not have lands; and that the disposal of the revenues of Pergamus should not be in the senate, but in the comitia. By these steps Gracchus most effectually humbled the senate; who, in order to discredit him among the people, gave out that Eudemus, who had brought the king's will to Rome, had left with Gracchus the royal diadem and mantle of Attalus, which the law-making tribune was to use when he should be proclaimed king of Rome. But these reports only served to put Gracchus more upon his guard, and to inspire the people with an implacable hatred against the rich who were the authors of them. Gracchus being now, by his power over the minds of the multitude, absolute master of their suffrages, formed a design of raising his father-in-law Appius Claudius to the consulate next year, of promoting his brother Caius to the tribuneship, and getting himself continued in the same office. The last was what most nearly concerned him; his person, as long as he was in office, being sacred and inviolable. As the senate was very active in endeavouring to get such only elected into the college of tribunes as were enemies to Gracchus and his faction, the tribune left no stone

Rome.

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The treasures of Attalus divided among the people by Gracchus.

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who is deposed, and the law passed.

Rome.

returned to secure his election. He told the people, that the rich had resolved to assassinate him as soon as he was out of his office; he appeared in mourning, as was the custom in the greatest calamities; and bringing his children, yet young, into the forum, recommended them to the people in such terms, as showed that he despaired of his own preservation. At this sight the populace returned no answer, but by outcries and menaces against the rich.

When the day appointed for the election of new tribunes came, the people were ordered to assemble in the capitol in the great court before the temple of Jupiter. The tribes being met, Gracchus produced his petition, intreating the people to continue him one year longer in the office of tribune, in consideration of the great danger to which he was exposed, the rich having vowed his destruction as soon as his person should be no more sacred. This was indeed an unusual request, it having been long customary not to continue any tribune in his office above a year. However, the tribes began to vote, and the two first declared for Gracchus. Hereupon the rich made great clamours; which terrified Rubrius Varro, who presided in the college of tribunes that day, to such a degree, that he resigned his place to Q. Mummius, who offered to preside in his room. But this raised a tumult among the tribunes themselves; so that Gracchus wisely dismissed the assembly, and ordered them to meet again the next day.

In the mean time the people, being sensible of what importance it was to them to preserve the life of so powerful a protector, not only conducted him home, but watched by turns all night at his door. Next morning by break of day, Gracchus having assembled his friends, led them from his house, and posted one half of them in the comitium, while he went up himself with the other to the capitol. As soon as he appeared, the people saluted him with loud acclamations of joy. But scarcely was he placed in his tribunal, when Fulvius Flaccus a senator, and friend to Gracchus, breaking through the crowd, came up to him, and gave him notice, that the senators, who were assembled in the temple of Faith, which almost touched that of Jupiter Capitolinus, had conspired against his life, and were resolved to attack him openly on his very tribunal. Hereupon Gracchus tucked up his robe, as it were, to prepare for a battle; and, after his example, some of his party seizing the staves of the apparitors, prepared to defend themselves, and to repel force by force. These preparations terrified the other tribunes; who immediately abandoned their places in a cowardly manner, and mixed with the crowd; while the priests ran to shut the gates of the temple, for fear of its being profaned. On the other hand, the friends of Gracchus, who were dispersed by parties in different places, cried out, *We are ready: What must we do?* Gracchus, whose voice could not be heard by all his adherents on account of the tumult, the clamours, and the confused cries of the different parties, put his hand to his head; which was the signal agreed on to prepare for battle. But some of his enemies, putting a malicious construction upon that gesture, immediately flew to the senate, and told the fathers, that the seditious tribune had called for the crown to be put upon his head. Hereupon the senators, fancying they already saw the king of Perga-

179
A conspiracy
against
his life.

mus's diadem on the tribune's head, and the royal mantle on his shoulders, resolved to give the consul leave to arm his legions, treat the friends of Gracchus as enemies, and turn the comitium into a field of battle.

But the consul Mutius Scævola, who was a prudent and moderate man, refused to be the instrument of their rash revenge, and to dishonour his consulate with the massacre of a disarmed people. As Calpurnius Piso, the other consul, was then in Sicily, the most turbulent among the senators cried out, "Since one of our consuls is absent, and the other betrays the republic, let us do ourselves justice; let us immediately go and demolish with our own hands this idol of the people." Scipio Nafica, who had been all along for violent measures, inveighed bitterly against the consul for refusing to succour the republic in her greatest distress. Scipio Nafica was the great-grandson of Cneius Scipio, the uncle of the first Africanus, and consequently cousin to the Gracchi by their mother Cornelia. But nevertheless not one of the senators betrayed a more irreconcilable hatred against the tribune than he. When the prudent consul refused to arm his legions, and put the adherents of Gracchus to death contrary to the usual forms of justice, he set no bounds to his fury, but, rising up from his place, cried out like a madman, "Since our consul betrays us, let those who love the republic follow me." Having uttered these words, he immediately walked out of the temple, attended by a great number of senators.

Nafica threw his robe over his shoulders, and having covered his head with it, advanced with his followers into the crowd, where he was joined by a company of the clients and friends of the patricians, armed with staves and clubs. These, falling indifferently upon all who stood in their way, dispersed the crowd. Many of Gracchus's party took to their heels; and in that tumult all the seats being overturned and broken, Nafica, armed with the leg of a broken bench, knocked down all who opposed him, and at length reached Gracchus. One of his party seized the tribune by the lappet of his robe: but he, quitting his gown, fled in his tunic; and as he was in that confusion, which is inseparable from fear, leaping over the broken benches, he had the misfortune to slip and fall. As he was getting up again, he received a blow on the head, which stunned him: then his adversaries rushing in upon him, with repeated blows put an end to his life.

Rome was by his death delivered, according to Cicero, from a domestic enemy, who was more formidable to her than even that Numantia, which had first kindled his resentments. Perhaps no man was ever born with greater talents, or more capable of aggrandizing himself, and doing honour to his country. But his great mind, his manly courage, his lively, easy, and powerful eloquence, were, says Cicero, like a sword in the hands of a madman. Gracchus abused them, not in supporting an unjust cause, but in conducting a good one with too much violence. He went so far as to make some believe that he had really something in view besides the interest of the people whom he pretended to relieve; and therefore some historians have represented him as a tyrant. But the most judicious writers clear him from this imputation, and ascribe his first design of reviving the Licinian law to an eager desire of being re-

venged

Rome.

180

A scuffle
ensues, in
which
Gracchus
is killed.

Rome. venged on the senators for the affront they had very unjustly put upon him, and the consul Mancinus, as we have hinted above. The law he attempted to revive had an air of justice, which gave a sanction to his revenge, without casting any blemish on his reputation.

181 His friends massacred. The death of Gracchus did not put an end to the tumult. Above 300 of the tribune's friends lost their lives in the affray; and their bodies were thrown, with that of Gracchus, into the Tiber. Nay, the senate carried their revenge beyond the fatal day which had stained the Capitol with Roman blood. They fought for all the friends of the late tribune, and without any form of law assassinated some, and forced others into banishment. Caius Billius, one of the most zealous defenders of the people, was seized by his enemies, and shut up in a cask with snakes and vipers, where he miserably perished. Though the laws prohibited any citizen to take away the life of another before he had been legally condemned, Nafica and his followers were acquitted by the senate, who enacted a decree, justifying all the cruelties committed against Gracchus and his adherents.

182 The disturbances increase. These disturbances were for a short time interrupted by a revolt of the slaves in Sicily, occasioned by the cruelty of their masters; but they being soon reduced, the contests about the *Sempronian law*, as it was called, again took place. Both parties were determined not to yield; and therefore the most fatal effects ensued. The first thing of consequence was the death of Scipio Africanus the Second, who was privately strangled in his bed by some of the partisans of the plebeian party, about 129 B. C. Caius Gracchus, brother to him who had been formerly killed, not only undertook the revival of the Sempronian law, but proposed a new one, granting the rights of Roman citizens to all the Italian allies, who could receive no share of the lands divided in consequence of the Sempronian law. The consequences of this were much worse than the former; the flame spread through all Italy; and the nations who had made war with the republic in its infancy again commenced enemies more formidable than before. Fregellæ, a city of the Volsci, revolted: but being suddenly attacked, was obliged to submit, and was raised to the ground; which quieted matters for the present. Gracchus, however, still continued his attempts to humble the senate and the rest of the patrician body: the ultimate consequence of which was, that a price was set on his head, and that of Fulvius his confederate, no less than their weight in gold, to any one who should bring them to Opinius the chief of the patrician party. Thus the custom of proscription was begun by the patricians, of which they themselves soon had enough. Gracchus and Fulvius were sacrificed, but the disorders of the republic were not so easily cured.

The inundation of the Cimbri and Teutones put a stop to the civil discords for some time longer; but they being defeated, as related under the article CIMBRI and TEUTONES, nothing prevented the troubles from being revived with greater fury than before, except the war with the Sicilian slaves, which had again commenced with more dangerous circumstances than ever. But this war being totally ended about 99 B. C. no farther obstacle remained. Marius, the conqueror of Jugurtha* and the Cimbri, undertook the cause of the plebeians against the senate and patricians. Ha-

* See *Nuzumidia*.

ving associated himself with Apuleius and Glaucia, two factious men, they carried their proceedings to such a length, that an open rebellion commenced, and Marius himself was obliged to act against his allies. Peace, however, was for the present restored by the massacre of Apuleius and Glaucia, with a great number of their followers; upon which Marius thought proper to leave the city.

While factious men thus endeavoured to tear the republic in pieces, the attempts of well-meaning people to heal those divisions served only to involve the state in calamities still more grievous. The consuls observed, that many individuals of the Italian allies lived at Rome, and falsely pretended to be Roman citizens. By means of them, it was likewise perceived, that the plebeian party had acquired a great deal of its power; as the votes of these pretended citizens were always at the service of the tribunes. The consuls therefore got a law passed, commanding all those pretended citizens to return home. This was so much resented by the Italian states, that an universal defection took place. A scheme was then formed by M. Livius Drusus, a tribune of the people, to reconcile all orders of men; but this only made matters worse, and procured his own assassination. His death seemed a signal for war. The 183 The social war. Marsi, Peligni, Samnites, Campanians, and Lucanians, and in short all the provinces from the river Liris to the Adriatic, revolted at once, and formed themselves into a republic, in opposition to that of Rome. The haughty Romans were now made thoroughly sensible that they were not invincible: they were defeated in almost every engagement; and must soon have yielded, had they not fallen upon a method of dividing their enemies. A law was passed, enacting, that all the nations in Italy, whose alliance with Rome was indispensible, should enjoy the right of Roman citizens. This drew off several nations from the alliance; and at the same time, Sylla taking upon him the command of the Roman armies, fortune soon declared in favour of the latter.

The success of Rome against the allies served only to bring greater miseries upon herself. Marius and Sylla became rivals; the former adhering to the people, and the latter to the patricians. Marius associated with one of the tribunes named *Sulpitius*; in conjunction with whom he raised such disturbances, that Sylla was forced to retire from the city. Having thus driven off his rival, Marius got himself appointed general against Mithridates* king of Pontus; but the soldiers refused to obey any other than Sylla. A civil war immediately ensued, in which Marius was driven out in his turn, and a price set upon his head and that of Sulpitius, with many of their adherents. Sulpitius was soon seized and killed; but Marius made his escape. In the mean time, however, the cruelties of Sylla rendered him obnoxious both to the senate and people; and Cinna, a furious partisan of the Marian faction, being chosen consul, cited him to give an account of his conduct. Upon this Sylla thought proper to set out for Asia: Marius was recalled from Africa, whither he had fled; and immediately on his landing in Italy, was joined by a great number of shepherds, slaves, and men of desperate fortunes; so that he soon saw himself at the head of a considerable army.

Cinna, in the mean time, whom the senators had deposed

Rome.
184
Horrid
cruelties
committed
by Cinna,
Marius, &c.

posed and driven out of Rome, solicited and obtained a powerful army from the allies; and being joined by Sertorius, a most able and experienced general, the two, in conjunction with Marius, advanced towards the capital; and as their forces daily increased, a fourth army was formed under the command of Papirius Carbo. The senate raised some forces to defend the city; but the troops being vastly inferior in number, and likewise inclined to the contrary side, they were obliged to open their gates to the confederates. Marius entered at the head of a numerous guard, composed of slaves, whom he called his *Bardiæans*, and whom he delighted to employ in revenging himself on his enemies. The first order he gave these assassins was, to murder all who came to salute him, and were not answered with the like civility. As every one was forward to pay his compliments to the new tyrant, this order proved the destruction of vast numbers. At last these Bardiæans abandoned themselves to such excesses in every kind of vice, that Cinna and Sertorius ordered their troops to fall upon them; which being instantly put in execution, they were all cut off to a man.

By the destruction of his guards, Marius was reduced to the necessity of taking a method of gratifying his revenge somewhat more tedious, though equally effectual. A conference was held between the four chiefs, in which Marius seemed quite frantic with rage. Sertorius endeavoured to moderate his fury; but, being overruled by Cinna and Carbo, a resolution was taken to murder without mercy all the senators who had opposed the popular faction. This was immediately put in execution. A general slaughter commenced, which lasted five days, and during which the greatest part of the obnoxious senators were cut off, their heads stuck upon poles over-against the rostra, and their bodies dragged with hooks into the forum, where they were left to be devoured by dogs. Sylla's house was demolished, his goods confiscated, and he himself declared an enemy to his country: however, his wife and children had the good fortune to make their escape.— This massacre was not confined to the city of Rome. The soldiers, like as many blood-hounds, were dispersed over the country in search of those who fled. The neighbouring towns, villages, and all the highways, swarmed with assassins; and on this occasion Plutarch observes with great concern, that the most sacred ties of friendship and hospitality are not proof against treachery, in the day of adversity, for there were but very few who did not discover their friends who had fled to them for shelter.

185
Sylla threatens
revenge.

This slaughter being over, Cinna named himself and Marius consuls for the ensuing year; and these tyrants seemed resolved to begin the new year as they had ended the old one: but, while they were preparing to renew their cruelties, Sylla, having proved victorious in the east, sent a long letter to the senate, giving an account of his many victories, and his resolution of returning to Rome, not to restore peace to his country, but to revenge himself of his enemies, i. e. to destroy those whom Marius had spared. This letter occasioned an universal terror. Marius, dreading to enter the lists with such a renowned warrior, gave himself up to excessive drinking, and died. His son was associated with Cinna in the government, though not in the consulship, and proved a tyrant no less cruel than his father. The

Rome.

senate declared one Valerius Flaccus general of the forces in the east, and appointed him a considerable army; but the troops all to a man deserted him, and joined Sylla. Soon after, Cinna declared himself consul a third time, and took for his colleague Papirius Carbo; but the citizens, dreading the tyranny of these inhuman monsters, fled in crowds to Sylla, who was now in Greece. To him the senate sent deputies, begging that he would have compassion on his country, and not carry his resentment to such a length as to begin a civil war: but he replied, that he was coming to Rome full of rage and revenge; and that all his enemies, if the Roman people consented to it, should perish either by the sword or the axes of the executioners. Upon this several very numerous armies were formed against him; but, through the misconduct of the generals who commanded them, these armies were every where defeated, or went over to the enemy. Pompey, afterwards styled *the Great*, signalized himself in this war, and embraced the party of Sylla. The Italian nations took some one side and some another, as their different inclinations led them. Cinna, in the mean time, was killed in a tumult, and young Marius and Carbo succeeded him; but the former having ventured an engagement with Sylla, was by him defeated, and forced to fly to Præneste, where he was closely besieged.

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Thus was Rome reduced to the lowest degree of misery, when one Pontius Telesinus, a Samnite of great experience in war, projected the total ruin of the city. He had joined, or pretended to join, the generals of the Marian faction with an army of 40,000 men; and therefore marched towards Præneste, as if he designed to relieve Marius. By this means he drew Sylla and Pompey away from the capital; and then, decamping in the night, overreached these two generals, and by break of day was within 10 furlongs of the Collatine gate. He, then pulled off the mask; and declaring himself as much an enemy to Marius as to Sylla, told his troops, that it was not his design to assist one Roman against another, but to destroy the whole race. "Let fire and sword (said he) destroy all; let no quarter be given; mankind can never be free as long as one Roman is left alive."—Never had this proud metropolis been in greater danger; nor ever had any city a more narrow escape. The Roman youth marched out to oppose him, but were driven back with great slaughter. Sylla himself was defeated, and forced to fly to his camp. Telesinus advanced with more fury than ever; but, in the mean time, the other wing of his army having been defeated by M. Crassus, the victorious general attacked the body where Telesinus commanded, and by putting them to flight, saved his country from the most imminent danger.

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Sylla, having now no enemy to fear, marched first to Atennæ, and thence to Rome. From the former city he carried 8000 prisoners to Rome, and caused them all to be massacred at once in the circus. His cruelty next fell upon the Prænestines, 12,000 of whom were massacred without mercy. Young Marius had killed himself, in order to avoid falling into the hands of such a cruel enemy. Soon after, the inhabitants of Norba, a city of Campania, finding themselves unable to resist the forces of the tyrant, set fire to their houses, and all perished in the flames. The taking of these cities put an end to the civil war, but not to the cruelties

of Sylla.

Rome. ties of Sylla. Having assembled the people in the comitium, he told them, that he was resolved not to spare a single person who had borne arms against him. This cruel resolution he put in execution with the most unrelenting rigour; and having at last cut off all those whom he thought capable of opposing him, Sylla caused himself to be declared perpetual dictator, or, in other words, king and absolute sovereign of Rome.

188
He is proclaimed perpetual dictator.

This revolution happened about 80 B. C. and from this time we may date the loss of the Roman liberty. Sylla indeed resigned his power in two years; but the citizens of Rome having once submitted, were ever after more inclined to submit to a master. Though individuals retained the same enthusiastic notions of liberty as before, yet the minds of the generality seem from this time to have inclined towards monarchy. New masters were indeed already prepared for the republic. Cæsar and Pompey had eminently distinguished themselves by their martial exploits, and were already rivals. They were, however, for some time prevented from raising any disturbances by being kept at a distance from each other. Sertorius, one of the generals of the Marian faction, and the only one of them possessed either of honour or probity, had retired into Spain, where he erected a republic independent of Rome. Pompey and Metellus, two of the best reputed generals in Rome, were sent against him; but instead of conquering, they were on all occasions conquered by him, and obliged to abandon their enterprise with disgrace. At last Sertorius was treacherously murdered; and the traitors, who after his death usurped the command, being totally destitute of his abilities, were easily defeated by Pompey: and thus that general reaped an undeserved honour from concluding the war with success.

189
Pompey and Crassus assume great authority.

The Spanish war was scarce ended, when a very dangerous one was excited by Spartacus, a Thracian gladiator. For some time this rebel proved very successful; but at last was totally defeated and killed by Crassus. The fugitives, however, rallied again, to the number of 5000; but, being totally defeated by Pompey, the latter took occasion from thence to claim the glory which was justly due to Crassus. Being thus become extremely popular, and setting no bounds to his ambition, he was chosen consul along with Crassus. Both generals were at the head of powerful armies; and a contest between them immediately began about who should first lay down their arms. With difficulty they were in appearance reconciled, and immediately began to oppose one another in a new way. Pompey courted the favour of the people, by reinstating the tribunes in their ancient power, which had been greatly abridged by Sylla. Crassus, though naturally covetous, entertained the populace with surprising profusion at 10,000 tables, and at the same time distributed corn sufficient to maintain their families for three months.—These prodigious expences will seem less surprising, when we consider that Crassus was the richest man in Rome, and that his estate amounted to upwards of 7000 talents, i. e. 1,356,250 l. sterling. Notwithstanding his utmost efforts, however, Pompey still had the superiority; and was therefore proposed as a proper person to be employed for clearing the seas of pirates. In this new station a most extensive power was to be granted to him. He was to have an absolute authority for three years over all the seas within the straits or Pillars of

Rome. Hercules, and over all the countries for the space of 400 furlongs from the sea. He was empowered to raise as many soldiers and mariners as he thought proper; to take what sums of money he pleased out of the public treasury without being accountable for them; and to choose out of the senate fifteen senators to be his lieutenants, and to execute his orders when he himself could not be present. The sensible part of the people were against investing one man with so much power; but the unthinking multitude rendered all opposition fruitless. The tribune Roscius attempted to speak against it, but was prevented by the clamours of the people. He then held up two of his fingers, to show that he was for dividing that extensive commission between two persons: but on this the assembly burst out into such hideous outcries, that a crow flying accidentally over the comitium, was stunned with the noise, and fell down among the rabble. This law being agreed to, Pompey executed his commission so much to the public satisfaction, that on his return a new law was proposed in his favour. By this he was to be appointed general of all the forces in Asia; and as he was still to retain the sovereignty of the seas, he was now in fact made sovereign of all the Roman empire.—This law was supported by Cicero and Cæsar, the former aspiring at the consulate, and the latter pleased to see the Romans so readily appointing themselves a master. Pompey, however, executed his commission with the utmost fidelity and success, completing the conquest of Pontus, Albania, &c. which had been successfully begun by Sylla and Lucullus.

190
Conspiracy of Catiline.
But while Pompey was thus aggrandising himself, the republic was on the point of being subverted by a conspiracy formed by Lucius Sergius Catiline. He was descended from an illustrious family; but having quite ruined his estate, and rendered himself infamous by a series of the most detestable crimes, he associated with a number of others in circumstances similar to his own, in order to repair their broken fortunes by ruining their country. Their scheme was to murder the consuls together with the greatest part of the senators, set fire to the city in different places, and then seize the government. This wicked design miscarried twice: but was not on that account dropped by the conspirators. Their party increased every day; and both Cæsar and Crassus, who since the departure of Pompey had studied to gain the affections of the people as far as possible, were thought to have been privy to the conspiracy. At last, however, the matter was discovered by means of a young knight, who had indiscreetly revealed the secret to his paramour. Catiline then openly took the field, and soon raised a considerable army: but was utterly defeated and killed about 62 B. C.; and thus the republic was freed from the present danger.

In the mean time, Cæsar continued to advance in popularity and in power. Soon after the defeat of Catiline, he was created pontifex maximus; and after that was sent into Spain, where he subdued several nations that had never before been subject to Rome.—While he was thus employed, his rival Pompey returned from the east, and was received with the highest honours; but though still as ambitious as ever, he now affected extraordinary modesty, and declined accepting of the applause which was offered him. His aim was to assume a sovereign authority without seeming to desire it; but he

Rome.

he was soon convinced, that, if he desired to reign over his fellow-citizens, it must be by force of arms. He therefore renewed his intrigues, and spared no pains, however mean and scandalous, to increase his popularity. Cæsar, on his return from Spain, found the sovereignty divided between Crassus and Pompey, each of whom was ineffectually struggling to get the better of the other. Cæsar, no less ambitious than the other two, proposed that they should put an end to their differences, and take him for a partner in their power. In short, he projected a triumvirate, or association of three persons, (Pompey, Crassus, and himself), in which should be lodged the whole power of the senate and people; and, in order to make their confederacy more lasting, they bound themselves by mutual oaths and promises to stand by each other, and suffer nothing to be undertaken or carried into execution without the unanimous consent of all the three.

191
The first
triumvirate.

Thus was the liberty of the Romans taken away a second time, nor did they ever afterwards recover it; though at present none perceived that this was the case, except Cato. The association of the triumvirs was for a long time kept secret; and nothing appeared to the people except the reconciliation of Pompey and Crassus, for which the state reckoned itself indebted to Cæsar. The first consequence of the triumvirate was the consulship of Julius Cæsar. But though this was obtained by the favour of Pompey and Crassus, he found himself disappointed in the colleague he wanted to associate with him in that office. He had pitched upon one whom he knew he could manage as he pleased, and distributed large sums among the people in order to engage them to vote for him. The senate, however, and even Cato himself, resolved to defeat the triumvir at his own weapons; and having therefore set up another candidate, distributed such immense sums on the opposite side, that Cæsar, notwithstanding the vast riches he had acquired, was forced to yield. This defeat proved of small consequence. Cæsar set himself to engage the affections of the people; and this he did, by an agrarian law, so effectually, that he was in a manner idolized. The law was in itself very reasonable and just; nevertheless, the senate, perceiving the design with which it was proposed, thought themselves bound to oppose it. Their opposition, however, proved fruitless: the consul Bibulus, who shewed himself most active in his endeavours against it, was driven out of the assembly with the greatest indignity, and from that day became of no consideration; so that Cæsar was reckoned the sole consul.

The next step taken by Cæsar was to secure the knights, as he had already done the people; and for this purpose he abated a third of the rents which they annually paid into the treasury; after which he governed Rome with an absolute sway during the time of his consulship. The reign of this triumvir, however, was ended by his expedition into Gaul, where his military exploits acquired him the highest reputation.—Pompey and Crassus in the mean time became consuls, and governed as despotically as Cæsar himself had done. On the expiration of their first consulship, the republic fell into a kind of anarchy, entirely owing to the disorders occasioned by the two late consuls. At last, however, this confusion was ended by raising Crassus and Pompey to the consulship a second time. This was no sooner done, that a new partition of the empire was

proposed. Crassus was to have Syria and all the eastern provinces, Pompey was to govern Africa and Spain, and Cæsar to be continued in Gaul, and all this for the space of five years. This law was passed by a great majority; upon which Crassus undertook an expedition against the Parthians, whom he imagined he should easily overcome, and then enrich himself with their spoils; Cæsar applied with great assiduity to the completing of the conquest of Gaul; and Pompey having nothing to do in his province, staid at Rome to govern the republic alone.

Rome.

The affairs of the Romans were now hastening to a crisis. Crassus, having oppressed all the provinces of the east, was totally defeated and killed by the Parthians*; after which the two great rivals Cæsar and Pompey were left alone, without any third person who could hold the balance between them, or prevent the deadly quarrels which were about to ensue. Matters, however, continued pretty quiet till Gaul was reduced to a Roman province †. The question then was, whether Cæsar or Pompey should first resign the command of their armies, and return to the rank of private persons. As both parties saw, that whoever first laid down his arms must of course submit to the other, both refused to disarm themselves. As Cæsar, however, had amassed immense riches in Gaul, he was now in a condition not only to maintain an army capable of vying with Pompey, but even to buy over the leading men in Rome to his interest. One of the consuls, named *Æmilius Paulus*, cost him no less than 1500 talents, or 310,625l. sterling; but the other, named *Marcellus*, could not be gained at any price. Pompey had put at the head of the tribunes one Scribonius Curio, a young patrician of great abilities, but so exceedingly debauched and extravagant, that he owed upwards of four millions and a half of our money. Cæsar, by enabling him to satisfy his creditors, and supplying him with money to pursue his debaucheries, secured him in his interest; and Curio, without seeming to be in Cæsar's interest, found means to do him the most essential service. He proposed that both generals should be recalled; being well assured that Pompey would never consent to part with his army, or lay down the government of Spain with which he had been invested, so that Cæsar might draw from Pompey's refusal a pretence for continuing himself in his province at the head of his troops. This proposal threw the opposite party into great embarrassments; and while both professed their pacific intentions, both continued in readiness for the most obstinate and bloody war.—Cicero took upon himself the office of mediator; but Pompey would hearken to no terms of accommodation. The orator, surpris'd to find him so obstinate, at the same time that he neglected to strengthen his army, asked him with what forces he designed to make head against Cæsar? To which the other answered, that he needed but stamp with his foot, and an army would start up out of the ground. This confidence he assumed because he persuaded himself that Cæsar's men would abandon him if matters came to extremities. Cæsar, however, though he affected great moderation, yet kept himself in readiness for the worst; and therefore, when the senate passed the fatal decree for a civil war, he was not in the least alarmed. This decree was issued in the year 49 B. C. and was expressed in the following words: "Let the consuls for the year, the proconsul Pompey,

* See Parthia.

192
Rivalship
of Cæsar
and Pom-
pey.
† See Gaul.

193
The decree
for a civil
war.
the

Rome. the prætors, and all those in or near Rome who have been consuls, provide for the public safety by the most proper means." This decree was no sooner passed, than the consul Marcellus went, with his colleague Lentulus, to an house at a small distance from the town, where Pompey then was; and presenting him with a sword, "We require you (said he) to take upon you with this the defence of the republic, and the command of her troops." Pompey obeyed; and Cæsar was by the same decree divested of his office, and one Lucius Domitius appointed to succeed him, the new governor being empowered to raise 4000 men in order to take possession of his province.

War being thus resolved on, the senate and Pompey began to make the necessary preparations for opposing Cæsar. The attempt of the latter to withstand their authority they termed a *tumult*; from which contemptible epithet it appeared that they either did not know, or did not dread, the enemy whom they were bringing upon themselves. However, they ordered 30,000 Roman forces to be assembled, together with as many foreign troops as Pompey should think proper; the expense of which armament was defrayed from the public treasury. The governments of provinces, and all public honours, were bestowed upon such as were remarkable for their attachment to Pompey and their enmity to Cæsar. The latter, however, was by no means wanting in what concerned his own interest. Three of the tribunes who had been his friends were driven out of Rome, and arrived in his camp disguised like slaves. Cæsar showed them to his army in this ignominious habit; and, setting forth the iniquity of the senate and patricians, exhorted his men to stand by their general under whom they had served so long with success; and finding by their acclamations that he could depend on them, he resolved to begin hostilities immediately.

194
Hostilities
begun by
Cæsar.

The first design of Cæsar was to make himself master of Ariminum, a city bordering upon Cisalpine Gaul, and consequently a part of his province; but as this would be looked upon as a declaration of war, he resolved to keep his design as private as possible. At that time he himself was at Ravenna, from whence he sent a detachment towards the Rubicon, desiring the officer who commanded it to wait for him on the banks of that river. The next day he assisted at a show of gladiators, and made a great entertainment. Towards the close of the day he rose from table, desiring his guests to stay till he came back, which he said would be very soon; but, instead of returning to the company, he immediately set out for the Rubicon, having left orders to some of his most intimate friends to follow him through different roads, to avoid being observed. Having arrived at the Rubicon, which parted Cisalpine Gaul from Italy, the succeeding misfortunes of the empire occurred to his mind, and made him hesitate. Turning then to Asinius Pollio, "If I dont cross the river (said he), I am undone; and if I do cross it, how many calamities shall I by this means bring upon Rome!" Having thus spoken, he mused a few minutes; and then crying out, "The die is cast," he threw himself into the river, and crossing it, marched with all possible speed to Ariminum, which he reached and surprised before day-break. From thence, as he had but one legion with him, he dispatched orders to the formidable army he had left in Gaul to cross the mountains and join him.

The activity of Cæsar struck the opposite party with the greatest terror; and indeed not without reason, for they had been extremely negligent in making preparations against such a formidable opponent. Pompey himself, no less alarmed than the rest, left Rome with a design to retire to Capua, where he had two legions whom he had formerly draughted out of Cæsar's army. He communicated his intended flight to the senate; but at the same time acquainted them, that if any magistrate or senator refused to follow him, he should be treated as a friend to Cæsar and an enemy to his country. In the mean time Cæsar, having raised new troops in Cisalpine Gaul, sent Marc Antony with a detachment to seize Aretium, and some other officers to secure Pisaurum and Fanum, while he himself marched at the head of the thirteenth legion to Auximum, which opened its gates to him. From Auximum he advanced into Picenum, where he was joined by the twelfth legion from Transalpine Gaul. As Picenum readily submitted to him, he led his forces against Corfinium, the capital of the Peligni, which Domitius Ahenobarbus defended with thirty cohorts. But Cæsar no sooner invested it, than the garrison betrayed their commander, and delivered him up with many senators, who had taken refuge in the place, to Cæsar, who granted them their lives and liberty. Domitius, fearing the resentment of the conqueror, had ordered one of his slaves, whom he used as a physician, to give him a dose of poison. When he came to experience the humanity of the conqueror, he lamented his misfortune, and blamed the hastiness of his own resolution. But his physician, who had only given him a sleeping draught, comforted him, and received his liberty as a reward for his affection.

195
Takes several towns.

Pompey, thinking himself no longer safe at Capua after the reduction of Corfinium, retired to Brundisium, with a design to carry the war into the east, where all the governors were his creatures. Cæsar followed him close; and arriving with his army before Brundisium, invested the place on the land-side, and undertook to shut up the port by a staccado of his own invention. But, before the work was completed, the fleet which had conveyed the two consuls with thirty cohorts to Dyrrhachium being returned, Pompey resolved to make his escape, which he conducted with all the experience and dexterity of a great officer. He kept his departure very secret; but, at the same time, made all necessary preparations for the facilitating of it. In the first place, he walled up the gates, then dug deep and wide ditches cross all the streets, except only those two that led to the port; in the ditches he planted sharp pointed stakes, covering them with hurdles and earth. After these precautions, he gave express orders that all the citizens should keep within doors, lest they should betray his design to the enemy; and then, in the space of three days, embarked all his troops, except the light-armed infantry, whom he had placed on the walls; and these likewise, on a signal given, abandoning their posts, repaired with great expedition to the ships. Cæsar, perceiving the walls unguarded, ordered his men to scale them, and make what haste they could after the enemy. In the heat of the pursuit, they would have fallen into the ditches which Pompey had prepared for them, had not the Brundisians warned them of the danger, and, by many windings and turnings, led them to the haven, where they found all the fleet under sail, except

196
Besieges Pompey, who escapes by a stratagem.

Rome.

except two vessels, which had run aground in going out of the harbour. These Cæsar took, made the soldiers on board prisoners, and brought them ashore.

Cæsar, seeing himself, by the flight of his rival, master of all Italy from the Alps to the sea, was desirous to follow and attack him before he was joined by the supplies which he expected from Asia. But being destitute of shipping, he resolved to go first to Rome, and settle some sort of government there; and then pass into Spain, to drive from thence Pompey's troops, who had taken possession of that great continent, under the command of Afranius and Petreius. Before he left Brundisium, he sent Scribonius Curio with three legions into Sicily, and ordered Q. Valerius, one of his lieutenants, to get together what ships he could, and cross over with one legion into Sardinia. Cato, who commanded in Sicily, upon the first news of Curio's landing there, abandoned the island, and retired to the camp of the consuls at Dyrrhachium; and Q. Valerius no sooner appeared with his small fleet off Sardinia, than the Caralitini, now the inhabitants of Cagliari, drove out Aurelius Cotta, who commanded there for the senate, and put Cæsar's lieutenant in possession both of their city and island.

197
Cæsar goes
to Rome.

In the mean time the general himself advanced towards Rome; and on his march wrote to all the senators then in Italy, desiring them to repair to the capital, and assist him with their counsel. Above all, he was desirous to see Cicero; but could not prevail upon him to return to Rome. As Cæsar drew near the capital, he quartered his troops in the neighbouring municipia; and then advancing to the city, out of a pretended respect to the ancient customs, he took up his quarters in the suburbs, whither the whole city crowded to see the famous conqueror of Gaul, who had been absent near ten years. And now such of the tribunes of the people as had fled to him for refuge reassumed their functions, mounted the rostra, and endeavoured by their speeches to reconcile the people to the head of their party. Marc Antony particularly, and Cassius Longinus, two of Cæsar's most zealous partisans, moved that the senate should meet in the suburbs, that the general might give them an account of his conduct. Accordingly, such of the senators as were at Rome assembled; when Cæsar made a speech in justification of all his proceedings, and concluded his harangue with proposing a deputation to Pompey, with offers of an accommodation in an amicable manner. He even desired the conscript fathers, to whom in appearance he paid great deference, to nominate some of their venerable body to carry proposals of peace to the consuls, and the general of the consular army; but none of the senators would take upon him that commission. He then began to think of providing himself with the necessary sums for carrying on the war, and had recourse to the public treasury. But Metellus, one of the tribunes, opposed him; alleging a law forbidding any one to open the treasury, but in the presence and with the consent of the consuls. Cæsar, however, without regarding the tribune, went directly to the temple of Saturn, where the public money was kept. But the keys of the treasury having been carried away by the consul Lentulus, he ordered the doors to be broken open. This Metellus opposed: but Cæsar, in a passion, laying his hand on his sword, threatened to kill him if he gave him any

farther disturbance; which so terrified Metellus, that he withdrew. Cæsar took out of the treasury, which was ever after at his command, an immense sum; some say, 300,000 pounds weight of gold. With this supply of money he raised troops all over Italy, and sent governors into all the provinces subject to the republic.

Rome.
198
Supplies
himself
with mo-
ney from
the public
treasury.

Cæsar now made Marc Antony commander in chief of the armies in Italy, sent his brother C. Antonius to govern Illyricum, assigned Cisalpine Gaul to Licinius Crassus, appointed M. Æmilius Lepidus governor of the capital; and having got together some ships to cruise in the Adriatic and Mediterranean seas, he gave the command of one of his fleets to P. Cornelius Dolabella, and of the other to young Hortensius, the son of the famous orator. As Pompey had sent governors into the same provinces, by this means a general war was kindled in almost all the parts of the known world. However, Cæsar would not trust any of his lieutenants with the conduct of the war in Spain, which was Pompey's favourite province, but took it upon himself; and having settled his affairs in great haste at Rome, returned to Ariminum, assembled his legions there, and passing the Alps, entered Transalpine Gaul. There he was informed that the inhabitants of Marseilles had resolved to refuse him entrance into their city; and that L. Domitius Ahenobarbus, whom he had generously pardoned and set at liberty after the reduction of Corfinium, had set sail for Marseilles with seven galleys, having on board a great number of his clients and slaves, with a design to raise the city in favour of Pompey. Cæsar, thinking it dangerous to let the enemy take possession of such an important place, sent for the 15 chief magistrates of the city, and advised them not to begin a war with him, but rather follow the example of Italy, and submit. The magistrates returned to the city, and soon after informed him that they were to stand neuter; but in the mean time Domitius arriving with his small squadron, was received into the city, and declared general of all their forces. Hereupon Cæsar immediately invested the town with three legions, and ordered twelve galleys to be built at Arclas, now *Arles*, in order to block up the port. But as the siege was like to detain him too long, he left C. Trebonius to carry it on, and D. Brutus to command the fleet, while he continued his march into Spain, where he began the war with all the valour, ability, and success of a great general. Pompey had three generals in this continent, which was divided into two Roman provinces. Varro commanded in Farther Spain; and Petreius and Afranius, with equal power, and two considerable armies, in Hither Spain. Cæsar, while he was yet at Marseilles, sent Q. Fabius, one of his lieutenants, with three legions, to take possession of the passes of the Pyrenees, which Afranius had seized. Fabius executed his commission with great bravery, entered Spain, and left the way open for Cæsar, who quickly followed him. As soon as he had crossed the mountains, he sent out scouts to observe the situation of the enemy; by whom he was informed, that Afranius and Petreius having joined their forces, consisting of five legions, 20 cohorts of the natives, and 5000 horse, were advantageously posted on an hill of an easy ascent in the neighbourhood of Ilerda, now *Lerida*, in Catalonia. Upon this advice Cæsar advanced within sight of the enemy, and encamped in a plain between the Sicoris and Cinga, now the *Segro* and *Cinca*. Be-

tween

Rome. ¹⁹⁹ Is reduced to great distress in Spain. ²⁰⁰ Overcomes his difficulties, and reduces all Spain.

tween the eminence on which Afranius had posted himself, and the city of Ilerda, was a small plain, and in the middle of it a rising ground, which Cæsar attempted to seize, in order to cut off by that means the communication between the enemy's camp and the city, from whence they had all their provisions. This occasioned a sharp dispute between three of Cæsar's legions and an equal number of the enemy, which lasted five hours with equal success, both parties claiming the victory. But after all, Afranius's men, who had first seized the post, maintained themselves in possession of it in spite of Cæsar's utmost efforts. Two days after this battle, continual rains, with the melting of the snow on the mountains, so swelled the two rivers between which Cæsar was encamped, that they overflowed, broke down his bridges, and laid under water the neighbouring country to a great distance. This cut off the communication between his camp and the cities that had declared for him; and reduced him to such straits, that his army was ready to die for famine, wheat being sold in his camp at 50 Roman denarii per bushel, that is, 11. 12s. 1½d. sterling. He tried to rebuild his bridges, but in vain; the violence of the stream rendering all his endeavours fruitless.

Upon the news of Cæsar's distress, Pompey's party at Rome began to take courage. Several persons of distinction went to congratulate Afranius's wife on the success of her husband's arms in Spain. Many of the senators who had hitherto stood neuter, hastened to Pompey's camp, taking it for granted that Cæsar was reduced to the last extremity, and all hopes of his party lost. Of this number was Cicero; who, without any regard to the remonstrances of Atticus, or the letters Cæsar himself wrote to him, desiring him to join neither party, left Italy, and landed at Dyrrhachium, where Pompey received him with great marks of joy and friendship. But the joy of Pompey's party was not long-lived. For Cæsar, after having attempted several times in vain to rebuild his bridges, caused boats to be made with all possible expedition; and while the enemy were diverted by endeavouring to intercept the succours that were sent him from Gaul, he laid hold of that opportunity to convey his boats in the night on carriages 22 miles from his camp; where with wonderful quickness a great detachment passed the Sicoris, and encamping on the opposite bank unknown to the enemy, built a bridge in two days, opened a communication with the neighbouring country, received the supplies from Gaul, and relieved the wants of his soldiers. Cæsar being thus delivered from danger, pursued the armies of Afranius and Petreius with such superior address and conduct, that he forced them to submit without coming to a battle, and by that means became master of all Hither Spain. The two generals disbanded their troops, sent them out of the province, and returned to Italy, after having solemnly promised never to assemble forces again, or make war upon Cæsar. Upon the news of the reduction of Hither Spain, the Spaniards in Farther Spain, and one Roman legion, deserted from Varro, Pompey's governor in that province, which obliged him to surrender his other legion and all his money.

Cæsar having thus reduced all Spain in a few months, appointed Cassius Longinus to govern the two provinces with four legions, and then returned to Marseilles;

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Rome. ²⁰¹ Returns to Rome, and is created dictator. ²⁰² Follows Pompey into the east.

which city was just upon the point of surrendering after a most vigorous resistance. Though the inhabitants had by their late treachery deserved a severe punishment, yet he granted them their lives and liberty; but stripped their arsenals of arms, and obliged them to deliver up all their ships. From Marseilles Cæsar marched into Cisalpine Gaul; and from thence hastened to Rome, where he laid the foundation of his future grandeur. He found the city in a very different state from that in which he had left it. Most of the senators and magistrates were fled to Pompey at Dyrrhachium. However, there were still prætors there; and among them M. Æmilius Lepidus, who was afterwards one of the triumvirs with Octavius and Marc Antony. The prætor, to ingratiate himself with Cæsar, nominated him dictator of his own authority, and against the inclination of the senate. Cæsar accepted the new dignity; but neither abused his power, as Sylla had done, nor retained it so long. During the 11 days of his dictatorship, he governed with great moderation, and gained the affections both of the people and the patricians. He recalled the exiles, granted the rights and privileges of Roman citizens to all the Gauls beyond the Po, and, as pontifex maximus, filled up the vacancies of the sacerdotal colleges with his own friends. Though it was expected that he would have absolutely cancelled all debts contracted since the beginning of the troubles, he only reduced the interest to one-fourth. But the chief use he made of his dictatorship was to preside at the election of consuls for the next year, when he got himself, and Servilius Isauricus, one of his most zealous partisans, promoted to that dignity.

And now being resolved to follow Pompey, and carry the war into the east, he set out for Brundisium, whither he had ordered 12 legions to repair with all possible expedition. But on his arrival he found only five there. The rest, being afraid of the dangers of the sea, and unwilling to engage in a new war, had marched leisurely, complaining of their general for allowing them no respite, but hurrying them continually from one country to another. However, Cæsar did not wait for them, but set sail with only five legions and 600 horse in the beginning of January. While the rest were waiting at Brundisium for ships to transport them over into Epirus, Cæsar arrived safe with his five legions in Chaonia, the northern part of Epirus, near the Ceraunian mountains. There he landed his troops, and sent the ships back to Brundisium to bring over the legions that were left behind. The war he was now entering upon was the most difficult he had yet undertaken. Pompey had for a whole year been assembling troops from all the eastern countries. When he left Italy, he had only five legions; but since his arrival at Dyrrhachium he had been reinforced with one from Sicily, another from Crete, and two from Syria. Three thousand archers, six cohorts of slingers, and seven thousand horse, had been sent him by princes in alliance with Rome. All the free cities of Asia had reinforced his army with their best troops; nay, if we give credit to an historical poet, succours were brought him from the Indus and the Ganges to the east, and from Arabia and Ethiopia to the south; at least it is certain, that Greece, Asia Minor, Syria, Palestine, Egypt, and all the nations from the Mediterranean to the Euphrates, took up arms in his favour. He had almost all the Roman knights, that

Rome.

that is, the flower of the young nobility, in his squadrons, and his legions consisted mostly of veterans inured to dangers and the toils of war. Pompey himself was a general of great experience and address; and had under him some of the best commanders of the republic, who had formerly conducted armies themselves. As for his navy, he had above 500 ships of war, besides a far greater number of small vessels, which were continually cruising on the coasts, and intercepted such ships as carried arms or provisions to the enemy. He had likewise with him above 200 senators, who formed a more numerous senate than that at Rome. Cornelius Lentulus and Claudius Marcellus, the last year's consuls, presided in it; but under the direction of Pompey their protector, who ordered them to assemble at Theffalonica, where he built a stately hall for that purpose. There, in one of their assemblies, at the motion of Cato, it was decreed, that no Roman citizen should be put to death but in battle, and that no city subject to the republic should be sacked. At the same time the conscript fathers assembled at Theffalonica decreed, that they alone represented the Roman senate, and that those who resided at Rome were encouragers of tyranny, and friends to the tyrant. And indeed, as the flower of the nobility was with Pompey, and the most virtuous men in the republic had taken refuge in his camp, he was generally looked upon as the only hope and support of the public liberty. Hence many persons of eminent probity, who had hitherto stood neuter, flocked to him from all parts. Among these were young Brutus, who afterwards conspired against Cæsar, Tadius Sextius, and Labienus. Brutus, whose father had been put to death in Galatia by Pompey's order, had never spoken to him, or so much as saluted him since that time: but as he now looked upon him as the defender of the public liberty, he joined him, sacrificing therein his private resentment to the interest of the public. Pompey received him with great joy, and was willing to confer upon him some command; but he declined the offer. Tadius Sextius, though extremely old and lame, yet left Rome, and went as far as Macedonia to join Pompey there. Labienus likewise forsook his old benefactor, under whom he had served during the whole course of the Gaulish war, and went over to his rival, though Cæsar had appointed him commander in chief of all the forces on the other side the Alps. In short, Pompey's party grew into such reputation, that his cause was generally called the *good cause*, while Cæsar's adherents were looked upon as enemies to their country, and abettors of tyranny.

203
Makes proposals of accommodation, which are rejected.

As soon as Cæsar landed, he marched directly to Oricum, the nearest city in Epirus, which was taken without opposition. The like success attended him at Apollonia, which was in no condition to stand a siege; and these two conquests opened a way to Dyrrhachium, where Pompey had his magazines of arms and provisions. This success, however, was interrupted by the news that the fleet which he had sent back to Brundisium to transport the rest of his troops had been attacked by Bibulus, one of Pompey's admirals, who had taken 30, and inhumanly burnt them with the seamen on board. This gave Cæsar great uneasiness, especially as he heard that Bibulus, with 110 ships of war, had taken possession of all the harbours between Salonium and Oricum; so that the legions at Brundisium could not venture to

Rome.

cross the sea without great danger of falling into the enemy's hands. By this Cæsar was so much embarrassed, that he made proposals of accommodation upon very moderate terms; being no other than that both Pompey and he should disband their armies within three days, renew their former friendship with solemn oaths, and return together to Italy. These proposals were sent by Vibullius Rufus, an intimate friend of Pompey, whom Cæsar had twice taken prisoner. Pompey, however, probably elated with his late good fortune, answered that he would not hearken to any terms, lest it should be said that he owed his life and return to Italy to Cæsar's favour. However, the latter again sent one Vatinius to confer with Pompey about a treaty of peace. Labienus was appointed to receive the proposals; but while they were conferring together, a party of Pompey's men coming up to them, discharged their darts at Vatinius and those who attended him. Some of the guards were wounded, and Vatinius narrowly escaped with his life.

In the mean time Cæsar advanced towards Dyrrhachium, in hopes of surprizing that important place; but Pompey unexpectedly appearing, he halted on the other side of the river Apius, where he intrenched himself, as having but a small number of troops in comparison of the formidable army which attended Pompey. The latter, however, notwithstanding his superiority, durst not cross the river in Cæsar's sight; so that the two armies continued for some time quiet in their respective camps. Cæsar wrote letter after letter to Marc Antony, who commanded the legions he had left in Italy, to come to his assistance; but receiving no answer, Cæsar disguised himself in the habit of a slave, and with all imaginable secrecy went on board a fisherman's bark, with a design to go over to Brundisium, though the enemy's fleet was cruising on the coasts both of Greece and Italy. This design, however, miscarried, by reason of the boat being put back by contrary winds; and thus Cæsar was restored to his soldiers, who had been very uneasy at his absence. He was no sooner landed than he dispatched Posthumius, one of his lieutenants, with most pressing orders to Marc Antony, Gabinius, and Calenus, to bring the troops to him at all adventures. Gabinius, unwilling to expose all the hopes of his general to the hazards of the sea, thought it safer to march a great way about by Illyricum, and therefore engaged all the legionaries he could to follow him by land. But the Illyrians, who had, unknown to him, declared for Pompey, fell unexpectedly upon him and killed him and his men, not one escaping. Marc Antony and Calenus, who went by sea, were in the greatest danger from one of Pompey's admirals; but had the good luck to bring their troops safe to shore at Nyphæum, in the neighbourhood of Apollonia. As soon as it was known that Antony was landed, Pompey marched to prevent his joining Cæsar. On the other hand, Cæsar instantly decamped, and hastening to the relief of his lieutenant, joined him before Pompey came up. Then Pompey, not caring to engage them when united, retired to an advantageous post in the neighbourhood of Dyrrhachium, known by the name of *Asparagium*, and there encamped. Cæsar having thus at length got all his troops together, resolved to finish the war by one general action, and determine the fate of the world, either by his own death or by that of his rival. To this end he offered

Rome. fered Pompey battle, and kept his army a great while drawn up in fight of the enemy. But Pompey declining an engagement, he decamped, and turned towards Dyrrhachium, as if he designed to surprize it, hoping by this means to draw Pompey into the plain. But Pompey, looking upon the taking of Dyrrhachium as a chimerical project, followed Cæsar at some distance, and letting him draw near to the city, encamped on a hill called *Petra*, which commanded the sea, whence he could be supplied with provisions from Greece and Asia, while Cæsar was forced to bring corn by land from Epirus, at a vast expence, and through many dangers.

204
Besieges
Pompey in
his camp.

This inconvenience put Cæsar upon a new design, which was to surround an army far more numerous than his own, and, by shutting them up within a narrow tract of ground, distress them as much for want of forage as his troops were distressed for want of corn. Pursuant to this design, he drew a line of circumvallation from the sea quite round Pompey's camp, and kept him so closely blocked up, that though his men were plentifully supplied with provisions by sea, yet the horses of his army began soon to die in great numbers for want of forage. Cæsar's men, though in the utmost distress for want of corn, yet bore all with incredible cheerfulness; protesting that they would rather live upon the bark of trees than suffer Pompey to escape, now they had him in their power. Cæsar tells us, that in this extremity such of the army as had been in Sardinia found out the way of making bread of a certain herb called *clara*, which they steeped in milk; and that when the enemy insulted them on account of the starving condition which they were in, they threw several of these loaves among them, to put them out of all hopes of subduing them by famine. "So long as the earth produces such roots (said they), we will not let Pompey escape." At length Pompey, alarmed at the distempers which began to prevail in his army, made several attempts to break through the barriers that inclosed him, but was always repulsed with loss. At length, being reduced to the utmost extremity for want of forage, he resolved at all events to force the enemy's lines and escape. With the assistance, therefore, and by the advice of two deserters, he embarked his archers, slingers, and light-armed infantry, and marching himself by land at the head of 60 cohorts, went to attack that part of Cæsar's lines which was next to the sea, and not yet quite finished. He set out from his camp in the dead of the night, and arriving at the post he designed to force by break of day, he began the attack by sea and land at the same time. The ninth legion, which defended that part of the lines, made for some time a vigorous resistance; but being attacked in the rear by Pompey's men, who came by sea, and landed between Cæsar's two lines, they fled with such precipitation, that the succours Marcellinus sent them from a neighbouring post could not stop them. The ensign who carried the eagle at the head of the routed legion was mortally wounded; but nevertheless, before he died, had presence of mind enough to consign the eagle to the cavalry of the party, desiring them to deliver it to Cæsar. Pompey's men pursued the fugitives, and made such a slaughter of them, that all the centurions of the first cohort were cut off except one. And now Pompey's army broke in like a torrent upon the posts Cæsar had fortified, and were advancing to attack Marcellinus, who

205
Is driven
from some
of his posts.

guarded a neighbouring fort; but Marc Antony coming very seasonably to his relief with 12 cohorts, they thought it advisable to retire.

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Soon after Cæsar himself arrived with a strong reinforcement, and posted himself on the shore, in order to prevent such attempts for the future. From this post he observed an old camp which he had made within the place where Pompey was inclosed, but afterwards abandoned. Upon his quitting it, Pompey had taken possession of it, and left a legion to guard it. This post Cæsar resolved to reduce, hoping to repair the loss he had sustained on this unfortunate day, by taking the legion which Pompey had posted there. Accordingly, he advanced secretly at the head of 33 cohorts in two lines: and arriving at the old camp before Pompey could have notice of his march, attacked it with great vigour, forced the first intrenchment, notwithstanding the brave resistance of Titus Pulcio, and penetrated to the second, whither the legion had retired. But here his fortune changed on a sudden. His right wing, in looking for an entrance into the camp, marched along the outside of a trench which Cæsar had formerly carried on from the left angle of his camp, about 400 paces, to a neighbouring river. This trench they mistook for the rampart of the camp; and being led away by that mistake from their left wing, they were soon after prevented from rejoining it by the arrival of Pompey, who came up at the head of a legion and a large body of horse. Then the legion which Cæsar had attacked taking courage, made a brisk sally, drove his men back to the first intrenchment which they had seized, and there put them in great disorder while they were attempting to pass the ditch. Pompey, in the mean time, falling upon them with his cavalry in flank, completed their defeat; and then flying to the enemy's right wing, which had passed the trench mentioned above, and was shut up between that and the ramparts of the old camp, made a most dreadful slaughter of them. The trench was filled with dead bodies, many falling into it in that disorder, and others passing over them and pressing them to death.

206
Cæsar de-
clared and
in great
danger.

In this distress, Cæsar did all he could to stop the flight of his legionaries, but to no purpose: the standard-bearers themselves threw down the Roman eagles when Cæsar endeavoured to stop them, and left them in the hands of the enemy, who on this occasion took 32 standards; a disgrace which Cæsar had never suffered before. He was himself in no small danger of falling by the hand of one of his own men, whom he took hold of when flying, bidding him stand and face about; but the man, apprehensive of the danger he was in, drew his sword, and would have killed him, had not one of his guards prevented the blow by cutting off his arm. Cæsar lost on this occasion 960 of his foot, 400 of his horse, 5 tribunes, and 32 centurions.

This loss and disgrace greatly mortified Cæsar, but he did not discourage him. After he had by his lenity and eloquent speeches recovered the spirit of his troops, he decamped, and retired in good order to Apollonia, where he paid the army, and left his sick and wounded. From thence he marched into Macedon, where Scipio Metellus, Pompey's father-in-law, was encamped. He hoped either to draw his rival into some plain, or to overpower Scipio if not assisted. He met with great difficulties on his march, the countries through which

207
Heretieves
his affairs,

Rome.

he passed refusing to supply his army with provisions; to such a degree was his reputation sunk since his last defeat! On his entering Thessaly he was met by Domitius, one of his lieutenants, whom he had sent with three legions to reduce Epirus. Having now got all his forces together, he marched directly to Gomphi, the first town of Thessaly, which had been formerly in his interest, but now declared against him. Whereupon he attacked it with so much vigour, that though the garrison was very numerous, and the walls were of an uncommon height, he made himself master of it in a few hours. From hence he marched to Metropolis, another considerable town of Thessaly, which immediately surrendered; as did all the other cities of the country, except Larissa, of which Scipio had made himself master.

On the other hand, Pompey being continually importuned by the senators and officers of his army, left his camp at Dyrrhachium, and followed Cæsar, firmly resolved not to give him battle, but rather to distress him by keeping close at his heels, straitening his quarters, and cutting off his convoys. As he had frequent opportunities of coming to an engagement, but always declined it, his friends and subalterns began to put ill constructions on his dilatoriness to his face.

208
Pompey
resolves to
come to
an engage-
ment.

These, together with the complaints of his soldiers, made him at length resolve to venture a general action. With this design he marched into a large plain near the cities of Pharsalia and Thebes; which latter was also called *Philippi*, from Philip king of Macedon, and the father of Peres, who, having reduced the Thebans, placed a colony of Macedonians in their city. This plain was watered by the Enipeus, and surrounded on all sides by high mountains; and Pompey, who was still averse from venturing an engagement, pitched his camp on the declivity of a steep mountain, in a place altogether inaccessible. There he was joined by Scipio his father-in-law, at the head of the legions which he had brought with him from Syria and Cilicia. But notwithstanding this reinforcement, he continued irrefolute, and unwilling to put all to the issue of a single action; being still convinced of the wisdom of his maxim, that it was better to destroy the enemy by fatigues and want, than to engage an army of brave veterans, who were in a manner reduced to despair. As he put off from day to day, under various pretences, descending into the plain where Cæsar was encamped, his officers forced him to call a council of war, when all to a man were for venturing a general action the very next day. Thus was Pompey obliged to sacrifice his own judgement to the blind ardour of the multitude; and the necessary measures were taken for a general engagement.

209
Is totally
defeated.
* See Phar-
salia.

The event of this battle was in the highest degree fortunate for Cæsar †; who resolved to pursue his advantage, and follow Pompey to whatever country he should retire. Hearing, therefore, of his being at Amphipolis, he sent off his troops before him, and then embarked on board a little frigate in order to cross the Hellespont; but in the middle of the strait, he fell in with one of Pompey's commanders, at the head of ten ships of war. Cæsar, noway terrified at the superiority of his force, bore up to him, and commanded him to submit. The other instantly obeyed, awed by the ter-

ror of Cæsar's name, and surrendered himself and his fleet at discretion.

Rome.

From thence he continued his voyage to Ephesus, then to Rhodes; and being informed that Pompey had been there before him, he made no doubt but that he was fled to Egypt; wherefore, losing no time, he set sail for that kingdom, and arrived at Alexandria with about 4000 men; a very inconsiderable force to keep such a powerful kingdom under subjection. But he was now grown so secure in his good fortune, that he expected to find obedience everywhere. Upon his landing, the first accounts he received were of Pompey's miserable end, who had been assassinated by orders of the treacherous king as soon as he went on shore; and soon after one of the murderers came with his head and ring as a most grateful present to the conqueror. But Cæsar turned away from it with horror, and shortly after ordered a magnificent tomb to be built to his memory on the spot where he was murdered; and a temple near the place, to Nemesis, who was the goddess that punished those that were cruel to men in adversity.

210
Is murdered
in Egypt.

It should seem that the Egyptians by this time had some hopes of breaking off all alliance with the Romans; which they considered, as in fact it was, but a specious subjection. They first began to take offence at Cæsar's carrying the ensigns of Roman power before him as he entered the city. Photinus, the eunuch, also treated him with disrespect, and even attempted his life. Cæsar, however, concealed his resentment till he had a force sufficient to punish his treachery; and sending privately for the legions which had been formerly enrolled for Pompey's service, as being the nearest to Egypt, he in the mean time pretended to repose an entire confidence in the king's minister. However, he soon changed his manner when he found himself in no danger from his attempts; and declared, that, as being a Roman consul, it was his duty to settle the succession to the Egyptian crown.

211
The Egypt-
ians quar-
rel with
Cæsar,

There were at that time two pretenders to the crown of Egypt: Ptolemy, the acknowledged king; and the celebrated Cleopatra his sister; who, by the custom of the country, was also his wife, and, by their father's will, shared jointly in the succession. However, not being contented with a bare participation of power, she aimed at governing alone; but being opposed in her views by the Roman senate, who confirmed her brother's title to the crown, she was banished into Syria with Arsinoe her younger sister.

Cæsar, however, gave her new hopes of obtaining the kingdom, and sent both for her and her brother to plead their cause before him. Photinus, the young king's guardian, who had long borne the most inveterate hatred as well to Cæsar as to Cleopatra, disdained this proposal, and backed his refusal by sending an army of 20,000 men to besiege him in Alexandria. Cæsar bravely repulsed the enemy for some time; but finding the city of too great extent to be defended by so small an army as he then had with him, he retired to the palace, which commanded the harbour, where he purposed to make a stand. Achilles, who commanded the Egyptians, attacked him there with great vigour, and still aimed at making himself master of the fleet that lay before the palace. Cæsar, however, too well knew the importance

212
and besiege
him in
Alexandria.

^{Rome.} importance of those ships in the hands of an enemy ; and therefore burnt them all in spite of every effort to prevent it. He next possessed himself of the isle of Pharos, which was the key to the Alexandrian port, by which he was enabled to receive the supplies sent him from all sides ; and in this situation he determined to withstand the united force of all the Egyptians.

In the mean time, Cleopatra having heard of the present turn in her favour, resolved to depend rather on Cæsar's favour for gaining the government than her own forces. She had, in fact, assembled an army in Syria to support her claims ; but now judged it the wisest way to rely entirely on the decision of her self-elected judge. But no arts, as she justly conceived, were so likely to influence Cæsar, as the charms of her person. The difficulty was how to get at Cæsar, as her enemies were in possession of all the avenues that led to the palace. For this purpose, she went on board a small vessel, and in the evening landed near the palace ; where, being wrapped up in a coverlet, she was carried by one Aspolodorus into the very chamber of Cæsar. Her address at first pleased him ; but her caresses, which were carried beyond the bounds of innocence, entirely brought him over to second her claims.

While Cleopatra was thus employed in forwarding her own views, her sister Arsinoë was also strenuously engaged in the camp in pursuing a separate interest. She had found means, by the assistance of one Ganymede her confidant, to make a large division in the Egyptian army in her favour ; and soon after caused Achilles to be murdered, and Ganymede to take the command in his stead, and to carry on the siege with greater vigour than before. Ganymede's principal effort was by letting in the sea upon those canals which supplied the palace with fresh water ; but this inconvenience Cæsar remedied by digging a great number of wells. His next endeavour was to prevent the junction of Cæsar's 24th legion, which he twice attempted in vain. He soon after made himself master of a bridge which joined the isle of Pharos to the continent, from which post Cæsar was resolved to dislodge him. In the heat of action, some mariners came and joined the combatants ; but being seized with a panic, instantly fled, and spread a general terror through the army. All Cæsar's endeavours to rally his forces were in vain, the confusion was past remedy, and numbers were drowned or put to the sword in attempting to escape ; on which, seeing the irremediable disorder of his troops, he retired to a ship in order to get to the palace that was just opposite. However, he was no sooner on board than great crowds entered at the same time with him ; upon which, apprehensive of the ship's sinking, he jumped into the sea, and swam 200 paces to the fleet that lay before the palace.

The Alexandrians, finding their efforts to take the palace ineffectual, endeavoured at least to get their king out of Cæsar's power, as he had seized upon his person in the beginning of their disputes. For this purpose they made use of their customary arts of dissimulation, professing the utmost desire for peace, and only wanting the presence of their lawful prince to give a sanction to the treaty. Cæsar, who was sensible of their perfidy, nevertheless concealed his suspicions, and gave them their king, as he was under no apprehensions from the abilities of a boy. Ptolemy, however, the instant he was

set at liberty, instead of promoting peace, made every effort to give vigour to hostilities.

In this manner Cæsar was hemmed in for some time : but he was at last relieved from this mortifying situation by Mithridates Pergamenus, one of his most faithful partizans ; who, collecting a numerous army in Syria, marched into Egypt, took the city of Pelusium, repulsed the Egyptian army with loss, and at last, joining with Cæsar, attacked their camp, and made a great slaughter of the Egyptians. Ptolemy himself, attempting to escape on board a vessel that was sailing down the river, was drowned by the ship's sinking ; and Cæsar thus became master of all Egypt without any further opposition. He therefore appointed, that Cleopatra, with her younger brother, who was then but an infant, should jointly govern, according to the intent of their father's will ; and drove out Arsinoë with Ganymede into banishment.

Cæsar now for a while seemed to relax from the usual activity of his conduct, captivated with the charms of Cleopatra. Instead of quitting Egypt to go and quell the remains of Pompey's party, he abandoned himself to his pleasures, passing whole nights in feasts with the young queen. He even resolved to attend her up the Nile into Ethiopia ; but the brave veterans, who had long followed his fortune, boldly reprehended his conduct, and refused to be partners in so infamous an expedition. Thus, at length, roused from his lethargy, he left Cleopatra, by whom he had a son who was afterwards named *Cæsarion*, in order to oppose Pharnaces the king of Pontus, who had now made some inroads upon the dominions of Rome. Here he was attended with the greatest success, as we have related under the article PONTUS ; and having settled affairs in this part of the empire, as well as time would permit, he embarked for Italy, where he arrived sooner than his enemies could expect, but not before his affairs there absolutely required his presence. He had been, during his absence, created consul for five years, dictator for one year, and tribune of the people for life. But Antony, who in the mean time governed in Rome for him, had filled the city with riot and debauchery, and many commotions ensued, which nothing but the arrival of Cæsar could appease. However, by his moderation and humanity, he soon restored tranquillity to the city, scarce making any distinction between those of his own and the opposite party. Thus having, by gentle means, restored his authority at home, he prepared to march into Africa, where Pompey's party had found time to rally under Scipio and Cato, assisted by Juba king of Mauritania. But the vigour of his proceedings had like to have been retarded by a mutiny in his own army. Those veteran legions, who had hitherto conquered all that came before them, began to murmur for not having received the rewards which they had expected for their past services, and now insisted upon their discharge. However, Cæsar found means to quell the mutiny ; and then, according to his usual diligence, landed with a small party in Africa, the rest of the army following soon after. After many movements and skirmishes, he resolved at last to come to a decisive battle. For this purpose he invested the city of Thapsus, supposing that Scipio would attempt its relief, which turned out according to his expectation. Scipio, joining with the young king of Mauritania, advanced with his army, and encamping near

Rome.

213
He is at last relieved.214
Arrives in Italy, and soon after undertakes an expedition into Africa.

Rome.
215
Defeats the
partisans of
Pompey.

near Cæsar, they soon came to a general battle. Cæsar's success was as usual; the enemy received a complete and final overthrow, with little loss on his side. Juba, and Petreus his general, killed each other in despair; Scipio, attempting to escape by sea into Spain, fell in among the enemy, and was slain; so that, of all the generals of that undone party, Cato was now alone remaining.

216
Cato kills
himself.
* See Cato.

This extraordinary man, having retired into Africa after the battle of Pharfalia, had led the wretched remains of that defeat through burning deserts and tracts infested with serpents of various malignity, and was now in the city of Utica, which he had been left to defend. Still, however, in love with even the show of Roman government, he had formed the principal citizens into a senate, and conceived a resolution of holding out the town. He accordingly assembled his senators upon this occasion, and exhorted them to stand a siege; but finding his admonitions ineffectual, he stabbed himself with his sword*. Upon his death, the war in Africa being completed, Cæsar returned in triumph to Rome; and, as if he had abridged all his former triumphs only to increase the splendor of this, the citizens were astonished at the magnificence of the procession, and the number of the countries he had subdued. It lasted four days: the first was for Gaul, the second for Egypt, the third for his victories in Asia, and the fourth for that over Juba in Africa. To every one of his soldiers he gave a sum equivalent to about 150l. of our money, double that sum to the centurions, and four times as much to the superior officers. The citizens also shared his bounty; to every one of whom he distributed 10 bushels of corn, 10 pounds of oil, and a sum of money equal to about two pounds Sterling of ours. He, after this, entertained the people at about 20,000 tables, treated them with the combat of gladiators, and filled Rome with a concourse of spectators from every part of Italy.

217
Honours
heaped up-
on him at
Rome.

The people now seemed eager only to find out new modes of homage and unusual methods of adulation for their great enslaver. He was created, by a new title, *Magister Morum*, or Master of the Morals of the People; he received the title of *Emperor*, *Father of his country*; his person was declared sacred; and, in short, upon him alone were devolved for life all the great dignities of the state. It must be owned, however, that no sovereign could make better use of his power. He immediately began his empire by repressing vice and encouraging virtue. He communicated the power of judicature to the senators and the knights alone, and by many sumptuary laws restrained the scandalous luxuries of the rich. He proposed rewards to all such as had many children; and took the most prudent methods of re-peopling the city, that had been exhausted in the late commotions; and besides his other works, he greatly reformed the calendar.

Having thus restored prosperity once more to Rome, he again found himself under a necessity of going into Spain, to oppose an army which had been raised there under the two sons of Pompey, and Labienus his former general. He proceeded in this expedition with his usual celerity, and arrived in Spain before the enemy thought him yet departed from Rome. Cneius and Sextus, Pompey's sons, profiting by their unhappy father's example, resolved as much as possible to protract the war; so that

the first operations of the two armies were spent in sieges and fruitless attempts to surprize each other. At length Cæsar, after taking many cities from the enemy, and pursuing young Pompey with unwearied perseverance, compelled him to come to a battle upon the plains of Munda.

Rome.

218
Becomes
master of
the whole
empire by
his victory
at Munda.

After a most obstinate engagement, Cæsar gained a complete victory (see MUNDA); and having now subdued all his enemies, he returned to Rome for the last time to receive new dignities and honours, and to enjoy an accumulation of all the great offices of the state. Still, however, he pretended to a moderation in the enjoyment of his power; he left the consuls to be named by the people; but as he possessed all the authority of the office, it from this time began to sink into contempt. He enlarged the number of senators also; but as he had previously destroyed their power, their new honours were but empty titles. He took care to pardon all who had been in arms against him, but not till he had deprived them of the power of resistance. He even set up once more the statues of Pompey; which, however, as Cicero observed, he only did to secure his own. The rest of this extraordinary man's life was employed for the advantage of the state. He adorned the city with magnificent buildings; he rebuilt Carthage and Corinth, sending colonies to both cities; he undertook to level several mountains in Italy, to drain the Pontine marshes near Rome, and designed to cut through the Isthmus of Peloponnesus. Thus he formed mighty projects and designs beyond the limits of the longest life; but the greatest of all was his intended expedition against the Parthians, by which he designed to revenge the death of Crassus; then to pass through Hyrcania, and enter Scythia along the banks of the Caspian sea; from thence to open himself a way through the immeasurable forests of Germany into Gaul, and so return to Rome. These were the aims of ambition: but the jealousy of a few individuals put an end to them all.

219
His vast
designs.

The senate, with an adulation which marked the degeneracy of the times, continued to load Cæsar with fresh honours, and he continued with equal vanity to receive them. They called one of the months of the year after his name; they stamped money with his image; they ordered his statue to be set up in all the cities of the empire; they instituted public sacrifices on his birthday; and talked, even his life-time, of enrolling him in the number of their gods. Antony, at one of their public festivals, foolishly ventured to offer him a diadem; but he put it back again, refusing it several times, and receiving at every refusal loud acclamations from the people. One day, when the senate ordered him some particular honours, he neglected to rise from his seat; and from that moment is said to have been marked for destruction. It began to be rumoured that he intended to make himself king; for though in fact he already was so, the people, who had an utter aversion to the name, could not bear his assuming the title. Whether he really designed to assume that empty honour must now for ever remain a secret; but certain it is, that the unsuspecting openness of his conduct marked something like a confidence in the innocence of his intentions. When informed by those about him of the jealousies of many persons who envied his power, he was heard to say, That he had rather die once by treason, than to live continually in the apprehension of it: and to convince

Rome.

Rome.

vince the world how little he had to apprehend from his enemies, he disbanded his company of Spanish guards, which facilitated the enterprise against his life.

pey's statue, after receiving three-and-twenty wounds, in the 56th year of his age, and 4th of his reign.

220
A conspiracy formed against him.

A deep-laid conspiracy was formed against him, composed of no less than 60 senators. At the head of this conspiracy was Brutus, whose life Cæsar had spared after the battle of Pharsalia, and Cassius, who had been pardoned soon after, both prætors for the present year. Brutus made it his chief glory to have been descended from that Brutus who first gave liberty to Rome; and from a desire of following his example, broke all the ties of private friendship, and entered into a conspiracy which was to destroy his benefactor. Cassius, on the other hand, was impetuous and proud, and hated Cæsar's person still more than his cause. He had often sought an opportunity of gratifying his revenge by assassination, which took rise rather from private than public motives.

As soon as the conspirators had dispatched Cæsar, they began to address themselves to the senate, in order to vindicate the motives of their enterprise, and to cite them to join in procuring their country's freedom; but all the senators who were not accomplices fled with such precipitation, that the lives of some of them were endangered in the throng. The people also being now alarmed, left their usual occupations, and ran tumultuously through the city; some actuated by their fears, and still more by a desire of plunder. In this state of confusion, the conspirators all retired to the capitol, and guarded its access by a body of gladiators which Brutus had in pay. It was in vain they alleged they only struck for freedom, and that they killed a tyrant who usurped the rights of mankind: the people, accustomed to luxury and ease, little regarded their professions, dreading more the dangers of poverty than of subjection.

222
Great confusion occasioned by his death.

The conspirators, to give a colour of justice to their proceedings, remitted the execution of this design to the ides of March, the day on which it was reported that Cæsar was to be offered the crown. The augurs had foretold that this day would be fatal to him; and the night preceding, he heard his wife Calphurnia lamenting in her sleep, and being awakened, she confessed to him that she dreamt of his being assassinated in her arms. These omens, in some measure, began to change his intentions of going to the senate, as he had resolved, that day; but one of the conspirators coming in, prevailed upon him to keep his resolution, telling him of the reproach which would attend his staying at home till his wife had lucky dreams, and of the preparations that were made for his appearance. As he went along to the senate, a slave, who hastened to him with information of the conspiracy, attempted to come near him, but could not for the crowd. Artemidorus, a Greek philosopher, who had discovered the whole plot, delivered to him a memorial, containing the heads of his information; but Cæsar gave it, with other papers, to one of his secretaries without reading, as was usual in things of this nature. As soon as he had taken his place in the senate, the conspirators came near him, under a pretence of saluting him; and Cimber, who was one of them, approached in a suppliant posture, pretending to sue for his brother's pardon, who was banished by his order. All the conspirators seconded him with great tenderness; and Cimber, seeming to sue with still greater submission, took hold of the bottom of his robe, holding him so as to prevent his rising. This was the signal agreed on. Casca, who was behind, stabbed him, though slightly, in the shoulder. Cæsar instantly turned round, and with the style of his tablet wounded him in the arm. However, all the conspirators were now alarmed; and inclosing him round, he received a second stab from an unknown hand in the breast, while Cassius wounded him in the face. He still defended himself with great vigour, rushing among them, and throwing down such as opposed him, till he saw Brutus among the conspirators, who, coming up, struck his dagger in his thigh. From that moment Cæsar thought no more of defending himself, but looking upon this conspirator, cried out, "And you too, Brutus!" Then covering his head, and spreading his robe before him in order to fall with greater decency, he sunk down at the base of Pom-

221
He is murdered.

The friends of the late dictator now began to find that this was the time for coming into greater power than before, and for satisfying their ambition under the veil of promoting justice. Of this number was Antony, whom we have already seen acting as a lieutenant under Cæsar. He was a man of moderate abilities and excessive vices; ambitious of power, but skilled in war, to which he had been trained from his youth. He was consul for this year; and resolved, with Lepidus, who was fond of commotions like himself, to seize this opportunity of assuming the sovereign power. Lepidus, therefore, took possession of the forum with a band of soldiers at his devotion; and Antony, being consul, was permitted to command them. Their first step was to possess themselves of all Cæsar's papers and money; and the next to convene the senate, in order to determine whether Cæsar had been a legal magistrate or a tyrannical usurper, and whether those who killed him merited rewards or punishments. There were many of these who had received their promotions from Cæsar, and had acquired large fortunes in consequence of his appointments: to vote him an usurper, therefore, would be to endanger their property; and yet to vote him innocent, might endanger the state. In this dilemma they seemed willing to reconcile extremes; wherefore they approved all the acts of Cæsar, and yet granted a general pardon to all the conspirators.

22
The conspirators pardoned by the senate.

This decree was very far from giving Antony satisfaction, as it granted security to a number of men who were the avowed enemies of tyranny, and who would be foremost in opposing his schemes of restoring absolute power. As therefore the senate had ratified all Cæsar's acts without distinction, he formed a scheme upon this of making him rule when dead as imperiously as he had done when living. Being, as was said, possessed of Cæsar's books of accounts, he so far gained upon his secretary as to make him insert whatever he thought proper. By these means, great sums of money, which Cæsar never would have bestowed, were here distributed among the people; and every man who was averse to republican principles was here sure of finding a gratuity. He then demanded that Cæsar's funeral obsequies should be performed; which the senate now could not decently forbid, as they had never declared him a tyrant. Accordingly, the body was brought forth.

Rome. forth into the forum with the utmost solemnity; and Antony began his operations upon the passions of the people, by the prevailing motives of private interest. He first read Cæsar's will, in which he had left Octavius, his sister's grandson, his heir, permitting him to take the name of *Cæsar*; and three parts of his private fortune Brutus was to inherit in case of his death. The Roman people were left the gardens which he had on the other side the Tiber; and every citizen, in particular, was to receive 300 sesterces. This last bequest not a little contributed to increase the people's affection for their late dictator; they now began to consider Cæsar as a father, who, not satisfied with doing them the greatest good while living, thought of benefiting them even after his death. As Antony continued reading, the multitude began to be moved, and sighs and lamentations were heard from every quarter. Antony, seeing the audience favourable to his designs, now began to address the assembly in a more pathetic strain: he presented before them Cæsar's bloody robe, and, as he unfolded it, took care they should observe the number of stabs in it: he then displayed an image, which to them appeared the body of Cæsar, all covered with wounds. The people could now no longer contain their indignation; they unanimously cried out for revenge; all the old soldiers who had fought under him, burnt, with his body, their coronets, and other marks of conquest with which he had honoured them. A great number of the first matrons in the city threw in their ornaments also; till at length, rage succeeding to sorrow, the multitude ran with flaming brands from the pile to set fire to the conspirators houses. In this rage of resentment, meeting with one Cinna, whom they mistook for another of the same name who was in the conspiracy, they tore him in pieces. The conspirators themselves, however, being well guarded, repulsed the multitude with no great trouble; but perceiving the rage of the people, they thought it safest to retire from the city. Divine honours were then granted him; and an altar was erected on the place where his body was burnt, where afterwards was erected a column inscribed, *To the father of his country*.

224
Antony inflames the people.

225
He endeavours to engross the power entirely into his own hand.

In the mean time Antony, who had excited this flame, resolved to make the best of the occasion. Having gained the people by his zeal in Cæsar's cause, he next endeavoured to bring over the senate, by a seeming concern for the freedom of the state. He therefore proposed to recal Sextus, Pompey's only remaining son, who had concealed himself in Spain since the death of his father: and to grant him the command of all the fleets of the empire. His next step to their confidence, was the quelling a sedition of the people, who rose to revenge the death of Cæsar, and putting their leader Amathus to death, who pretended to be the son of Marius. He after this pretended to dread the resentment of the multitude, and demanded a guard for the security of his person. The senate granted his request; and, under this pretext, he drew round him a body of 6000 resolute men, attached to his interest, and ready to execute his commands. Thus he continued every day making rapid strides to absolute power; all the authority of government was lodged in his hands and those of his two brothers alone, who shared among them the consular, tribunitian, and prætorian power. His vows to revenge Cæsar's death

Rome. seemed either postponed, or totally forgotten; and his only aim seemed to be to confirm himself in that power which he had thus artfully acquired. But an obstacle to his ambition seemed to arise from a quarter on which he least expected it. This was from Octavius or Octavianus Cæsar, afterwards called *Augustus*, who was the grand-nephew and adopted son of Cæsar, and was at Apollonia when his kinsman was slain. He was then about 18 years old, and had been sent to that city to improve himself in the study of Grecian literature. Upon the news of Cæsar's death, notwithstanding the earnest dissuasions of all his friends, he resolved to return to Rome, to claim the inheritance, and revenge the death of his uncle. From the former professions of Antony, he expected to find him a warm assistant to his aims; and he doubted not, by his concurrence, to take signal vengeance on all who had a hand in the conspiracy. However, he was greatly disappointed. Antony, whose projects were all to aggrandize himself, gave him but a very cold reception, and, instead of granting him the fortune left him by the will, delayed the payment of it upon various pretences, hoping to check his ambition by limiting his circumstances. But Octavianus, instead of abating his claims, even sold his own patrimonial estate, to pay such legacies as Cæsar had left, and particularly that to the people. By these means he gained a degree of popularity, which his enemies vainly laboured to diminish, and which in fact he had many other methods to procure. His conversation was elegant and insinuating, his face comely and graceful, and his affection to the late dictator so sincere, that every person was charmed either with his piety or his address. But what added still more to his interest was the name of Cæsar, which he had assumed, and, in consequence of which, the former followers of his uncle now flocked in great numbers to him. All these he managed with such art, that Antony now began to conceive a violent jealousy for the talents of his young opponent, and secretly laboured to counteract all his designs. In fact, he did not want reason; for the army near Rome, that had long wished to see the conspirators punished, began to turn from him to his rival, whom they saw more sincerely bent on gratifying their desires. Antony having procured also the government of Hither Gaul from the people, two of his legions that he had brought home from his former government of Macedonia, went over to Octavianus, notwithstanding all his remonstrances to detain them. This produced, as usual, interviews, complaints, recriminations, and pretended reconciliations, which only tended to widen the difference; so that, at length, both sides prepared for war. Thus the state was divided into three distinct factions; that of Octavianus, who aimed at procuring Cæsar's inheritance, and revenging his death; that of Antony, whose sole view was to obtain absolute power; and that of the conspirators, who endeavoured to restore the senate to its former authority.

Antony being raised by the people to his new government of Cisalpine Gaul, contrary to the inclinations of the senate, resolved to enter upon his province immediately, and oppose Brutus, who commanded a small body of troops there, while his army was yet entire. He accordingly left Rome, and marching thither, commanded Brutus to depart. Brutus, being unable

Rome.

226
Is opposed by Octavianus.

Rome. unable to oppose him, retired with his forces; but being pursued by Antony, he was at last besieged in the city of Mutina, of which he sent word to the senate.

In the mean while, Octavianus, who by this time had raised a body of 10,000 men, returned to Rome; and being resolved, before he attempted to take vengeance on the conspirators, if possible to diminish the power of Antony, began by bringing over the senate to second his designs. In this he succeeded by the credit of Cicero, who had long hated Antony because he thought him the enemy of the state. Accordingly, by means of his eloquence, a decree was passed, ordering Antony to raise the siege of Mutina, to evacuate Cisalpine Gaul, and to await the further orders of the senate upon the banks of the Rubicon. Antony treated the order with contempt; and instead of obeying, began to show his displeasure at being hitherto so submissive. Nothing now therefore remained for the senate but to declare him an enemy to the state, and to send Octavianus, with the army he had raised, to curb his insolence. The latter was very ready to offer his army for this expedition, in order to revenge his own private injuries, before he undertook those of the public. The two consuls, Hirtius and Pansa, joined all their forces; and thus combined, they marched at the head of a numerous army, against Antony, into Cisalpine Gaul. After one or two ineffectual conflicts, both armies came to a general engagement; in which Antony was defeated, and compelled to fly to Lepidus, who commanded a body of forces in Further Gaul. This victory, however, which promised the senate so much success, produced effects very different from their expectations. The two consuls were mortally wounded; but Pansa, previous to his death, called Octavianus to his bed-side, and advised him to join with Antony, telling him, that the senate only desired to depress both, by opposing them to each other. The advice of the dying consul sunk deep on his spirits; so that from that time he only sought a pretext to break with them. Their giving the command of a party of his army to Decimus Brutus, and their denying him a triumph soon after, served to alienate his mind entirely from the senate, and made him resolve to join Antony and Lepidus. He was willing, however, to try the senate thoroughly, before he came to an open rupture; wherefore he sent to demand the consulship, which was refused him. He then thought himself obliged to keep no measures with that assembly, but privately sent to sound the inclinations of Antony and Lepidus, concerning a junction of forces, and found them as eager to assist as the senate was to oppose him. Antony was, in fact, the general of both armies, and Lepidus was only nominally so, for his soldiers refused to obey him upon the approach of the former. But being assured of the assistance of Octavianus upon their arrival in Italy, they soon crossed the Alps with an army of 17 legions, breathing revenge against all who had opposed their designs.

The senate now began, too late, to perceive their error in disobliging Octavianus; and therefore gave him the consulship which they had so lately refused, and, to prevent his joining with Antony, flattered him with new honours, giving him a power superior to all law. The first use Octavianus made of his new authority was

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Rome. to procure a law for the condemnation of Brutus and Cassius; after which, he joined his forces with those of Antony and Lepidus.

The meeting of these three usurpers of their country's freedom was near Mutina, upon a little island of the river Panarus. Their mutual suspicions were the cause of their meeting in this place. Lepidus first entered, and, finding all things safe, made the signal for the other two to approach. Octavianus began the conference, by thanking Antony for his zeal in putting Decimus Brutus to death; who, being abandoned by his army, was taken as he was designing to escape into Macedonia, and beheaded by Antony's command. Their conference lasted for three days; and the result of it was, that the supreme authority should be lodged in their hands, under the title of the *triumvirate*, for the space of five years; that Antony should have Gaul; Lepidus, Spain; and Octavianus, Africa, and the Mediterranean islands. As for Italy, and the eastern provinces, they were to remain in common, until their general enemy was entirely subdued. But the last article of their union was a dreadful one. It was agreed that all their enemies should be destroyed; of which each presented a list. In these were comprised not only the enemies, but the friends of the *triumvirate*, since the partisans of the one were often found among the opposers of the others. Thus Lepidus gave up his brother Paulus to the vengeance of his colleague; Antony permitted the proscription of his uncle Lucius; and Octavianus delivered up the great Cicero. The most sacred rights of nature were violated; 300 senators, and above 2000 knights, were included in this terrible proscription; their fortunes were confiscated, and their murderers enriched with the spoil. Rome soon felt the effects of this infernal union, and the horrid cruelties of Marius and Sylla were renewed. As many as could escape the cruelty of the *triumvir*, fled thither into Macedonia to Brutus, or found refuge with young Pompey, who was now in Sicily, and covered the Mediterranean with his numerous navy. Their cruelties were not aimed at the men alone; but the softer sex were in danger of being marked as objects either of avarice or resentment. They made out a list of 1400 women of the best quality, and the richest in the city, who were ordered to give in an account of their fortunes, to be taxed in proportion. But this seemed so unpopular a measure, and was so firmly opposed by Hortensia, who spoke against it, that, instead of 1400 women, they were content to tax only 400. However, they made up the deficiency, by extending the tax upon men; near 100,000, as well citizens as strangers, were compelled to furnish supplies to the subversion of their country's freedom. At last, both the avarice and vengeance of the *triumviri* seemed fully satisfied, and they went into the senate to declare that the proscription was at an end; and thus having deluged the city with blood, Octavianus and Antony, leaving Lepidus to defend Rome in their absence, marched with their army to oppose the conspirators, who were now at the head of a formidable army in Asia.

Brutus and Cassius, the principal of these, upon the death of Cæsar, being compelled to quit Rome, went into Greece, where they persuaded the Roman students at Athens to declare in the cause of freedom; then

Z

parting,

Rome.

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They are reconciled, and divide the empire with Lepidus.

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The second *triumvirate*.

230

Cruelties of the *triumvirs*.

227
A war breaks out between them.

Rome.

parting, the former raised a powerful army in Macedonia and the adjacent countries, while the latter went into Syria, where he soon became master of 12 legions, and reduced his opponent Dolabella to such straits as to kill himself. Both armies soon after joining at Smyrna, the sight of such a formidable force began to revive the declining spirits of the party, and to re-unite the two generals still more closely, between whom there had been some time before a slight misunderstanding. In short, having quitted Italy like distressed exiles, without having one single soldier or one town that owned their command, they now found themselves at the head of a flourishing army, furnished with all the necessaries for carrying on the war, and in a condition to support a contest where the empire of the world depended on the event. This success in raising levies was entirely owing to the justice, moderation, and great humanity of Brutus, who in every instance seemed studious of the happiness of his country.

* See Rhodes.

It was in this flourishing state of their affairs that the conspirators had formed a resolution of going against Cleopatra, who, on her side, had made great preparations to assist their opponents. However, they were diverted from this purpose by an information that Octavianus and Antony were now upon their march, with 40 legions to oppose them. Brutus now, therefore, moved to have their army pass over into Greece and Macedonia, and there meet the enemy; but Cassius so far prevailed as to have the Rhodians and Lycians first reduced, who had refused their usual contribution. This expedition was immediately put in execution, and extraordinary contributions were raised by that means, the Rhodians having scarce any thing left but their lives*. The Lycians suffered still more severely; for having shut themselves up in the city of Xanthus, they defended the place against Brutus with such fury, that neither his art nor intreaties could prevail upon them to surrender. At length, the town being set on fire, by their attempting to burn the works of the Romans, Brutus, instead of laying hold on this opportunity to storm the place, made every effort to preserve it, intreating his soldiers to try all means of extinguishing the fire: but the desperate phrenzy of the citizens was not to be mollified. Far from thinking themselves obliged to their generous enemy for the efforts which were made to save them, they resolved to perish in the flames. Wherefore, instead of extinguishing, they did all in their power to augment the fire, by throwing in wood, dry reeds, and all kinds of fuel. Nothing could exceed the distress of Brutus upon seeing the townsmen thus resolutely bent on destroying themselves: he rode about the fortifications, stretching out his hands to the Xanthians, and conjuring them to have pity on themselves and their city; but, insensible to his expostulations, they rushed into the flames with desperate obstinacy, and the whole soon became an heap of undistinguishable ruin. At this horrid spectacle, Brutus offered a reward to every soldier who would bring him a Lycian alive. The number of those whom it was possible to save from their own fury amounted to no more than 150.

Brutus and Cassius met once more at Sardis, where, after the usual ceremonies were passed between them, they resolved to have a private conference together,

when, after much altercation, they were at last perfectly reconciled. After which, night coming on, Cassius invited Brutus and his friends to an entertainment. Upon retiring home it was, that Brutus, as Plutarch tells the story, saw a spectre in his tent. It was in the dead of the night, when the whole camp was perfectly quiet, that Brutus was employed in reading by a lamp that was just expiring. On a sudden he thought he heard a noise as if somebody entered; and looking towards the door, he perceived it open. A gigantic figure, with a frightful aspect, stood before him, and continued to gaze upon him with silent severity. At last Brutus had courage to speak to it: "Art thou a daemon or a mortal man? and why comest thou to me?" "Brutus," replied the phantom, "I am thy evil genius, thou shalt see me again at Philippi." "Well then," answered Brutus, without being discomposed, "we shall meet again." Upon which the phantom vanished; and Brutus calling to his servants, asked if they had seen any thing; to which replying in the negative, he again resumed his studies. But as he was struck with so strange an occurrence, he mentioned it the next day to Cassius, who, being an Epicurean, ascribed it to the effect of imagination too much exercised by vigilance and anxiety. Brutus appeared satisfied with this solution of his late terrors; and, as Antony and Octavianus were now advanced into Macedonia, they soon after passed over into Thrace, and advanced to the city of Philippi, near which the forces of the triumvirs were posted.

A battle soon ensued; which the republicans were defeated, and Cassius killed, as is related in the article PHILIPPI.

The first care of Brutus, when he became the sole general, was to assemble the dispersed troops of Cassius, and animate them with fresh hopes of victory. As they had lost all they possessed by the plundering of their camp, he promised them 2000 denarii each man to make up their losses. This once more inspired them with new ardour; they admired the liberality of their general, and with loud shouts proclaimed his former intrepidity. Still, however, he had not confidence sufficient to face the adversary, who offered him battle the ensuing day. His aim was to starve his enemies, who were in extreme want of provisions, their fleet having been lately defeated. But his single opinion was overruled by the rest of his army, who now grew every day more confident of their strength, and more arrogant to their new general. He was, therefore, at last, after a respite of 20 days, obliged to comply with their solicitations to try the fate of the battle. Both armies being drawn out, they remained a long while opposite to each other without offering to engage. It is said that he himself had lost much of his natural ardour by having again seen the spectre the night preceding: however, he encouraged his men as much as possible, and gave the signal for battle within three hours of sunset. Fortune again declared against him; and the two triumviri expressly ordered by no means to suffer the general to escape, for fear he should renew the war. Thus the whole body of the enemy seemed chiefly intent on Brutus alone, and his capture seemed inevitable. In this deplorable exigence, Lucilius his friend resolved, by his own death, to effect the general's delivery. Upon perceiving a body of Thracian horse

Rome.

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Brutus sees a spectre.

233

The republicans defeated.

234

They are defeated a second time.

Rome. closely pursuing Brutus, and just upon the point of taking him, he boldly threw himself in their way, telling them that he was Brutus. The Thracians, overjoyed with so great a prize, immediately dispatched some of their companions, with the news of their success, to the army. Upon which, the ardour of the pursuit now abating, Antony marched out to meet his prisoner; some silently deploring the fate of so virtuous a man; others reproaching that mean desire of life for which he consented to undergo captivity. Antony now seeing the Thracians approach, began to prepare himself for the interview; but the faithful Lucilius, advancing with a cheerful air, owned the deceit that he had put upon him: on which the triumvir, struck with so much fidelity, pardoned him upon the spot; and from that time forward loaded him with benefits, and honoured him with his friendship.

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Brutus
kills him-
self.

In the mean time Brutus, with a small number of friends, passed over a rivulet, and, night coming on, sat down under a rock which concealed him from the pursuit of the enemy. After taking breath for a little time, he sent out one Statilius to give him some information of those that remained; but he never returned, being killed by a party of the enemy's horse. Brutus judging very rightly of his fate, now resolved to die likewise, and spoke to those who stood round him to lend him their last sad assistance. None of them, however, would render him so melancholy a piece of service. At last one Strato, averting his head, presented the sword's point to Brutus; who threw himself upon it, and immediately expired.

From the moment of Brutus's death the triumviri began to act as sovereigns, and to divide the Roman dominions between them, as theirs by right of conquest. However, though there were apparently three who thus participated all the power, yet, in fact, only two were actually possessed of it; since Lepidus was at first admitted merely to curb the mutual jealousy of Antony and Octavianus, and was possessed neither of interest in the army nor authority among the people. Their first care was to punish those whom they had formerly marked for vengeance. The head of Brutus was sent to Rome to be thrown at the foot of Cæsar's statue. His ashes, however, were sent to his wife Portia, Cato's daughter, who afterwards killed herself by swallowing burning coals. It is observed, that of all those who had a hand in the death of Cæsar, not one died a natural death.

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Antony's
extrava-
gance.

The power of the triumviri being thus established upon the ruins of the commonwealth, Antony went into Greece, and spent some time at Athens, conversing among the philosophers, and assisting at their disputes in person. From thence he passed over into Asia, where all the monarchs of the east, who acknowledged the Roman power, came to pay him their obedience. In this manner he proceeded from kingdom to kingdom, attended by a crowd of sovereigns, exacting contributions, distributing favours, and giving away crowns with capricious insolence. He presented the kingdom of Cappadocia to Syfenes, in prejudice of Ariarathes, only because he found pleasure in the beauty of Glaphyra, the mother of the former. He settled Herod in the kingdom of Judea, and supported him against every opposer. But among all the sovereigns of the east who shared his fa-

vours, none had so large a part as Cleopatra, the celebrated queen of Egypt.

Rome.

It happened that Serapion, her governor in the island of Cyprus, had formerly furnished some succours to the conspirators; and it was thought proper that she should answer for his conduct on that occasion. Accordingly, having received orders from Antony to come and clear herself of this imputation of infidelity, she readily complied, equally conscious of the goodness of her cause and the power of her beauty. She had already experienced the force of her charms upon Cæsar and Pompey's eldest son; and the addition of a few years since that time had not impaired their lustre. Antony was now in Tarsus, a city of Cilicia, when Cleopatra resolved to attend his court in person. She sailed down the river Cydnus, at the mouth of which the city stood, with the most sumptuous pageantry. Her galley was covered with gold; the sails were of purple, large, and floating in the wind. The oars of silver kept tune to the sound of flutes and cymbals. She herself lay reclined on a couch spangled with stars of gold, and with such ornaments as poets and painters had usually ascribed to Venus. On each side were boys like cupids, who fanned her by turns; while the most beautiful nymphs, dressed like Nereids and Graces, were placed at proper distances around her. Upon the banks of the river were kept burning the most exquisite perfumes, while an infinite number of people gazed upon the sight. Antony was captivated with her beauty; and, leaving all his business to satisfy his passion, shortly after followed her into Egypt.

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Has an in-
terview
with Cleo-
patra.

While he thus remained idle, Octavianus, who took upon him to lead back the veteran troops and settle them in Italy, was assiduously employed in providing for their subsistence. He had promised them lands at home, as a recompense for their past services; but they could not receive new grants, without turning out the former inhabitants. In consequence of this, multitudes of women, with children in their arms, whose tender years and innocence excited universal compassion, daily filled the temples and the streets with their distresses. Numbers of husbandmen and shepherds came to deprecate the conqueror's intention, or to obtain an habitation in some other part of the world. Amongst this number was Virgil the poet, who in an humble manner begged permission to retain his patrimonial farm: Virgil obtained his request; but the rest of his countrymen, of Mantua and Cremona, were turned out without mercy.

Italy and Rome now felt the most extreme miseries; the insolent soldiers plundered at will; while Sextus Pompey, being master of the sea, cut off all foreign communication, and prevented the people's receiving their usual supplies of corn. To these mischiefs were added the commencement of another civil war. Fulvia, the wife of Antony, who had been left behind him at Rome, had felt for some time all the rage of jealousy, and resolved to try every method of bringing back her husband from the arms of Cleopatra. She considered a breach with Octavianus as the only probable means of rousing him from his lethargy; and accordingly, with the assistance of Lucius her brother-in-law, who was then consul, and entirely devoted to her interest, she began to sow the seeds of dissension. The pretext was, that Antony should have a share in the distribution of

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Miseries
sustained
by the Ro-
mans.

Rome.

lands as well as Octavianus. This produced some negotiations between them; Octavianus offered to make the veterans themselves umpires in the dispute. Lucius refused to acquiesce; and being at the head of more than six legions, mostly composed of such as had been dispossessed of their lands, he resolved to compel Octavianus to accept of whatever terms he should offer. Thus a new war was excited between Octavianus and Antony; or, at least, the generals of the latter assumed the sanction of his name. Octavianus, however, proved victorious: Lucius was hemmed in between two armies, and constrained to retreat to Perugia, a city of Etruria, where he was closely besieged by the opposite party. He made many desperate sallies, and Fulvia did all in her power to relieve him, but without success. He was at last, therefore, reduced to such extremity by famine, that he came out in person and delivered himself up to the mercy of the conqueror. Octavianus received him very honourably, and generously pardoned him and all his followers. Thus having concluded the war in a few months, he returned in triumph to Rome.

Antony, who, during this interval, was revelling in all the studied luxuries procured him by his insidious mistress, having heard of his brother's overthrow, and his wife's being compelled to leave Italy, was resolved to oppose Octavianus without delay. He accordingly sailed at the head of a considerable fleet from Alexandria to Tyre, from thence to Cyprus and Rhodes, and had an interview with Fulvia his wife at Athens. He much blamed her for occasioning the late disorders, testified the utmost contempt for her person, and, leaving her upon her death-bed at Sicyon, hastened into Italy to fight Octavianus. They both met at Brundisium; and it was now thought that the flames of a civil war were going to blaze out once more. The forces of Antony were numerous, but mostly newly raised; however, he was assisted by Sextus Pompeius, who in these oppositions of interests was daily coming into power. Octavianus was at the head of those veterans who had always been irresistible, but who seemed no way disposed to fight against Antony their former general. A negotiation was therefore proposed; and a reconciliation was effected. All offences and affronts were mutually forgiven; and to cement the union, a marriage was concluded between Antony and Octavia, the sister of Octavianus. A new division of the Roman empire was made between them; Octavianus was to have the command of the west, Antony of the east, while Lepidus was obliged to content himself with the provinces in Africa. As for Sextus Pompeius, he was permitted to retain all the islands he had already possessed, together with Peloponnesus: he was also granted the privilege of demanding the consulship in his absence, and of discharging that office by any of his friends. It was likewise stipulated to leave the sea open, and pay the people what corn was due out of Sicily. Thus a general peace was concluded, to the great satisfaction of the people, who now expected a cessation from all their calamities.

This calm seemed to continue for some time: Antony led his forces against the Parthians, over whom his lieutenant, Ventidius, had gained great advantages. Octavianus drew the greatest part of his army into Gaul, where there were some disturbances; and Pom-

pey went to secure his newly ceded province to his interest. It was on this quarter that fresh motives were given for renewing the war. Antony, who was obliged by treaty to quit Peloponnesus, refused to evacuate it till Pompey had satisfied him for such debts as were due to him from the inhabitants. This Pompey would by no means comply with; but immediately fitted out a new fleet, and renewed his former enterprises, by cutting off such corn and provisions as were consigned to Italy. Thus the grievances of the poor were again renewed; and the people began to complain, that instead of three tyrants they were now oppressed by four.

In this exigence, Octavianus, who had long meditated the best means of diminishing the number, resolved to begin by getting rid of Pompey, who kept the state in continual alarms. He was master of two fleets; one of which he had caused to be built at Ravenna; and another which Menodorus, who revolted from Pompey, brought to his aid. His first attempt was to invade Sicily; but being overpowered in his passage by Pompey, and afterwards shattered in a storm, he was obliged to defer his designs to the ensuing year. During this interval he was reinforced by a fleet of 120 ships, given him by Antony, with which he resolved once more to invade Sicily on three several quarters. But fortune seemed still determined to oppose him. He was a second time disabled and shattered by a storm: which so raised the vanity of Pompey, that he began to style himself the *son of Neptune*. However, Octavianus was not to be intimidated by any disgraces; for having shortly refitted his navy, and recruited his forces, he gave the command of both to Agrippa, his faithful friend and associate in war. Agrippa proved himself worthy of the trust reposed in him: he began his operations by a victory over Pompey; and, though he was shortly after worsted himself, he soon after gave his adversary a complete and final overthrow. Thus undone, Pompey resolved to fly to Antony, from whom he expected refuge, as he had formerly obliged that triumvir by giving protection to his mother. However, he tried once more, at the head of a small body of men, to make himself independent, and even surprised Antony's officers who had been sent to accept of his submissions. Nevertheless, he was at last abandoned by his soldiers, and delivered up to Titus, Antony's lieutenant, who shortly after caused him to be slain.

The death of this general removed one very powerful obstacle to the ambition of Octavianus, and he resolved to take the earliest opportunity to get rid of the rest of his associates. An offence was soon furnished by Lepidus, that served as a sufficient pretext for depriving him of his share in the triumvirate. Being now at the head of 22 legions, with a strong body of cavalry, he idly supposed that his present power was more than an equivalent to the popularity of Octavianus. He therefore resolved upon adding Sicily, where he then was, to his province; pretending a right, as having first invaded it. His colleague sent to expostulate upon these proceedings; but Lepidus fiercely replied, 'that he was determined to have his share in the administration, and would no longer submit to let one alone possess all the authority.' Octavianus was previously informed of the disposition of Lepidus's soldiers; for he had, by his secret intrigues and largesses, entirely attached them to himself. Wherefore, without further delay

239
The empire divided anew.

Rome.

240
Sextus Pompeius defeated and taken prisoner.

Rome. delay, he with great boldness went alone to the camp of Lepidus, and with no other assistance than his private bounties, and the authority he had gained by his former victories, he resolved to depose his rival. The soldiers thronged round him with the most dutiful alacrity, while Lepidus hastened to prevent their defection. But Octavianus, though he received a wound from one of the centurions, went with great presence of mind to the place where the military ensigns were planted, and, flourishing one of them in the air, all the legionary soldiers ran in crowds and saluted him as their general. Lepidus being thus abandoned by his men, divested himself of all the marks of his authority, which he could no longer keep, and submissively threw himself at the feet of Octavianus. This general spared his life, notwithstanding the remonstrances of his army; but deprived him of all his former authority, and banished him to Circæum.

241
Lepidus defeated and banished.

242
Antony's imprudent conduct.

* See Parthia.

Octavianus was received upon his return to Rome with universal joy; the senators met him at the gates, and conducted him to the capitol: the people followed, crowned with garlands of flowers: and after having returned thanks to the gods, waited upon him to his palace. There remained now but one obstacle to his ambition, which was Antony, whom he resolved to remove, and for that purpose began to render his character as contemptible as he possibly could at Rome. In fact, Antony's conduct did not a little contribute to promote the endeavours of his ambitious partner in the state. He had marched against the Parthians with a prodigious army; but was forced to return with the loss of the fourth part of his forces, and all his baggage*. This extremely diminished his reputation; but his making a triumphal entry into Alexandria soon after, entirely disgusted the citizens of Rome. However, Antony seemed quite regardless of their resentment: totally disregarding the business of the state, he spent whole days and nights in the company of Cleopatra, who studied every art to increase his passion, and vary his entertainments. Not contented with sharing in her company all the delights which Egypt could afford, Antony was resolved to enlarge his sphere of luxury, by granting her many of those kingdoms which belonged to the Roman empire. He gave her all Phœnicia, Celo-Syria, and Cyprus; with a great part of Cilicia, Arabia, and Judea; gifts which he had no right to bestow, but which he pretended to grant in imitation of Hercules. This complication of vice and folly at length totally exasperated the Romans; and Octavianus, willing to take advantage of their resentment, took care to exaggerate all his defects. At length, when he found the people sufficiently irritated against him, he resolved to send Octavia, who was then at Rome, to Antony, as if with a view of reclaiming her husband; but, in fact, to furnish a sufficient pretext of declaring war against him, as he knew she would be dismissed with contempt.

Antony was now in the city of Leucopolis, revelling with his insidious paramour, when he heard that Octavia was at Athens, upon her journey to visit him. This was very unwelcome news to him as well as to Cleopatra; who, fearing the charms of her rival, endeavoured to convince Antony of the strength of her passion. He frequently caught her in tears, which she seemed as if willing to hide; and often intreated her to tell him the

Rome. cause, which she seemed willing to suppress. These artifices, together with the ceaseless flattery and importunity of her creatures, prevailed so much upon Antony's weakness, that he commanded Octavia to return home without seeing her, and attached himself still more closely to Cleopatra than before. His ridiculous passion now began to have no bounds. He resolved to own her for his wife, and entirely to repudiate Octavia. He accordingly assembled the people of Alexandria in the public theatre, where was raised an alcove of silver, under which were placed two thrones of gold, one for himself and the other for Cleopatra. There he seated himself, dressed like Bacchus, while Cleopatra sat beside him clothed in the ornaments and attributes of Isis, the principal deity of the Egyptians. On that occasion he declared her queen of all the countries which he had already bestowed upon her; while he associated Cæsar, her son by Cæsar, as her partner in the government. To the two children which he had by her himself he gave the title of *king of kings*, with very extensive dominions; and, to crown his absurdities, he sent a minute account of his proceedings to the two consuls at Rome. It was now necessary to act up to his imaginary dignity; new luxuries and pageantries were now therefore studied, and new marks of profusion found out: not less than 60,000*l.* of our money were lavished upon one single entertainment; it is said, upon this occasion, that Cleopatra dissolved a pearl of great value in vinegar, and drank it off. But we are told of one circumstance that might well represent their delights, and teach mankind to relish the beverage of virtue, however simple, above their greatest luxuries. He was suspicious of being poisoned in every meal; he feared Cleopatra, whom he so much loved, and would eat nothing without having it previously tasted by one of his attendants.

In the mean time Octavianus had now a sufficient pretext for declaring war; and informed the senate of his intentions. However, he deferred the execution of his design for a while, being then employed in quelling an insurrection of the Illyrians. The following year was chiefly taken up in preparations against Antony, who, perceiving his design, remonstrated to the senate, that he had many causes of complaint against his colleague, who had seized upon Sicily without offering him a share; alleging that he had also dispossessed Lepidus, and kept to himself the province he had commanded; and that he had divided all Italy among his own soldiers, leaving nothing to recompense those in Asia. To this complaint Octavianus was contented to make a sarcastic answer; implying, that it was absurd to complain of his distribution of a few trifling districts in Italy, when Antony having conquered Parthia, he might now reward his soldiers with cities and provinces. The sarcasm upon Antony's misfortunes in Parthia so provoked him, that he ordered Canidius, who commanded his army, to march without intermission into Europe; while he and Cleopatra followed to Samos, in order to prepare for carrying on the war with vigour. When arrived there, it was ridiculous enough to behold the odd mixture of preparations for pleasure and for war. On one side all the kings and princes from Europe to the Euxine sea had orders to send him thither supplies both of men, provisions and arms; on the other side, all the comedians, dancers, buffoons, and musicians of Greece,

243
Divorces Octavia, and marries Cleopatra.

244
Octavianus resolves to make war upon him.

Rome.

Greece, were ordered to attend him. Thus, frequently, when a ship was thought to arrive laden with soldiers, arms, and ammunition, it was found only filled with players and theatrical machinery. When news was expected of the approach of an army, messengers only arrived with tidings of a fresh quantity of venison. The kings who attended him endeavoured to gain his favour more by their entertainments than their warlike preparations; the provinces strove rather to please him by sacrificing to his divinity, than by their alacrity in his defence; so that some were heard to say, "What rejoicings would not this man make for a victory, when he thus triumphs at the eve of a dangerous war!" In short, his best friends now began to forsake his interests.

His delay at Samos, and afterwards at Athens, where he carried Cleopatra to receive new honours, was extremely favourable to the arms of Octavianus. This general was at first scarcely in a disposition to oppose him, had he gone into Italy; but he soon found time to put himself in a condition for carrying on the war, and shortly after declared it against him in form. All Antony's followers were invited over to join him, with great promises of rewards: but they were not declared enemies, partly to prevent their growing desperate, and partly to give a show of moderation to his own party. At length both found themselves in readiness to begin the war, and their armies were answerable to the empire they contended for. The one was followed by all the forces of the east; the other drew all the strength of the west to support his pretensions. Antony's force composed a body of 100,000 foot and 12,000 horse; while his fleet amounted to 500 ships of war. The army of Octavianus mustered but 80,000 foot, but equalled his adversary's in the number of cavalry; his fleet was but half as numerous as Antony's; however, his ships were better built, and manned with better soldiers.

245
Antony
defeated at
Actium.

The great decisive engagement, which was a naval one, was fought near Actium, a city of Epirus, at the entrance of the gulf of Ambracia. Antony ranged his ships before the mouth of the gulf; and Octavianus drew up his fleet in opposition. Neither general assumed any fixed station to command in; but went about from ship to ship wherever his presence was necessary. In the mean time, the two land armies, on opposite sides of the gulf, were drawn up, only as spectators of the engagement; and encouraged the fleets by their shouts to engage. The battle began on both sides with great ardour, and after a manner not practised upon former occasions. The prows of their vessels were armed with brazen points; and with these they drove furiously against each other. In this conflict the ships of Antony came with greater force, but those of Octavianus avoided the shock with greater dexterity. On Antony's side, the sterns of the ships were raised in form of a tower; from whence they threw arrows from machines for that purpose. Those of Octavianus made use of long poles hooked with iron, and fire-pots. They fought in this manner for some time with equal animosity; nor was there any advantage on either side, except a small appearance of disorder in the centre of Antony's fleet. But all of a sudden Cleopatra determined the fortune of the day. She was seen flying from the engagement attended by 60 sail; struck, per-

I

Rome.

haps, with the terrors natural to her sex: but what increased the general amazement was, to behold Antony himself following soon after, and leaving his fleet at the mercy of the conquerors. The engagement, notwithstanding, continued with great obstinacy till five in the evening; when Antony's forces, partly constrained by the conduct of Agrippa, and partly persuaded by the promises of Octavianus, submitted to the conqueror. The land forces soon after followed the example of the navy; and all yielded to the conqueror without striking a blow the fourth day after the battle.

When Cleopatra fled, Antony pursued her in a five-oared galley; and coming along-side of her ship entered, without seeing or being seen by her. She was in the stern, and he went to the prow, where he remained for some time silent, holding his head between his hands. In this manner he continued three whole days; during which, either through indignation or shame, he neither saw nor spoke to Cleopatra. At last, when they were arrived at the promontory of Tenarus, the queen's female attendants reconciled them, and every thing went on as before. Still, however, he had the consolation to suppose his army continued faithful to him; and accordingly dispatched orders to his lieutenant Canidius to conduct it into Asia. However, he was soon undeceived when he arrived in Africa, when he was informed of their submission to his rival. This account so transported him with rage, that he was hardly prevented from killing himself; but at length, at the entreaty of his friends, he returned to Alexandria, in a very different situation from that in which he had left it some time before. Cleopatra, however, seemed to retain that fortitude in her misfortunes which had utterly abandoned her admirer. Having amassed considerable riches by means of confiscation and other acts of violence, she formed a very singular and unheard of project; this was to convey her whole fleet over the isthmus of Suez into the Red sea, and thereby save herself in another region beyond the reach of Rome, with all her treasures. Some of her vessels were actually transported thither, pursuant to her orders; but the Arabians having burnt them, and Antony dissuading her from the design, she abandoned it for the more improbable scheme of defending Egypt against the conqueror.— She omitted nothing in her power to put his advice in practice, and made all kinds of preparations for war; at least hoping thereby to obtain better terms from Octavianus. In fact, she had always loved Antony's fortunes rather than his person; and if she could have fallen upon a method of saving herself, though even at his expence, there is no doubt but she would have embraced it with gladness. She even still had some hopes from the power of her charms, though she was arrived almost at the age of 40; and was desirous of trying upon Octavianus those arts which had been so successful with the greatest men of Rome. Thus, in three embassies which were sent one after another from Antony to his rival in Asia, the queen had always her secret agents, charged with particular proposals in her name. Antony desired no more than that his life might be spared, and to have the liberty of passing the remainder of his days in obscurity. To these proposals Octavianus made no reply. Cleopatra sent him also public proposals in favour of her children; but at the same time privately resigned him her crown, with all the ensigns of royalty.

246
He resolves
to defend
Egypt
against the
conqueror.

To

Rome. To the queen's public proposal no answer was given; to her private offer he replied, by giving her assurances of his favour in case she sent away Antony or put him to death. These negotiations were not so private but they came to the knowledge of Antony, whose jealousy and rage were now heightened by every concurrence. He built a small solitary house upon a mole in the sea; and there he passed his time, shunning all commerce with mankind, and professing to imitate Timon the man-hater. However his furious jealousy drove him even from this retreat into society; for hearing that Cleopatra had many secret conferences with one Thyrsus, an emissary from Octavianus, he seized upon him, and having ordered him to be cruelly scourged, he sent him back to his patron. At the same time he sent letters by him, importing, that he had chastised Thyrsus for insulting a man in his misfortunes; but withal he gave his rival permission to avenge himself, by scourging Hipparchus, Antony's freeman, in the same manner. The revenge, in this case, would have been highly pleasing to Antony, as Hipparchus had left him to join the fortunes of his more successful rival.

Meanwhile, the operations of the war were carried vigorously forward, and Egypt was once more the theatre of the contending armies of Rome. Gallus, the lieutenant of Octavianus, took Paretonium, which opened the whole country to his incursions. On the other side, Antony, who had still considerable forces by sea and land, wanted to take that important place from the enemy. He therefore marched towards it, flattering himself, that as soon as he should show himself to the legions which he had once commanded, their affection for their ancient general would revive. He approached therefore, and exhorted them to remember their former vows of fidelity. Gallus, however, ordered all the trumpets to sound, in order to hinder Antony from being heard, so that he was obliged to retire.

²⁴⁷
Pelusium
given up
to Octavianus.

Octavianus himself was in the mean time advancing with another army before Pelusium, which, by its strong situation, might have retarded his progress for some time. But the governor of the city, either wanting courage to defend it, or previously instructed by Cleopatra to give it up, permitted him to take possession of the place; so that Octavianus had now no obstacle in his way to Alexandria, whither he marched with all expedition. Antony, upon his arrival, sallied out to oppose him, fighting with great desperation, and putting the enemy's cavalry to flight. This slight advantage once more revived his declining hopes; and, being naturally vain, he re-entered Alexandria in triumph. Then going, all armed as he was, to the palace, he embraced Cleopatra, and presented her a soldier who had distinguished himself in the late engagement. The queen rewarded him very magnificently; presenting him with an head-piece and breast-plate of gold. With these, however, the soldier went off the next night to the other army. Antony could not bear this desertion without fresh indignation; he resolved, therefore, to make a bold expiring effort by sea and land, but previously offered to fight his adversary in single combat. Octavianus too well knew the inequality of their situations to comply with this forlorn offer; he only, therefore, coolly replied, that Antony had ways enough to die besides single combat.

The evening before the day appointed for the last

desperate attempt, he ordered a grand entertainment to be prepared. At day-break he posted the few troops he had remaining upon a rising ground near the city: from whence he sent orders to his galleys to engage the enemy. There he waited to be a spectator of the combat; and, at first, he had the satisfaction to see them advance in good order; but his approbation was soon turned into rage, when he saw his ships only saluting those of Octavianus, and both fleets uniting together, and sailing back into the harbour. At the very same time his cavalry deserted him. He tried, however, to lead on his infantry; which were easily vanquished, and he himself compelled to return into the town. His anger was now ungovernable; he could not help crying out aloud as he passed, that he was betrayed by Cleopatra, and delivered by her to those who, for her sake alone, were his enemies. In these suspicions he was not deceived; for it was by secret orders from the queen that the fleet had passed over to the enemy.

Rome.
²⁴⁸
Antony deserted by his fleet.

Cleopatra had, for a long while, dreaded the effects of Antony's jealousy; and had, some time before, prepared a method of obviating any sudden sallies it might produce. Near the temple of Isis she had erected a building, which was seemingly designed for a sepulchre. Hither she removed all her treasure and most valuable effects, covering them over with torches, faggots, and other combustible matter. This sepulchre she designed to answer a double purpose; as well to screen her from the sudden resentments of Antony, as to make Octavianus believe that she would burn all her treasures in case he refused her proper terms of capitulation. Here, therefore, she retired from Antony's present fury; shutting the gates, which were fortified with bolts and bars of iron: but in the mean time gave orders that a report should be spread of her death.— This news, which soon reached Antony, recalled all his former love and tenderness. He now lamented her death with the same violence he had but a few minutes before seemed to desire it; and called one of his freedmen, named *Eros*, whom he had by oath engaged to kill him whenever fortune should drive him to this last resource. *Eros* being now commanded to perform his promise, this faithful follower drew the sword, as if going to execute his orders; but turning his face, plunged it into his own bosom, and died at his master's feet. Antony for a while hung over his faithful servant, and, commending his fidelity, took up the sword, with which stabbing himself in the belly, he fell backward upon a little couch. Though the wound was mortal, yet the blood stopping he recovered his spirits, and earnestly conjured those who were come into the room to put an end to his life; but they all fled, being seized with fright and horror. He therefore continued in agonies for some time; till he was informed by one of the queen's secretaries that his mistress was still alive. He then earnestly desired to be carried to the place where she was. They accordingly brought him to the gate of the sepulchre; but Cleopatra, who would not permit it to be opened, appeared at the window, and threw down cords in order to pull him up. In this manner, assisted by her two female attendants, she raised him all bloody from the ground; and while yet suspended in the air, he continued stretching out his hands to encourage her. Cleopatra and her maids had only just strength sufficient to raise him; and at last, with much straining, they effected

²⁴⁹
Stabs himself with his sword.

Rome. effected their purpose, and carried him to a couch, on which they gently laid him. Here she gave way to her sorrow, tearing her clothes, beating her breast, and kissing the wound of which he was dying. She called upon him as her lord, her husband, her emperor, and seemed to have forgot her own distresses in the greatness of his sufferings. Antony entreated her to moderate the transports of her grief, and asked for some wine. After he had drank, he entreated Cleopatra to endeavour to preserve her life, if she could do it with honour; and recommended Proculus, a friend of Octavianus, as one she might rely on to be her intercessor. Just as he had done speaking, he expired; and Proculus made his appearance by command of Octavianus, who had been informed of Antony's desperate conduct. He was sent to try all means of getting Cleopatra into his power; his master having a double motive for his solicitude on this occasion; one, to prevent her destroying the treasures she had taken with her into the tomb; the other, to preserve her person as an ornament to grace his triumph. Cleopatra, however, was upon her guard, and would not confer with Proculus, except through the gate, which was well secured. In the mean time, while he designedly drew out the conference to some length, and had given Gallus, one of his fellow-foldiers, directions to carry on the conversation in his absence, he entered with two more by the window at which Antony had been drawn up. As soon as he was entered, he ran down to the gate; and one of the women crying out, that they were taken alive, Cleopatra, perceiving what had happened, drew a poniard, and attempted to stab herself; but Proculus prevented the blow, and gently remonstrated that she was cruel in refusing so good a prince as his master was the pleasure of displaying his clemency. He then forced the poniard out of her hand, and examined her clothes to be certain she had no poison about her. Thus leaving every thing secured, he went to acquaint his master with his proceedings.

250
He dies.

251
Cleopatra
taken.

Octavianus was extremely pleased at finding her in his power: he sent Epaphroditus to bring her to his palace, and to watch her with the utmost circumspection. He was likewise ordered to use her, in every respect, with that deference and submission which were due to her rank, and to do every thing in his power to render her captivity agreeable. She was permitted to have the honour of granting Antony the rites of burial, and furnished with every thing she desired, that was becoming his dignity to receive, or her love to offer. Yet still she languished under her new confinement. Her excessive sorrow, her many losses, and the blows she had given her bosom, produced a fever which she seemed willing to increase. She resolved to abstain from taking any nourishment, under the pretence of a regimen necessary for her disorder; but Octavianus being made acquainted with the real motive by her physician, began to threaten her with regard to her children, in case she persisted. This was the only punishment that could now affect her; she allowed herself to be treated as they thought proper, and received whatever was prescribed for her recovery.

In the mean time Octavianus made his entry into Alexandria; taking care to mitigate the fears of the inhabitants, by conversing familiarly as he went along with Areus, a philosopher, and a native of the place.

Rome. The citizens, however, trembled at his approach; and when he placed himself upon the tribunal, they prostrated themselves, with their faces to the ground, before him, like criminals who waited the sentence of their execution. Octavianus presently ordered them to rise; telling them, that three motives induced him to pardon them: His respect for Alexander, who was the founder of their city; his admiration of its beauty; and his friendship for Areus, their fellow-citizen. Two only of particular note were put to death upon this occasion; Antony's eldest son Antyllus, and Casario, the son of Julius Cæsar; both betrayed into his hands by their respective tutors, who themselves suffered for their perfidy shortly after. As for the rest of Cleopatra's children, he treated them with great gentleness, leaving them to the care of those who were entrusted with their education, who had orders to provide them with every thing suitable to their birth. When she was recovered from her late indisposition, he came to visit her in person.— Cleopatra had been preparing for this interview, and made use of every method she could think of to propitiate the conqueror, and to gain his affection; but in vain. However, at his departure, Octavianus imagined that he had reconciled her to life, and to the indignity of being shown in the intended triumph, which he was preparing for on his return to Rome: but in this he was deceived. Cleopatra, all this time, had kept a correspondence with Dolabella, a young Roman of high birth, in the camp of Octavianus; who, perhaps, from compassion, or stronger motives, was interested in the misfortunes of that princess. From him she learnt the intentions of Octavianus, and that he was determined to send her off in three days, together with her children, to Rome. She now therefore determined upon dying; but previously intreated permission to pay her oblations at Antony's tomb. This request being granted her, she was carried with her two female attendants to the stately monument where he was laid. There she threw herself upon his coffin, bewailed her captivity, and renewed her protestations not to survive him. She then crowned the tomb with garlands of flowers; and having kissed the coffin a thousand times, she returned home to execute her fatal resolution. Having bathed, and ordered a sumptuous banquet, she attired herself in the most splendid manner. She then feasted as usual; and soon after ordered all but her two attendants, Charmion and Iras, to leave the room. Then, having previously ordered an asp to be secretly conveyed to her in a basket of fruit, she sent a letter to Octavianus, informing him of her fatal purpose, and desiring to be buried in the same tomb with Antony. Octavianus, upon receiving this letter, instantly dispatched messengers to prevent her, but they arrived too late. Upon entering the chamber, they beheld Cleopatra lying dead upon a gilded couch, arrayed in her royal robes. Near her, Iras, one of her faithful attendants, was stretched lifeless at the feet of her mistress; and Charmion herself, almost expiring, was settling the diadem upon Cleopatra's head. She died at the age of thirty-nine, after having reigned twenty-two years. Her death put an end to the monarchy in Egypt, which had flourished there from time immemorial.

Octavianus seemed much troubled at Cleopatra's death, as it deprived him of a principal ornament in his intended

252
Her death.

Rome. intended triumph. However, the manner of it a good deal exalted her character among the Romans, with whom suicide was considered as a virtue. Her dying request was complied with, her body being laid by Antony's, and a magnificent funeral prepared for her and her two faithful attendants.

After having settled the affairs of Egypt, he left Alexandria in the beginning of September, in the year of Rome 720, with a design to return through Syria, Asia Minor, and Greece, to Italy. On his arrival at Antioch, he found there Tiridates, who had been raised to the throne of Parthia in opposition to Phraates, and likewise ambassadors from Phraates, who were all come on the same errand; to wit, to solicit the assistance of the Romans against each other. Octavianus gave a friendly answer both to Tiridates and the ambassadors of Phraates, without intending to help either; but rather with a design to animate the one against the other, and by that means to weaken both, so far as to render the Parthian name no longer formidable to Rome. After this, having appointed Messala Corvinus governor of Syria, he marched into the province of Asia, properly so called, and there took up his winter-quarters. He spent the whole winter in settling the affairs of the several provinces of Asia Minor and the adjacent islands; and early in the spring passed into Greece, whence he set out for Rome, which he entered in the month Sextilis, afterwards called *August*, in three triumphs, which were celebrated for three days together.

253 Octavianus has thoughts of resigning his power. And now Octavianus was at the height of his wishes, sole sovereign, sole master, of the whole Roman empire. But, on the other hand, the many dangers which attend an usurped power, appearing to him in a stronger light than ever, filled his mind with a thousand perplexing thoughts. The natural aversion of the Romans to a kingly government, their love of liberty, and the ides of March, when his father Julius was murdered in full senate by those very men whom he thought the most devoted to his person, made him fear there might arise another Brutus, who, to restore liberty to his country, might assassinate him on his very throne. This he knew had happened to Julius Cæsar; whereas Sylla, after having laid down the authority he had usurped, died peaceably in his bed in the midst of his enemies. The passion of fear outweighed in his soul the charms of a diadem, and inclined him to follow the example of Sylla. He was indeed very unwilling to part with his authority; but fear began to get the better of his ambition. However, before he came to any resolution, he thought it advisable to consult his two most intimate and trusty friends, Agrippa and Mæcenas; the former no less famous for his probity than his valour; and the latter a man of great penetration, and generally esteemed the most refined politician of his age. Agrippa enlarged on the many and almost inevitable dangers which attend monarchy, insupportable to a free people, and to men educated in a commonwealth. He did not forget the examples of Sylla and Cæsar; and closed his speech with exhorting Octavianus to convince the world, by restoring liberty to his country, that the only motive for his taking up arms was to revenge his father's death.

Mæcenas, on the other hand, remonstrated to him, that he had done too much to go back; that, after

so much bloodshed, there could be no safety for him but on the throne; that, if he divested himself of the sovereign power, he would be immediately profecuted by the children and friends of the many illustrious persons whom the misfortunes of the times had forced him to sacrifice to his safety; that it was absolutely necessary for the welfare and tranquillity of the republic, that the sovereign power should be lodged in one person, not divided among many, &c. Octavianus thanked them both for their friendly advice, but showed himself inclined to follow the opinion of Mæcenas; whereupon that able minister gave him many wise instructions and rules of government, which are related at length by Dio Cassius, and will ever be looked upon as a masterpiece in politics. Among other things he told him, That he could not fail of being successful in all his undertakings, happy in his lifetime, and famous in history after his death, if he never deviated from this rule; to wit, To govern others as he would wish to be governed himself, had he been born to obey and not to command. He added, That if, in taking upon him the sovereign power, he dreaded the name of king, a name so odious in a commonwealth, he might content himself with the title of *Cæsar* or *Imperator*, and under that name, which was well known to the Romans, enjoy all the authority of a king.

This advice Octavianus followed, and from that time laid aside all thoughts of abdicating the sovereign power; but, to deceive the people into a belief that they still enjoyed their ancient government, he continued the old magistrates, with the same name, pomp, and ornaments, but with just as much power as he thought fit to leave them. They were to have no military power, but only their old jurisdiction of deciding finally all causes, except such as were capital; and though some of these last were left to the governor of Rome, yet the chief he reserved for himself. He paid great court to the people: the very name that covered his usurpation was a compliment to them; for he affected to call it the power of the tribuneship, though he acted as absolutely by it as if he had called it the dictatorial power. He likewise won the hearts of the populace by cheapness of provisions and plentiful markets; he frequently entertained them with shows and sports; and by these means kept them in good-humour, and made them forget usurpation, slavery, and every public evil; people in ease and plenty being under no temptation of inquiring into the title of their prince, or resenting acts of power which they do not immediately feel.

As for the senate, he filled it with his own creatures, raising the number of the conscript fathers to 1000. He supplied several poor senators with money out of the treasury to discharge the public offices, and on all occasions affected a high regard for that venerable body; but at the same time divested them of all power, and reduced them to mere cyphers. To prevent them from raising new disturbances in the distant provinces, he issued an edict, forbidding any senator to travel out of Italy without leave, except such as had lands in Sicily, or Narbonne Gaul, which at that time comprehended Languedoc, Provence, and Dauphiny. To these provinces, which were near Italy, and in a perfect state of tranquillity, they had full liberty to retire when they pleased, and live there upon their estates. Before he ended his sixth consulship, he took a census of the peo-

Rome. But is dissuaded from it by Mæcenas.

Rome.

ple, which was 41 years after the last; and in this the number of the men fit to bear arms amounted to 463,000, the greatest that had ever been found before. He likewise celebrated the games which had been decreed by the senate for his victory at Actium; and it was ordered, that they should be celebrated every fifth year, four colleges of priests being appointed to take care of them; to wit, the pontifices, the augurs, the septemvirs, and quindecimvirs. The more to gain the affections of the people, he annulled, by one edict, the many severe and unjust laws which had been enacted during the triumvirate. He raised many public buildings, repaired the old ones, and added many stately ornaments to the city, which at this time was, if we may give credit to some ancient writers, about 50 miles in compass, and contained near four millions of souls, reckoning men, women, children, and slaves. He attended business, reformed abuses, showed great regard for the Roman name, procured public abundance, pleasure, and jollity, often appearing in person at the public diversions, and in all things studying to render himself dear to the populace.

255
The senate
intreat him
to accept
the sove-
reignty.

And now Octavianus, entering upon his seventh consulship with M. Agrippa, the third time consul, and finding all things ripe for his design, the people being highly pleased with his mild government, and the senate filled with his creatures, whose fortunes depended upon his holding the power he had usurped, went by the advice of Agrippa and Mæcenas to the senate-house; and there, in a studied speech, offered to resign his authority, and put all again into the hands of the people upon the old foundation of the commonwealth; being well apprised, that the greater part of the conscript fathers, whose interests were interwoven with his, would unanimously press him to the contrary: Which happened accordingly; for they not only interrupted him while he was speaking, but, after he had done, unanimously besought him to take upon himself alone the whole government of the Roman empire. He, with a seeming reluctance, yielded at last to their request, as if he had been compelled to accept of the sovereignty. By this artifice he compassed his design, which was, to get the power and authority, which he had usurped, confirmed to him by the senate and people for the space of 10 years: for he would not accept of it for a longer term, pretending he should in that time be able to settle all things in such peace and order that there would be no further need of his authority; but that he might then ease himself of the burden, and put the government again into the hands of the senate and people. This method he took to render the yoke less heavy; but with a design to renew his lease, if we may be allowed the expression, as soon as the ten years were expired; which he did accordingly from ten years to ten years as long as he lived, all the while governing the whole Roman empire with an absolute and uncontrouled power. With this new authority the senate resolved to distinguish him with a new name. Some of the conscript fathers proposed the name of *Romulus*, thereby to import that he was another founder of Rome; others offered other titles; but the venerable name of *Augustus*, proposed by Manutius Plancus, seemed preferable to all the rest, as it expressed more dignity and reverence than authority, the most sacred things, such as temples, and places consecrated by augurs, being termed

256
He takes
the title of
Augustus.

by the Romans *Augusta*. Octavianus himself was inclined to assume the name of *Romulus*; but, fearing he should be suspected of affecting the kingdom, he declined it, and took that of *Augustus*, by which we shall henceforth distinguish him.

Rome.

Though the whole power of the senate and people was now vested in Augustus, yet, that he might seem to share it with the conscript fathers, he refused to govern all the provinces; assigning to the senate such as were quiet and peaceable; and keeping to himself those which, bordering upon barbarous nations, were most exposed to troubles and wars, saying, He desired the fathers might enjoy their power with ease and safety, while he underwent all the dangers and labours: but, by this politic conduct, he secured all the military power to himself: the troops lying in the provinces he had chosen; and the others, which were governed by the senate, being quite destitute of forces. The latter were called *senatorial*, and the former *imperial*, provinces. Over the provinces of both sorts were set men of distinction, to wit, such as had been consuls or prætors, with the titles of *proconsul* and *proprætor*; but the government of Egypt was committed to a private knight, Augustus fearing lest a person of rank, depending upon the wealth and situation of that country, might raise new disturbances in the empire. All these governors held their employment only for a year, and were upon the arrival of their successors to depart their provinces immediately, and not fail to be at Rome within three months at the farthest. This division of the provinces was made, according to Ovid, on the ides of January; whereas he was vested by the senate and people with the sovereign power on the seventh of the ides of the same month, as is manifest from the Narbonne marbles; and from that time many writers date the years of his empire. Thus ended the greatest commonwealth, and at the same time began the greatest monarchy, that had ever been known; a monarchy which infinitely excelled in power, riches, extent, and continuance, all the empires which had preceded it.

It comprehended the greatest and by far the best part of Europe, Asia, and Africa, being near 4000 miles in length, and about half as much in breadth. As to the yearly revenues of the empire, they have by a moderate computation been reckoned to amount to forty millions of our money. But the Romans themselves now ran headlong into all manner of luxury and effeminacy. The people were become a mere mob; those who were wont to direct mighty wars, to raise and depose great kings, to bestow or take away potent empires, were so sunk and debauched, that, if they had but bread and shows, their ambition went no higher. The nobility were indeed more polite than in former ages; but at the same time idle, venal, vicious, insensible of private virtue, utter strangers to public glory or disgrace, void of zeal for the welfare of their country, and solely intent on gaining the favour of the emperor, as knowing that certain wealth and preferment were the rewards of ready submission, acquiescence, and flattery. No wonder, therefore, that they lost their liberty, without being ever again able to retrieve it.

Augustus, now absolute master of the Roman empire, took all methods to ingratiate himself with his soldiers, by whose means he had attained such a height of power. With this view, he dispersed them through

257
Extent, &c.
of the Ro-
man em-
pire.

258
Military
establish-
ments of
Augustus.

different

Rome. different parts of Italy in 32 colonies, that he might the more easily reassemble them on proper occasions. He kept 23 legions constantly on foot, 17 of which were in Europe; viz. eight on the Rhine, four on the Danube, three in Spain, and two in Dalmatia. The other eight were sent into Asia and Africa; four of them being quartered in the neighbourhood of the Euphrates, two in Egypt, and two in Africa Propria, that is, the ancient dominions of Carthage. All these forces, amounting to 170,650 men, were constantly kept on foot by the Roman emperors for several ages. In the neighbourhood of Rome were always quartered 12 cohorts, that is, about 10,000 men; nine of which were called *praetorian cohorts*; the other three, *city cohorts*. These were established as a guard to the emperor, and to maintain peace and tranquillity in the city, but had often a great share in the disturbances which took place throughout the empire. Besides these, Augustus constantly kept at sea two powerful navies; the one riding at anchor near Ravenna in the Adriatic sea, to command Dalmatia, Greece, Cyprus, and the rest of the eastern provinces; the other at Misenum in the Mediterranean, to keep in awe the western parts of the empire. They were likewise to keep the seas clear of pirates, to convoy the vessels which brought to Rome the annual tributes from the provinces beyond sea, and to transport corn and other provisions necessary for the relief and subsistence of the city. As to the civil government, Augustus enacted several new laws, and reformed some of the old ones: however, he affected to do nothing without the advice of the senate; who were so well pleased with the complaisance showed them on all occasions, that to the rest of his titles they added that of *Pater Patriæ*, or "Father of his Country."

259
His friendship courted by the kings of Parthia and India.

And now Augustus having settled all things with regard to the civil and military establishments of the empire, turned his arms against the Spanish nations called the *Cantabrians* and *Asturians*, who had never been fully subdued. The war, however, terminated as usual, in favour of the Romans; and these brave nations were forced to receive the yoke, though not without the most violent resistance on their part, and the utmost difficulty on that of the Romans (See ASTURIA). By this and his other conquests the name of Augustus became so celebrated, that his friendship was courted by the most distant monarchs. Phraates king of Parthia consented to a treaty with him upon his own terms, and gave him four of his own sons with their wives and children as hostages for the performance of the articles; and as a further instance of his respect, he delivered up the Roman eagles and other ensigns which had been taken from Crassus at the battle of Carrhae. He received also an embassy from the king of India, with a letter written in the Greek tongue, in which the Indian monarch informed him, that "though he reigned over 600 kings, he had so great a value for the friendship of Augustus, that he had sent this embassy on so long a journey on purpose to desire it of him; that he was ready to meet him at whatsoever place he pleased to appoint; and that, upon the first notice, he was ready to assist him in whatever was right." This letter he subscribed by the name of *Porus king of India*. Of the ambassadors who set out from India, three only reached the presence of Augustus, who was at that time in the island of Samos, the

others dying by the way. Of the three survivors one was named *Zarmar*, a gymnosophist, who followed the emperor to Athens, and there burnt himself in his presence; it being customary for the gymnosophists to put an end to their lives in this manner, when they thought they had lived long enough, or apprehended some misfortune. Soon after this the Roman dominions were extended southward over the Garamantes, a people whose country reached as far as the river Niger. All this time the emperor continued to make new regulations for the good of the state; and among other things caused the Sibylline oracles to be reviewed. Many of these he rejected; but such as were reckoned authentic, he caused to be copied by the pontifices themselves, and lodged them in golden cabinets, which he placed in the temple of Apollo, built by him in his palace.

Rome.

The Roman empire had now extended itself so far, that it seemed to have arrived at the limits prescribed to it by nature; and as soon as this was the case, it began to be attacked by those nations which in process of time were to overthrow it. The Germans, by which name the Romans confounded a great number of nations dwelling in the northern parts of Europe, began to make incursions into Gaul. Their first attempt happened in the year 17 B. C. when they at first gained an inconsiderable advantage, but were soon driven back with great loss. Soon after this the Rhæti, who seem to have inhabited the country bordering on the lake of Constance, invaded Italy, where they committed dreadful devastations, putting all the males to the sword without distinction of rank or age; nay, we are told, that, when women with child happened to fall into their hands, they consulted their augurs whether the child was male or female; and if they pronounced it a male, the mother was immediately massacred. Against these barbarians Augustus sent Drusus the second son of the empress Livia; who, though very young, found means to gain a complete victory with very little loss on his part. Those who escaped took the road to Gaul, being joined by the Vindelici, another nation in the neighbourhood; but Tiberius, the elder brother of Drusus, marched against them, and overthrew them so completely, that the Rhæti, Vindelici, and Norici, three of the most barbarous nations in those parts, were fain to submit to the pleasure of the emperor. To keep their country in awe, Tiberius planted two colonies in Vindelicia, opening a road from thence into Noricum and Rhætia. One of the cities which he built for the defence of his colonies was called *Dryfomagus*; the other, *Augusta Vindelicorum*; both of which are now known by the names of *Nimingen* and *Augsburg*.

260
The empire invaded by the northern barbarians.

Augustus, who had long since obtained all the temporal honours which could well be conferred upon him, now began to assume those of the spiritual kind also; being in the year 13 B. C. created Pontifex Maximus: an office which he continued to hold till his death; as did also his successors till the time of Theodosius. By virtue of this office he corrected a very gross mistake in the Roman calendar; for the pontifices, having, for the space of 36 years, that is, ever since the reformation by Julius Cæsar, made every third year a leap year, instead of every fourth, twelve days had been inserted instead of nine, so that the Roman year consisted of three days more than it ought to have done. These three

261
Augustus created pontifex maximus.

Rome. superfluous days having been thrown out, the form of the year has ever since been regularly observed, and is still known by the name of the *old style* in use among us. On this occasion he gave his own name to the month of August, as Julius Cæsar had formerly done to the month of July.

262
Tiberius
succeeds A-
grippa.

In the year 11 B. C. Agrippa died, and was succeeded in his high employment of governor of Rome, by Tiberius; but, before investing him with this ample power, the emperor caused him to divorce his wife Agrippina (who had already brought him a son, and was then big with child), in order to marry Julia the widow of Agrippa and daughter of the emperor. Julia was a princess of an infamous character, as was known to almost every body excepting Augustus himself; however, Tiberius made no hesitation, through fear of disobliging the emperor.

The emperor now sent his two sons Tiberius and Drusus against the northern nations. Tiberius reduced the Pannonians, who had attempted to shake off the yoke after the death of Agrippa. Drusus performed great exploits in Germany; but while he was considering whether he should penetrate further into these northern countries, he was seized with a violent fever, which carried him off in a few days. He was succeeded in his command by Tiberius, who is reported to have done great things, but certainly made no permanent conquests in Germany. However, he was honoured with a triumph, and had the tribunitial power for five years conferred upon him; which was no sooner done, than, to the great surprise of Augustus and the whole city, he desired leave to quit Rome and retire to Rhodes. Various reasons have been assigned for this extraordinary resolution: some are of opinion that it was in order to avoid being an eye-witness of the debaucheries of his wife Julia, who set no bounds to her lewdness; though others imagine that he was offended at the honours which Augustus had conferred on his grandchildren, especially at his styling them *princes of the Roman youth*; which left him no hopes of enjoying the sovereign power. However, Augustus positively refused to comply with his request, and his mother Livia used her utmost endeavours to dissuade him from his resolution: but Tiberius continued obstinate; and, finding all other means ineffectual, at last shut himself up in his house, where he abstained four whole days from nourishment. Augustus, perceiving that he could not get the better of his obstinate and inflexible temper, at last complied with his request. Tiberius soon grew weary of his retirement, and, giving out that he had left Rome only to avoid giving umbrage to the emperor's two grandchildren, desired leave to return; but Augustus was so much displeas'd with his having obstinately insisted on leaving Rome, that he obliged him to remain at Rhodes for seven years longer. His mother, with much ado got him declared the emperor's lieutenant in those parts; but Tiberius, dreading the resentment of his father-in-law, continued to act as a private person during the whole time of his stay there.

264
Is confined
there by
Augustus
for seven
years.

A profound peace now reigned throughout the whole empire; and in consequence of this the temple of Janus was shut, which had never before happened since the time of Numa Pompilius. During this pacific interval, the Saviour of mankind was born in Ju-

dæa, as is recorded in the sacred history, 748 years after the foundation of Rome by Romulus. Three years after, Tiberius returned to the city, by permission of Augustus, who yet would not allow him to bear any public office; but in a short time, Lucius Cæsar, one of the emperor's grandchildren, died, not without suspicions of his being poisoned by Livia. Tiberius showed such great concern for his death, that the affection of Augustus for him returned; and it is said that he would at that time have adopted Tiberius, had it not been for giving umbrage to his other grandson Caius Cæsar. This obstacle, however, was soon after removed; Caius being taken off also, not without great suspicions of Livia, as well as in the former case. Augustus was exceedingly concerned at his death, and immediately adopted Tiberius as his son; but adopted also Agrippa Posthumus, the third son of the famous Agrippa; and obliged Tiberius to adopt Germanicus the son of his brother Drusus, though he had a son of his own named *Drusus*; which was a great mortification to him. As to Agrippa, however, who might have been an occasion of jealousy, Tiberius was soon freed from him, by his disgrace and banishment, which very soon took place, but on what account is not known.

Rome. 265
Birth of
Christ.

The northern nations now began to turn formidable; and though it is pretended that Tiberius was always successful against them, yet about this time they gave the Romans a most terrible overthrow; three legions and six cohorts, under Quintilius Varus, being almost entirely cut in pieces. Augustus set no bounds to his grief on this fatal occasion. For some months he let his hair and beard grow, frequently tearing his garments, knocking his head against the wall, and crying out like a distracted person, "Restore the legions, Varus!" Tiberius, however, was soon after sent into Germany; and for his exploits there he was honoured with a triumph. Augustus now took him for his colleague in the sovereignty; after which he sent Germanicus against the northern barbarians, and Tiberius into Illyricum. This was the last of his public acts; for having accompanied Tiberius for part of his journey, he died at Nola in Campania, in the 76th year of his age, and 56th of his reign. Livia was suspected of having hastened his death by giving him poisoned figs. Her reason for this was, that she feared a reconciliation between him and his grandson Agrippa, whom he had banished, as we have already related. Some months before, the emperor had paid a visit to Agrippa, unknown to Livia, Tiberius, or any other person, excepting one Fabius Maximus. This man, on his return home, discovered the secret to his wife, and she to the empress. Augustus then perceiving that Fabius had betrayed him, was so provoked, that he banished him from his presence for ever; upon which the unfortunate Fabius, unable to survive his disgrace, laid violent hands on himself.

266
Augustus
adopts Ti-
berius as his
son.

267
Death of
Augustus.

Tiberius, who succeeded to the empire, resolved to secure himself on the throne by the murder of Agrippa; whom accordingly he caused to be put to death by a military tribune. Though this might have been a sufficient evidence of what the Romans had to expect, the death of Augustus was no sooner known, than the consuls, senators, and knights, to use the expression of Tacitus, ran headlong into slavery. The two consuls first

Rome. first took an oath of fidelity to the emperor, and then administered it to the senate, the people, and the soldiery. Tiberius behaved in a dark mysterious manner, taking care to rule with an absolute sway, but at the same time seeming to hesitate whether he should accept the sovereign power or not; inasmuch that one of the senators took the liberty to tell him, that other men were slow in performing what they had promised, but he was slow in promising what he had already performed. At last, however, his modesty was overcome, and he declared his acceptance of the sovereignty in the following words: "I accept the empire, and will hold it, till such time as you, conscript fathers, in your great prudence, shall think proper to give repose to my old age."

268
Diffimulation of Tiberius.

269
Revolt of the Pannonian and German legions.

Tiberius had scarcely taken possession of the throne, when news were brought him that the armies in Pannonia and Germany had mutinied. In Pannonia, three legions having been allowed some days of relaxation from their usual duties, either to mourn for the death of Augustus, or to rejoice for the accession of Tiberius, grew turbulent and seditious. The Pannonian mutineers were headed by one Percennius, a common soldier; who, before he served in the army, had made it his whole business to form parties in the theatres and playhouses to hiss or applaud such actors as he liked or disliked. Inflamed by the speeches of this man, they openly revolted; and though Tiberius himself wrote to them, and sent his son Drusus to endeavour to quell the tumult, they massacred some of their officers, and insulted others, till at last, being frightened by an eclipse of the moon, they began to show some signs of repentance. Of this favourable disposition Drusus took advantage; and even got the ringleaders of the revolt condemned and executed. Immediately after this they were again terrified by such violent storms and dreadful rains, that they quietly submitted, and every thing in that quarter was restored to tranquillity.

The revolt of the German legions threatened much more danger, as they were more numerous than those of Pannonia. They proceeded nearly in the same way as the Pannonian legions, falling upon their officers, especially the centurions, and beating them till they almost expired, drove them out of the camp, and some of them were even thrown into the Rhine. Germanicus, who was at that time in Gaul, hastened to the camp on the first news of the disturbance; but being unable to prevail on them to return to their duty, he was obliged to feign letters from Tiberius, granting all their demands. These were, That all those who had served 20 years should be discharged; that such as had served 16 should be deemed veterans; and that some legacies which had been left them by Augustus should not only be paid immediately, but doubled. This last article he was obliged to discharge without delay out of the money which he and his friends had brought to defray the expences of their journey; and on receiving it, the troops quietly retired to their winter quarters. But, in the mean time, some deputies sent either by Tiberius or the senate, probably to quell the sedition, occasioned fresh disturbances; for the legionaries, taking it into their heads that these deputies were come to revoke the concessions which Germanicus had made, were with difficulty prevented from tearing them in pieces; and, notwithstanding the utmost endeavours of

Rome. Germanicus, behaved in such an outrageous manner, that the general thought proper to send off his wife Agrippina, with her infant son Claudius, she herself at the same time being big with child. As she was attended by many women of distinction, wives of the chief officers in the camp, their tears and lamentations in parting with their husbands occasioned a great uproar, and drew together the soldiers from all quarters. A new scene ensued, which made an impression even upon the most obdurate. They could not behold, without shame and compassion, so many women of rank travelling thus forlorn, without a centurion to attend them, or a soldier to guard them; and their general's wife among the rest, carrying her infant child in her arms, and preparing to fly for shelter against the treachery of the Roman legions. This made such a deep impression on the minds of many of them, that some ran to stop her, while the rest recurred to Germanicus, earnestly intreating him to recall his wife, and to prevent her from being obliged to seek a sanctuary among foreigners. The general improved this favourable disposition, and in a short time they of their own accord seized and massacred the ringleaders of the revolt. Still, however, two of the legions continued in their disobedience. Against them therefore Germanicus determined to lead those who had returned to their duty. With this view he prepared vessels; but before he embarked his troops, he wrote a letter to Cæcina who commanded them, acquainting him that he approached with a powerful army, resolved to put them all to the sword without distinction, if they did not prevent him by taking vengeance on the guilty themselves. This letter Cæcina communicated only to the chief officers and such of the soldiers as had all along disapproved of the revolt, exhorting them at the same time to enter into an association against the seditious, and put to the sword such as had involved them in the present ignominy and guilt. This proposal was approved of, and a cruel massacre immediately took place; inasmuch that when Germanicus came to the camp, he found the greatest part of the legions destroyed. This greatly affected the humane Germanicus, who caused the bodies of the slain to be burnt, and celebrated their obsequies with the usual solemnities; however, the sedition was thus effectually quelled, after which he led his army into Germany. There he performed many great exploits*; but still all that he could perform was far from freeing the empire from so dangerous and troublesome an enemy. In the year 19, he died, of poison, as was supposed, given by Piso, his partner in the government of Syria, to which Germanicus had been promoted after his return from the north.

In the mean time, Tiberius, though he affected to court the favour of the people by various methods, yet showed himself in general such a cruel and blood-thirsty tyrant, that he became the object of universal abhorrence. Though he had hated Germanicus in his heart, he punished Piso with death; but in about a year after the death of Germanicus, having now no object of jealousy to keep him in awe, he began to pull off the mask, and appear more in his natural character than before. He took upon himself the interpretation of all political measures, and began daily to diminish the authority of the senate; which design was much facilitated, by their own aptitude to slavery;

Rome.

270
The revolt quelled by a dreadful massacre.

* See Germanicus many.

271
Tiberius a cruel tyrant.

Rome.

very; so that he despised their meanness, while he enjoyed its effects. A law at that time subsisted, which made it treason to form any injurious attempt against the majesty of the people. Tiberius assumed to himself the interpretation and enforcement of this law; and extended it not only to the cases which really affected the safety of the state, but to every conjuncture that could possibly be favourable to his hatred or suspicions. All freedom was now therefore banished from convivial meetings, and diffidence reigned amongst the dearest relations. The law of offended majesty being revived, many persons of distinction fell a sacrifice to it.

272
Rise of
Sejanus a
wicked mi-
nister.

In the beginning of these cruelties, Tiberius took into his confidence Sejanus, a Roman knight, but by birth a Volscian, who found out the method of gaining his confidence, by the most refined degree of dissimulation, being an over-match for his master in his own arts. He was made by the emperor captain of the Prætorian guards, one of the most confidential trusts in the state, and extolled in the senate as a worthy associate in his labours. The servile senators, with ready adulation, set up the statues of the favourite beside those of Tiberius, and seemed eager to pay him similar honours. It is not well known whether he was the adviser of all the cruelties that ensued soon after; but certain it is, that, from the beginning of his ministry, Tiberius seemed to become more fatally suspicious.

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His infam-
ous con-
duct.

It was from such humble beginnings that this minister even ventured to aspire at the throne, and was resolved to make the emperor's foolish confidence one of the first steps to his ruin. However, he considered that cutting off Tiberius alone would rather retard than promote his designs while his son Drusus and the children of Germanicus were yet remaining. He therefore began by corrupting Livia, the wife of Drusus; whom, after having debauched her, he prevailed upon to poison her husband. This was effected by means of a slow poison (as we are told), which gave his death the appearance of a casual distemper. Tiberius, in the mean time, either naturally phlegmatic, or at least not much regarding his son, bore his death with great tranquillity. He was even heard to jest upon the occasion; for when the ambassadors from Troy came somewhat late with their compliments of condolence, he answered their pretended distresses, by condoling with them also upon the death of Hector.

Sejanus having succeeded in this, was resolved to make his next attempt upon the children of Germanicus, who were undoubted successors to the empire. However, he was frustrated in his designs, both with regard to the fidelity of their governors, and the chastity of Agrippina their mother. Whereupon he resolved upon changing his aims, and removing Tiberius out of the city; by which means he expected more frequent opportunities of putting his designs into execution. He therefore used all his address to persuade Tiberius to retire to some agreeable retreat, remote from Rome. By this he expected many advantages, since there could be no access to the emperor but by him. Thus all letters being conveyed to the prince by soldiers at his own devotion, they would pass through his hands; by which means he must in time become the sole governor of the empire, and at last be in a capacity of removing all ob-

stacles to his ambition. He now therefore began to insinuate to Tiberius the great and numerous inconveniences of the city, the fatigues of attending the senate, and the seditious temper of the inferior citizens of Rome. Tiberius, either prevailed upon by his persuasions, or pursuing the natural turn of his temper, which led to indolence and debauchery, in the twelfth year of his reign left Rome, and went into Campania, under pretence of dedicating temples to Jupiter and Augustus. After this, though he removed to several places, he never returned to Rome; but spent the greatest part of his time in the island of Caprea, a place which was rendered as infamous by his pleasures as detestable by his cruelties, which were shocking to human nature. Buried in this retreat, he gave himself up to his pleasures, quite regardless of the miseries of his subjects. Thus an insurrection of the Jews, upon placing his statue in Jerusalem, under the government of Pontius Pilate, gave him no sort of uneasiness. The falling of an amphitheatre at Fidenæ, in which 50,000 persons were either killed or wounded, no way affected his repose. He was only employed in studying how to vary his odious pleasures, and forcing his feeble frame, shattered by age and former debaucheries, into the enjoyment of them. Nothing can present a more horrid picture than the retreat of this impure old man, attended by all the ministers of his perverted appetites. He was at this time 67 years old; his person was most displeasing; and some say the disagreeableness of it, in a great measure, drove him into retirement. He was quite bald before; his face was all broke out into ulcers, and covered over with plasters; his body was bowed forward, while its extreme height and leanness increased its deformity. With such a person, and a mind still more hideous, being gloomy, suspicious, and cruel, he sat down with a view rather of forcing his appetites than satisfying them. He spent whole nights in debaucheries at the table; and he appointed Pomponius Flaccus and Lucius Piso to the first posts of the empire, for no other merit than that of having sat up with him two days and two nights without interruption. These he called his friends of all hours. He made one Novelius Torgnatus a prætor for being able to drink off five bottles of wine at a draught. His luxuries of another kind were still more detestable, and seemed to increase with his drunkenness and gluttony. He made the most eminent women of Rome subservient to his lusts; and all his inventions only seemed calculated how to make his vices more extravagant and abominable. The numberless obscene medals dug up in that island at this day bear witness at once to his shame, and the veracity of the historians who have described his debaucheries. In short, in this retreat, which was surrounded with rocks on every side, he quite gave up the business of the empire; or, if he was ever active, it was only to do mischief. But, from the time of his retreat, he became more cruel, and Sejanus always endeavoured to increase his distrusts. Secret spies and informers were placed in all parts of the city, who converted the most harmless actions into subjects of offence. If any person of merit testified any concern for the glory of the empire, it was immediately construed into a design to obtain it. If another spoke with regret of former liberty, he was supposed to aim at re-establishing the commonwealth. Every action became liable to forced interpretations; joy expressed an hope of the prince's death; melancholy, an envying of his

Rome.

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Tiberius re-
tires from
Rome.

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His abomi-
nable con-
duct in his
retreat.

Rome. his prosperity. Sejanus found his aim every day succeeding; the wretched emperor's terrors were an instrument that he wrought upon at his pleasure, and by which he levelled every obstacle to his designs. But the chief objects of his jealousy were the children of Germanicus, whom he resolved to put out of the way. He therefore continued to render them obnoxious to the emperor, to alarm him with false reports of their ambition, and to terrify them with alarms of his intended cruelty. By these means, he so contrived to widen the breach, that he actually produced on both sides those dispositions which he pretended to obviate; till at length, the two princes Nero and Drusus were declared enemies to the state, and afterwards starved to death in prison; while Agrippina their mother was sent into banishment.

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The children of Germanicus put to death.

In this manner Sejanus proceeded, removing all who stood between him and the empire, and every day increasing in confidence with Tiberius, and power with the senate. The number of his statues exceeded even those of the emperor; people swore by his fortune, in the same manner as they would have done had he been actually upon the throne, and he was more dreaded than even the tyrant who actually enjoyed the empire. But the rapidity of his rise seemed only preparatory to the greatness of his downfall. All we know of his first disgrace with the emperor is, that Satrius Secundus was the man who had the boldness to accuse him. Antonia, the mother of Germanicus, seconded the accusation. What were the particulars of his crimes, we cannot learn; but certain it is, that he attempted to usurp the empire, by aiming at the life of Tiberius. He was very near dispatching him, when his practices were discovered, and his own life was substituted for that against which he aimed. Tiberius, sensible of the traitor's power, proceeded with his usual dissimulation in having him apprehended. He granted him new honours at the very time he resolved his death, and took him as his colleague in the consulship. The emperor's letter to the senate began only with slight complaints against his friend, but ended with an order for putting him in prison. He intreated the senators to protect a poor old man, as he was, abandoned by all; and, in the mean time, prepared ships for his flight, and ordered soldiers for his security. The senate, who had long been jealous of the favourite's power, and dreaded his cruelty, immediately took this opportunity of going beyond their orders. Instead of sentencing him to imprisonment, they directed his execution. A strange revolution now appeared in the city; of those numbers that but a moment before were pressing into the presence of Sejanus, with offers of service and adulation, not one was found that would seem to be of his acquaintance: he was deserted by all; and those who had formerly received the greatest benefits from him, seemed now converted into his most inveterate enemies. As he was conducting to execution, the people loaded him with insult and execration. He attempted to hide his face with his hands; but even this was denied him, and his hands were secured. Nor did the rage of his enemies subside with his death; his body was ignominiously dragged about the streets, and his whole family executed with him.

His death only lighted up the emperor's rage for further executions. The prisons were crowded with pretended accomplices in the conspiracy of Sejanus. Ti-

berius began to grow weary of particular executions; he therefore gave orders that all the accused should be put to death together without further examination. Of 20 senators, whom he chose for his council, he put 16 to death. "Let them hate me (cried he) so long as they obey me." He then averred, that Priam was a happy man, who outlived all his posterity. In this manner there was not a day without some barbarous execution, in which the sufferers were obliged to undergo the most shameful indignities and exquisite torments. When one Camillus had killed himself to avoid the torture: "Ah (cried Tiberius), how that man has been able to escape me!" When a prisoner earnestly intreated that he would not defer his death: "No (cried the tyrant), I am not sufficiently your friend, to shorten your torment." He often satisfied his eyes with the tortures of the wretches that were put to death before him; and in the days of Suetonius the rock was to be seen, from which he ordered such as had displeased him to be thrown headlong. As he was one day examining some persons upon the rack, he was told that an old friend of his was come from Rhodes to see him. Tiberius supposing him brought for the purpose of information, immediately ordered him to the torture; and when he was convinced of his mistake, he ordered him to be put to death, to prevent farther discovery.

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Monstrous cruelty of Tiberius.

In this manner did the tyrant continue to torment others, although he was himself still more tortured by his own suspicions; so that in one of his letters to the senate, he confessed that the gods and goddesses had so afflicted and confounded him, that he knew not what or how to write. In the mean time, the frontier provinces were invaded with impunity by the barbarians. Mæsia was seized on by the Dacians and Sarmatians; Gaul was wasted by the Germans, and Armenia conquered by the king of Parthia. Tiberius, however, was so much a slave to his brutal appetites, that he left his provinces wholly to the care of his lieutenants, and they were intent rather on the accumulation of private fortune than the safety of the state. Such a total disorder in the empire produced such a degree of anxiety in him who governed it, that he was heard to wish, that heaven and earth might perish when he died. At length, however, in the 22d year of his reign, he began to feel the approaches of his dissolution, and all his appetites totally to forsake him. He now, therefore, found it was time to think of a successor, and hesitated for a long while, whether he should choose Caligula, whose vices were too apparent to escape his observation. He had been often heard to say, that this youth had all the faults of Sylla, without his virtues; that he was a serpent that would sting the empire, and a Phaeton that would set the world in a flame. However, notwithstanding all his well-grounded apprehensions, he named him for his successor; willing, perhaps, by the enormity of Caligula's conduct to cover the memory of his own.

But though he thought fit to choose a successor, he concealed his approaching decline with the utmost care, as if he was willing at once to hide it from the world and himself. He long had a contempt for physic, and refused the advice of such as attended him; he even seemed to take a pleasure in being present at the sports of the soldiers, and ventured himself to throw a javelin at a boar that was let loose before him. The effort which he made upon this occasion caused a pain in his

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Chooses Caligula for his successor.

side,

Rome.

side, which hastened the approaches of death: still, however, he seemed willing to avoid his end; and strove, by change of place, to put off the inquietude of his own reflections. He left his favourite island, and went upon the continent, where he at last fixed at the promontory of Misenum. It was here that Charicles, his physician, pretending to kiss his hand, felt the failure of his pulse; and apprised Macro, the emperor's present favourite, that he had not above two days to live. Tiberius, on the contrary, who had perceived the art of Charicles, did all in his power to impress his attendants with an opinion of his health: he continued at table till the evening; he saluted all his guests as they left the room, and read the acts of the senate, in which they had absolved some persons he had written against, with great indignation. He resolved to take signal vengeance of their disobedience, and meditated new schemes of cruelty, when he fell into such faintings, as all believed were fatal. It was in this situation, that, by Macro's advice, Caligula prepared to secure the succession. He received the congratulations of the whole court, caused himself to be acknowledged by the Prætorian soldiers, and went forth from the emperor's apartment amidst the applauses of the multitude; when all of a sudden he was informed that the emperor was recovered, that he had begun to speak, and desired to eat. This unexpected account filled the whole court with terror and alarm: every one who had before been earnest in testifying their joy, now re-assumed their pretended sorrow, and left the new emperor, through a feigned solicitude for the fate of the old. Caligula himself seemed thunderstruck; he preserved a gloomy silence, expecting nothing but death, instead of the empire at which he had aspired. Macro, however, who was hardened in crimes, ordered that the dying emperor should be dispatched, by smothering him with pillows, or, as others will have it, by poison. In this manner Tiberius died, in the 78th year of his age, after reigning 22.

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Corruptions
of the Ro-
mans at this
time.

The Romans were, at this time, arrived at their highest pitch of effeminacy and vice. The wealth of almost every nation of the empire, having, for some time, circulated through the city, brought with it the luxuries peculiar to each country; so that Rome presented a detestable picture of various pollution. In this reign lived Apicius, so well known for having reduced gluttony into a system; some of the most notorious in this way, thought it no shame to give near 100 pounds for a single fish, and exhaust a fortune of 50,000 pounds in one entertainment. Debaucheries of every other kind kept pace with this; while the detestable folly of the times thought it was refining upon pleasure to make it unnatural. There were at Rome men called *Spintrix*, whose sole trade it was to study new modes of pleasure; and these were universally favourites of the great. The senators had long fallen from their authority, and were no less estranged from their integrity and honour. Their whole study seemed to be, how to invent new ways of flattering the emperor, and various methods of tormenting his supposed enemies. The people were still more corrupt: they had, for some years, been accustomed to live in idleness, upon the donations of the emperor; and, being satisfied with subsistence, entirely gave up their freedom. Too effeminate and cowardly to go to war, they only railed against their governors; so that they were bad soldiers and seditious citizens. In the

18th year of this monarch's reign, Christ was crucified. Shortly after his death, Pilate is said to have written to Tiberius an account of his passion, resurrection, and miracles; upon which the emperor made a report of the whole to the senate, desiring that Christ might be accounted a god by the Romans. But the senate being displeased that the proposal had not come first from themselves, refused to allow of his apotheosis; alleging an ancient law, which gave them the superintendance in all matters of religion. They even went so far, as by an edict to command that all Christians should leave the city: but Tiberius, by another edict, threatened death to all such as should accuse them; by which means they continued unmolested during the rest of his reign.

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Christ cru-
cified.

No monarch ever came to the throne with more advantages than Caligula. He was the son of Germanicus, who had been the darling of the army and the people. He was bred among the soldiers, from whom he received the name of *Caligula*, from the short buskin, called *caliga*, that was worn by the common centinels, and which was also usually worn by him. As he approached Rome, the principal men of the state went out in crowds to meet him. He received the congratulations of the people on every side, all equally pleased in being free from the cruelties of Tiberius, and in hoping new advantages from the virtues of his successor.

Caligula seemed to take every precaution to impress them with the opinion of a happy change. Amidst the rejoicings of the multitude, he advanced mourning, with the dead body of Tiberius, which the soldiers brought to be burnt at Rome, according to the custom of that time. Upon his entrance into the city, he was received with new titles of honour by the senate, whose chief employment seemed now to be, the art of increasing their emperor's vanity. He was left co-heir with Gemellus, grandson to Tiberius; but they set aside the nomination, and declared Caligula sole successor to the empire. The joy for this election was not confined to the narrow bounds of Italy; it spread through the whole empire, and victims without number were sacrificed upon the occasion. Some of the people, upon his going into Campania, made vows for his return; and shortly after, when he fell sick, the multitudes crowded whole nights round his palace, and some even devoted themselves to death in case he recovered, setting up bills of their resolutions in the streets. In this affection of the citizens, strangers themselves seemed ambitious of sharing. Artabanus, king of Parthia, sought the emperor's alliance with assiduity. He came to a personal conference with one of his legates; passed the Euphrates, adored the Roman eagles, and kissed the emperor's images; so that the whole world seemed combined to praise him for virtues which they supposed him to possess.

The new emperor at first seemed extremely careful of the public favour; and having performed the funeral solemnities of Tiberius, he hastened to the islands of Pandataria and Pontia, to remove the ashes of his mother and brothers, exposing himself to the dangers of tempestuous weather, to give a lustre to his piety. Having brought them to Rome, he instituted annual solemnities in their honour, and ordered the month of September to be called *Germanicus*, in memory of his father. These

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Caligula
begins to
reign
well.

Rome. These ceremonies being over, he conferred the same honours upon his grandmother Antonia, which had before been given to Livia; and ordered all informations to be burnt, that any ways exposed the enemies of his family. He even refused a paper that was offered him, tending to the discovery of a conspiracy against him; alleging, That he was conscious of nothing to deserve any man's hatred, and therefore had no fears from their machinations. He caused the institutions of Augustus, which had been disused in the reign of Tiberius, to be revived; undertook to reform many abuses in the state, and severely punished corrupt governors. Among others, he banished Pontius Pilate into Gaul, where this unjust magistrate afterwards put an end to his life by suicide. He banished the spintrix, or inventors of abominable recreations, from Rome; attempted to restore the ancient manner of electing magistrates by the suffrages of the people; and gave them a free jurisdiction, without any appeal to himself. Although the will of Tiberius was annulled by the senate, and that of Livia suppressed by Tiberius, yet he caused all their legacies to be punctually paid; and in order to make Gemellus amend for missing the crown, he caused him to be elected Princeps Juventutis, or principal of the youth. He restored some kings to their dominions who had been unjustly dispossessed by Tiberius, and gave them the arrears of their revenues. And, that he might appear an encourager of every virtue, he ordered a female slave a large sum of money for enduring the most exquisite torments without discovering the secrets of her master. So many concessions, and such apparent virtue, could not fail of receiving just applause. A shield of gold, bearing his image, was decreed to be carried annually to the Capitol, attended by the senate and the sons of the nobility singing in praise of the emperor's virtues. It was likewise ordained, that the day on which he was appointed to the empire should be called *Publilia*; implying, that when he came to govern, the city received a new foundation.

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but becomes a most outrageous tyrant.

In less than eight months all this shew of moderation and clemency vanished; while furious passions, unexampled avarice, and capricious cruelty, began to take their turn in his mind. As most of the cruelties of Tiberius arose from suspicion, so most of those committed by Caligula took rise from prodigality. Some indeed assert, that a disorder which happened soon after his accession to the empire, entirely discomposed his understanding. However this may be, madness itself could scarcely dictate cruelties more extravagant, or inconsistencies more ridiculous, than are imputed to him; some of them appear almost beyond belief, as they seem entirely without any motive to incite such barbarities.

The first object of his cruelty was a person named *Politus*, who had devoted himself to death, in case the emperor, who was then sick, should recover. When Caligula's health was re-established, he was informed of the zeal of *Politus*, and actually compelled him to complete his vow. This ridiculous devotee was therefore led round the city, by children, adorned with chaplets, and then put to death, being thrown headlong from the ramparts. Another, named *Secundus*, had vowed to fight in the amphitheatre upon the same occasion. To this he was also compelled, the emperor himself choosing to be a spectator of the combat. However, he was more fortunate than the former, being so successful as

to kill his adversary, by which he obtained a release from his vow. Gemellus was the next who suffered from the tyrant's inhumanity. The pretence against him was, that he had wished the emperor might not recover, and that he had taken a counter-poison to secure him from any secret attempts against his life. Caligula ordered him to kill himself; but as the unfortunate youth was ignorant of the manner of doing it, the emperor's messengers soon instructed him in the fatal lesson. Silenus, the emperor's father-in-law, was the next that was put to death upon slight suspicions; and Gercinus, a senator of noted integrity, refusing to witness falsely against him, shared his fate. After these followed a crowd of victims to the emperor's avarice or suspicion. The pretext against them was their enmity to his family; and in proof of his accusations he produced those very memorials which but a while before he pretended to have burnt. Among the number of those who were sacrificed to his jealousy, was Macro, the late favourite of Tiberius, and the person to whom Caligula owed his empire. He was accused of many crimes, some of which were common to the emperor as well as to him, and his death brought on the ruin of his whole family.

These cruelties, however, only seemed the first fruits of a mind naturally timid and suspicious: his vanity and profusion soon gave rise to others which were more atrocious, as they sprung from less powerful motives. His pride first began by assuming to himself the title of *ruler*, which was usually granted only to kings. He would also have taken the crown and diadem, had he not been advised that he was already superior to all the monarchs of the world. Not long after, he assumed divine honours, and gave himself the names of such divinities as he thought most agreeable to his nature. For this purpose he caused the heads of the statues of Jupiter and some other gods to be struck off, and his own to be put in their places. He frequently seated himself between Castor and Pollux, and ordered all who came to their temple to worship, should pay their adorations only to him; nay, at last he altered their temple to the form of a portico, which he joined to his palace, that the very gods, as he said, might serve him in the quality of porters.

He was not less notorious for the depravation of his appetites than for his ridiculous presumptions. Neither person, place, nor sex, were obstacles to the indulgence of his unnatural lusts. There was scarcely a lady of any quality in Rome that escaped his lewdness; and, indeed, such was the degeneracy of the times, that there were few ladies who did not think this disgrace an honour. He committed incest with his three sisters, and at public feasts they lay with their heads upon his bosom by turns. Of these he prostituted Livia and Agrippina to his vile companions, and then banished them as adulteresses and conspirators against his person. As for Drusilla, he took her from her husband Longinus, and kept her as his wife. Her he loved so affectionately, that, being sick, he appointed her as heiress of his empire and fortune; and she happening to die before him, he made her a goddess. Nor did her example when living, appear more dangerous to the people than her divinity when dead. To mourn for her death was a crime, as she was become a goddess; and to rejoice for her divinity was capital, because she was dead. Nay, even silence

Rome.

lence itself was an unpardonable insensibility, either of the emperor's loss or his sister's advancement. Thus he made his sister subservient to his profit, as before he had done to his pleasure; raising vast sums of money by granting pardons to some, and by confiscating the goods of others. As to his marriages, whether he contracted them with greater levity, or dissolved them with greater injustice, is not easy to determine. Being present at the nuptials of Livia Orestilla with Piso, as soon as the solemnity was over, he commanded her to be brought to him as his own wife, and then dismissed her in a few days. He soon after banished her upon suspicion of cohabiting with her husband after she was parted from him. He was enamoured of Lollia Paulina, upon a bare relation of her grandmother's beauty; and thereupon took her from her husband, who commanded in Macedonia: notwithstanding which, he repudiated her as he had done the former, and likewise forbade her future marrying with any other. The wife who caught most firmly upon his affections was Milonia Cæsonia, whose chief merit lay in her perfect acquaintance with all the alluring arts of her sex, for she was otherwise possessed neither of youth nor beauty. She continued with him during his reign; and he loved her so ridiculously, that he sometimes showed her to his soldiers dressed in armour, and sometimes to his companions stark naked.

But of all his vices, his prodigality was the most remarkable, and that which in some measure gave rise to the rest. The luxuries of former emperors were simplicity itself, when compared to those which he practised. He contrived new ways of bathing, where the richest oils and most precious perfumes were exhausted with the utmost profusion. He found out dishes of immense value; and had even jewels, as we are told, dissolved among his sauces. He sometimes had services of pure gold presented before his guests instead of meat; observing, that a man should be an economist or an emperor.

For several days together he flung considerable sums of money among the people. He ordered ships of a prodigious bulk to be built of cedar, the stems of ivory inlaid with gold and jewels, the sails and tackling of various silks, while the decks were planted with the choicest fruit trees, under the shade of which he often dined. Here, attended by all the ministers of his pleasures, the most exquisite singers, and the most beautiful youths, he coasted along the shore of Campania with great splendor. All his buildings seemed rather calculated to raise astonishment, than to answer the purposes of utility. But the most notorious instance of his fruitless profusion was the vast bridge at Puteoli, which he undertook in the third year of his reign. To satisfy his desire of being master as well of the ocean as the land, he caused an infinite number of ships to be fastened to each other, so as to make a floating bridge from Baiæ to Puteoli, across an arm of the sea three miles and a half broad. The ships being placed in two rows, in form of a crescent, were secured to each other with anchors, chains, and cables. Over these were laid vast quantities of timber, and upon that earth, so as to make the whole resemble one of the streets of Rome. He next caused several houses to be built upon his new bridge, for the reception of himself and his attendants, into which fresh water was conveyed by pipes from land.

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He then repaired thither with all his court, attended by prodigious throngs of people, who came from all parts to be spectators of such an expensive pageant. It was there that Caligula, adorned with all the magnificence of eastern royalty, sitting on horseback with a civic crown and Alexander's breastplate, attended by the great officers of the army, and all the nobility of Rome, entered at one end of the bridge, and with ridiculous importance rode to the other. At night, the number of torches and other illuminations with which this expensive structure was adorned, cast such a gleam as illuminated the whole bay, and all the neighbouring mountains. This seemed to give the weak emperor new cause for exultation; boasting that he had turned night into day, as well as sea into land. The next morning he again rode over in a triumphal chariot, followed by a numerous train of charioteers, and all his soldiers in glittering armour. He then ascended a rostrum erected for the occasion, where he made a solemn oration in praise of the greatness of his enterprise, and the assiduity of his workmen and his army. He then distributed rewards among his men, and a splendid feast succeeded. In the midst of the entertainment many of his attendants were thrown into the sea; several ships filled with spectators were attacked and sunk in an hostile manner; and although the majority escaped through the calmness of the weather, yet many were drowned; and some who endeavoured to save themselves by climbing to the bridge, were struck down again by the emperor's command. The calmness of the sea during this pageant, which continued for two days, furnished Caligula with fresh opportunities for boasting; being heard to say, "that Neptune took care to keep the sea smooth and serene, merely out of reverence to him."

Expences like these, it may be naturally supposed, must have exhausted the most unbounded wealth: in fact, after reigning about a year, Caligula found his revenues totally exhausted; and a fortune of about 18,000,000 of our money, which Tiberius had amassed together, entirely spent in extravagance and folly. Now, therefore, his prodigality put him upon new methods of supplying the exchequer; and as before his profusion, so now his rapacity became boundless. He put in practice all kinds of rapine and extortion; while his principal study seemed to be the inventing new imposts and illicit confiscations. Every thing was taxed, to the very wages of the meanest tradesman. He caused freemen to purchase their freedom a second time; and poisoned many who had named him for their heir, to have the immediate possession of their fortunes. He set up a brothel in his own palace, by which he gained considerable sums by all the methods of prostitution. He also kept a gaming-house, in which he himself presided, scrupling none of the meanest tricks in order to advance his gains. On a certain occasion having had a run of ill luck, he saw two rich knights passing through his court; upon which he suddenly rose up, and causing both to be apprehended, confiscated their estates, and then joining his former companions, boasted that he never had a better throw in his life. Another time, wanting money for a stake, he went down and caused several noblemen to be put to death; and then returning, told the company that they sat playing for trifles while he had won 60,000 sesterces at a cast.

Such insupportable and capricious cruelties produced many

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Ridiculous
expeditions
against Bri-
tain and
Germany.

many secret conspiracies against him; but these were for a while deferred, upon account of his intended expedition against the Germans and Britons, which he undertook in the third year of his reign. For this purpose, he caused numerous levies to be made in all parts of the empire; and talked with so much resolution, that it was universally believed he would conquer all before him. His march perfectly indicated the inequality of his temper: sometimes it was so rapid, that the cohorts were obliged to leave their standards behind them; at other times it was so slow, that it more resembled a pompous procession than a military expedition. In this disposition he would cause himself to be carried on eight men's shoulders, and order all the neighbouring cities to have their streets well swept and watered to defend him from the dust. However, all these mighty preparations ended in nothing. Instead of conquering Britain, he only gave refuge to one of its banished princes; and this he described in a letter to the senate, as taking possession of the whole island. Instead of conquering Germany, he only led his army to the sea shore in Batavia. There disposing his engines and warlike machines with great solemnity, and drawing up his men in order of battle, he went on board his galley, with which coasting along, he commanded his trumpets to sound and the signal to be given as if for an engagement; upon which, his men having had previous orders, immediately fell to gathering the shells that lay upon the shore into their helmets, terming them the *spoils of the conquered ocean, worthy of the palace and the capitol*. After this doughty expedition, calling his army together as a general after victory, he harangued them in a pompous manner, and highly extolled their achievements; and then distributing money among them, dismissed them with orders to be joyful, and congratulated them upon their riches. But that such exploits should not pass without a memorial, he caused a lofty tower to be erected by the sea-side; and ordered the galleys in which he had put to sea to be conveyed to Rome in a great measure by land.

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Meanness
of the se-
nate.

After numberless instances of folly and cruelty in this expedition, among which he had intentions of destroying the whole army that had formerly mutinied under his father Germanicus, he began to think of a triumph. The senate, who had long been the timid ministers of his pride and cruelty, immediately set about consulting how to satisfy his expectations. They considered that a triumph would, even to himself, appear as a burlesque upon his expedition: they therefore decreed him only an ovation. Having come to this resolution, they sent him a deputation, informing him of the honours granted him, and the decree, which was drawn up in terms of the most extravagant adulation. However, their flattery was far from satisfying his pride. He considered their conduct rather as a diminution of his power, than an addition to his glory. He therefore ordered them, on pain of death, not to concern themselves with his honours; and being met by their messengers on the way, who invited him to come and partake of the preparations which the senate had decreed, he informed them that he would come; and then laying his hand upon his sword, added, that he would bring that also with him. In this manner, either quite omitting his triumph, or deferring it to another time, he entered the city with only an ovation; while the senate passed

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the whole day in acclamations in his praise, and speeches filled with the most excessive flattery. This conduct in some measure served to reconcile him, and soon after their excessive zeal in his cause entirely gained his favour. For it happened that Protogenes, who was one of the most intimate and the most cruel of his favourites, coming into the house, was fawned upon by the whole body of the senate, and particularly by Proculus. Whereupon Protogenes with a fierce look, asked how one who was such an enemy to the emperor could be such a friend to him? There needed no more to excite the senate against Proculus. They instantly seized upon him, and violently tore him in pieces; plainly showing by their conduct, that tyranny in a prince produces cruelty in those whom he governs.—It was after returning from this extravagant expedition, that he was waited upon by a deputation of the Jews of Alexandria, who came to deprecate his anger for not worshipping his divinity as other nations had done. The emperor gave them a very ungracious reception, and would probably have destroyed their countrymen if he had not soon after been cut off.

This affair of the Jews remained undecided during his reign; but it was at last settled by his successor to their satisfaction. It was upon this occasion that Philo made the following remarkable answer to his associates, who were terrified with apprehensions of the emperor's indignation: "Fear nothing (cried he to them), Caligula, by declaring against us, puts God on our side."

The continuation of this horrid reign seemed to threaten universal calamity: however, it was but short. There had already been several conspiracies formed to destroy the tyrant, but without success. That which at last succeeded in delivering the world of this monster, was concerted under the influence of Cassius Cherea, tribune of the prætorian bands. This was a man of experienced courage, an ardent admirer of freedom, and consequently an enemy to tyrants. Besides the motives which he had in common with other men, he had received repeated insults from Caligula, who took all occasions of turning him into ridicule, and impeaching him of cowardice, merely because he had an effeminate voice. Whenever Cherea came to demand the watchword from the emperor, according to custom, he always gave him either Venus, Adonis, or some such, implying effeminacy and softness. He therefore secretly imparted his designs to several senators and knights, whom he knew to have received personal injuries from Caligula, or to be apprehensive of those to come. Among these was Valerius Asiaticus, whose wife the emperor had debauched. Annius Vincianus, who was suspected of having been in a former conspiracy, was now desirous of really engaging in the first design that offered. Besides these, were Clemens the prefect; and Calistus, whose riches made him obnoxious to the tyrant's resentment.

While these were deliberating upon the most certain and speedy method of destroying the tyrant, an unexpected incident gave new strength to the conspiracy. Pompeidius, a senator of distinction, having been accused before the emperor, of having spoken of him with disrespect, the informer cited one Quintilia, an actress, to confirm his accusation. Quintilia, however, was possessed of a degree of fortitude not easily found. She denied the fact with obstinacy; and being put to the torture at the informer's request, she bore the severest tor-

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A conspi-
racy form-
ed against
the empe-
ror,

Rome. ments of the rack with unshaken constancy. But what is most remarkable of her resolution is, that she was acquainted with all the particulars of the conspiracy; and although Cherea was appointed to preside at her torture, she revealed nothing: on the contrary, when she was led to the rack, she trod upon the toe of one of the conspirators, intimating at once her knowledge of the confederacy, and her own resolution not to divulge it. In this manner she suffered until all her limbs were dislocated; and in that deplorable state was presented to the emperor, who ordered her a gratuity for what she had suffered. Cherea could now no longer contain his indignation at being thus made the instrument of a tyrant's cruelty. He therefore proposed to the conspirators to attack him as he went to offer sacrifices in the capitol, or while he was employed in the secret pleasures of the palace. The rest, however, were of opinion, that it was best to fall upon him when he should be unattended; by which means they would be more certain of success. After several deliberations, it was at last resolved to attack him during the continuance of the Palatine games, which lasted four days; and to strike the blow when his guards should have the least opportunity to defend him. In consequence of this, the three first days of the games passed without affording that opportunity which was so ardently desired. Cherea now, therefore, began to apprehend, that deferring the time of the conspiracy might be a mean to divulge it: he even began to dread, that the honour of killing the tyrant might fall to the lot of some other person more bold than himself. Wherefore, he at last resolved to defer the execution of his plot only to the day following, when Caligula should pass through a private gallery, to some baths not far distant from the palace.

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who is
murdered.

The last day of the games was more splendid than the rest; and Caligula seemed more sprightly and condescending than usual. He took great amusement in seeing the people scramble for the fruits and other rarities thrown by his order among them; and seemed no way apprehensive of the plot formed for his destruction. In the mean time, the conspiracy began to transpire; and had he possessed any friends, it could not have failed of being discovered. The conspirators waited a great part of the day with the most extreme anxiety; and at one time Caligula seemed resolved to spend the whole day without any refreshment. This unexpected delay entirely exasperated Cherea; and had he not been restrained, he would have gone and perpetrated his design in the midst of all the people. Just at that instant, while he was yet hesitating what he should do, Asprenas, one of the conspirators, persuaded Caligula to go to the bath and take some slight refreshment, in order to enjoy the rest of the entertainment with greater relish. The emperor therefore rising up, the conspirators used every precaution to keep off the throng, and to surround him, under pretence of greater assiduity. Upon entering into the little vaulted gallery that led to the bath, he was met by a band of Grecian children who had been instructed in singing, and were come to perform in his presence. He was once more therefore going to return into the theatre with them, had not the leader of the band excused himself, as having a cold. This was the moment that Cherea seized to strike him to the ground; crying out, "Tyrant,

think upon this." Immediately after, the other conspirators rushed in; and while the emperor continued to resist, crying out, that he was not yet dead, they dispatched him with 30 wounds, in the 29th year of his age, after a short reign of three years ten months and eight days. With him, his wife and infant daughter also perished; the one being stabbed by a centurion, the other having its brains dashed out against the wall. His coin was also melted down by a decree of the senate; and such precautions were taken, that all seemed willing, that neither his features nor his name might be transmitted to posterity.

As soon as the death of Caligula was made public, it produced the greatest confusion in all parts of the city. The conspirators, who only aimed at destroying a tyrant without attending to a successor, had all sought safety by retiring to private places. Some thought the report of the emperor's death was only an artifice of his own, to see how his enemies would behave. Others averred that he was still alive, and actually in a fair way to recover. In this interval of suspense, the German guards finding it a convenient time to pillage, gave a loose to their licentiousness, under a pretence of revenging the emperor's death. All the conspirators and senators that fell in their way received no mercy: Asprenas, Norbanus, and Anteius, were cut in pieces. However, they grew calm by degrees, and the senate was permitted to assemble, in order to deliberate upon what was necessary to be done in the present emergency.

In this deliberation, Saturninus, who was then consul, insisted much upon the benefits of liberty; and talked in raptures of Cherea's fortitude, alleging that it deserved the highest reward. This was a language highly pleasing to the senate. Liberty now became the favourite topic; and they even ventured to talk of extinguishing the very name of Cæsar. Impressed with this resolution, they brought over some cohorts of the city to their side, and boldly seized upon the Capitol. But it was now too late for Rome to regain her pristine freedom; the populace and the army opposing their endeavours. The former were still mindful of their ancient hatred to the senate; and remembered the donations and public spectacles of the emperors with regret. The latter were sensible they could have no power but in a monarchy; and had some hopes that the election of the emperor would fall to their determination. In this opposition of interests, and variety of opinions, chance seemed at last to decide the fate of the empire. Some soldiers happening to run about the palace, discovered Claudius, Caligula's uncle, lurking in a secret place, where he had hid himself through fear. Of this personage, who had hitherto been despised for his imbecility, they resolved to make an emperor: and accordingly carried him upon their shoulders to the camp, where they proclaimed him at a time he expected nothing but death.

The senate now, therefore, perceiving that force alone was likely to settle the succession, were resolved to submit, since they had no power to oppose. Claudius was the person most nearly allied to the late emperor, then living; being the nephew of Tiberius, and the uncle of Caligula. The senate therefore passed a decree, confirming him in the empire; and went soon after in a body, to render him their compulsive homage

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Great confusion
ensues on his
death.

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Claudius
made emperor.

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mage. Cherca was the first who fell a sacrifice to the jealousy of this new monarch. He met death with all the fortitude of an ancient Roman; desiring to die by the same sword with which he had killed Caligula. Lupus, his friend, was put to death with him; and Sabinus, one of the conspirators, laid violent hands on himself.

Claudius was 50 years old when he began to reign. The complicated diseases of his infancy had in some measure affected all the faculties both of his body and mind. He was continued in a state of pupillage much longer than was usual at that time; and seemed, in every part of his life incapable of conducting himself. Not that he was entirely destitute of understanding, since he had made a tolerable proficiency in the Greek and Latin languages, and even wrote a history of his own time; which, however destitute of other merit, was not contemptible in point of style. Nevertheless, with this share of erudition, he was unable to advance himself in the state, and seemed utterly neglected until he was placed all at once at the head of affairs.

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His happy administration in the beginning of his reign.

The commencement of his reign gave the most promising hopes of a happy continuance. He began by passing an act of oblivion for all former words and actions, and disannulled all the cruel edicts of Caligula. He forbade all persons, upon severe penalties, to sacrifice to him as they had done to Caligula; was assiduous in hearing and examining complaints; and frequently administered justice in person; tempering by his mildness the severity of the law. We are told of his bringing a woman to acknowledge her son, by adjudging her to marry him. The tribunes of the people coming one day to attend him when he was on the tribunal, he courteously excused himself for not having room for them to sit down. By this deportment he so much gained the affections of the people, that upon a vague report of his being slain by surprise, they ran about the streets in the utmost rage and consternation, with horrid imprecations against all such as were accessory to his death; nor could they be appeased, until they were assured, with certainty, of his safety. He took a more than ordinary care that Rome should be continually supplied with corn and provisions, securing the merchants against pirates. He was not less assiduous in his buildings, in which he excelled almost all that went before him. He constructed a wonderful aquæduct, called after his own name, much surpassing any other in Rome, either for workmanship or plentiful supply. It brought water from 40 miles distance, through great mountains, and over deep valleys; being built on stately arches, and furnishing the highest parts of the city. He made also an haven at Ostia; a work of such immense expence, that his successors were unable to maintain it. But his greatest work of all was the draining of the lake Fucinus, which was the largest in Italy, and bringing its water into the Tiber, in order to strengthen the current of that river. For effecting this, among other vast difficulties, he mined through a mountain of stone three miles broad, and kept 30,000 men employed for 11 years together.

To this solicitude for the internal advantages of the state, he added that of a watchful guardianship over the provinces. He restored Judea to Herod Agrippa, which Caligula had taken from Herod Antipas, his uncle, the man who had put John the Baptist to death,

and who was banished by order of the present emperor. Claudius also restored such princes to their kingdoms as had been unjustly dispossessed by his predecessors; but deprived the Lycians and Rhodians of their liberty, for having promoted insurrections, and crucified some citizens of Rome.

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He even undertook to gratify the people by foreign conquest. The Britons, who had, for near 100 years, been left in sole possession of their own island, began to seek the mediation of Rome, to quell their intestine commotions. The principal man who desired to subject his native country to the Roman dominion, was one Bericus, who, by many arguments, persuaded the emperor to make a descent upon the island, magnifying the advantages that would attend the conquest of it. In pursuance of his advice, therefore, Plautius the prætor was ordered to pass over into Gaul, and make preparations for this great expedition. At first, indeed, his soldiers seemed backward to embark; declaring, that they were unwilling to make war beyond the limits of the world, for so they judged Britain to be. However, they were at last persuaded to go; and the Britons, under the conduct of their king Cynobelinus, were several times overthrown. And these successes soon after induced Claudius to go into Britain in person, upon pretence that the natives were still seditious, and had not delivered up some Roman fugitives who had taken shelter among them; but for a particular account of the exploits of the Romans in this island, see the article: ENGLAND.

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His expedition against Britain.

But though Claudius gave in the beginning of his reign the highest hopes of a happy continuance, he soon began to lessen his care for the public, and to commit to his favourites all the concerns of the empire. This weak prince was unable to act but under the direction of others. The chief of his directors was his wife Messalina: whose name is almost become a common appellation to women of abandoned characters. However, she was not less remarkable for her cruelties than her lusts; as by her intrigues she destroyed many of the most illustrious families of Rome. Subordinate to her were the emperor's freedmen; Pallas, the treasurer; Narcissus, the secretary of state; and Callistus, the master of the requests. These entirely governed Claudius; so that he was only left the fatigues of ceremony, while they were possessed of all the power of the state.

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Is induced by his favourites to commit many acts of cruelty.

It would be tedious to enumerate the various cruelties which these insidious advisers obliged the feeble emperor to commit: those against his own family will suffice. Appius Silanus, a person of great merit, who had been married to the emperor's mother-in-law, was put to death upon the suggestions of Messalina. After him he slew both his sons-in-law, Silanus and Pompey, and his two nieces the Lívias, one the daughter of Drusus, the other of Germanicus; and all without permitting them to plead in their defence, or even without assigning any cause for his displeasure. Great numbers of others fell a sacrifice to the jealousy of Messalina and her minions; who bore so great a sway in the state, that all offices, dignities, and governments, were entirely at their disposal. Every thing was put to sale: they took money for pardons and penalties; and accumulated, by these means, such vast sums, that the wealth of Cræsus was considered as nothing in comparison

in comparison

Rome.

parison. One day, the emperor complaining that his exchequer was exhausted, he was ludicrously told, that it might be sufficiently replenished if his two freedmen would take him into partnership. Still, however, during such corruption, he regarded his favourites with the highest esteem, and even solicited the senate to grant them peculiar marks of their approbation. These disorders in the ministers of government did not fail to produce conspiracies against the emperor. Staius Corvinus and Gallus Asinius formed a conspiracy against him. Two knights, whose names are not told us, privately combined to assassinate him. But the revolt which gave him the greatest uneasiness, and which was punished with the most unrelenting severity, was that of Camillus, his lieutenant-general in Dalmatia. This general, incited by many of the principal men of Rome, openly rebelled against him, and assumed the title of emperor. Nothing could exceed the terrors of Claudius, upon being informed of this revolt: his nature and his crimes had disposed him to be more cowardly than the rest of mankind; so that when Camillus commanded him by letters to relinquish the empire, and retire to a private station, he seemed inclined to obey. However, his fears upon this occasion were soon removed: for the legions which had declared for Camillus being terrified by some prodigies, shortly after abandoned him; so that the man whom but five days before they had acknowledged as emperor, they now thought it no infamy to destroy. The cruelty of Messalina and her minions upon this occasion seemed to have no bounds. They so wrought upon the emperor's fears and suspicions, that numbers were executed without trial or proof; and scarce any, even of those who were but suspected, escaped, unless by ransoming their lives with their fortunes.

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Their infamous conduct.

But such cruelties as these, the favourites of the emperor endeavoured to establish his and their own authority: but in order to increase the necessity of their assistance, they laboured to augment the greatness of his terrors. He now became a prey to jealousy and diffidence. Being one day in the temple, and finding a sword that was left there by accident, he convened the senate in a fright, and informed them of his danger. After this he never ventured to go to any feast without being surrounded by his guards, nor would he suffer any man to approach him without a previous search. Thus wholly employed by his anxiety for self-preservation, he entirely left the care of the state to his favourites, who by degrees gave him a relish for slaughter. From this time he seemed delighted with inflicting tortures; and on a certain occasion continued a whole day at the city Tibur, waiting for a hangman from Rome, that he might feast his eyes with an execution in the manner of the ancients. Nor was he less regardless of the persons he condemned, than cruel in the infliction of their punishment. Such was his extreme stupidity, that he would frequently invite those to supper whom he had put to death but the day before; and often denied the having given orders for an execution, but a few hours after pronouncing sentence. Suetonius assures us, that there were no less than 35 senators, and above 300 knights, executed in his reign; and that such was his unconcern in the midst of slaughter, that one of the tribunes bringing him an account of a certain senator who was executed, he quite

forgot his offence, but calmly acquiesced in his punishment.

Rome.

In this manner was Claudius urged on by Messalina to commit cruelties, which he considered only as wholesome severities; while, in the mean time, she put no bounds to her enormities. The impunity of her past vices only increasing her confidence to commit new, her debaucheries became every day more notorious, and her lewdness exceeded what had ever been seen at Rome. She caused some women of the first quality to commit adultery in the presence of their husbands, and destroyed such as refused to comply. After appearing for some years insatiable in her desires, she at length fixed her affections upon Caius Silius, the most beautiful youth in Rome. Her love for the young Roman seemed to amount even to madness. She obliged him to divorce his wife Livia Syllana, that she might entirely possess him herself. She obliged him to accept of immense treasures and valuable presents; cohabiting with him in the most open manner, and treating him with the most shameless familiarity. The very imperial ornaments were transferred to his house; and the emperor's slaves and attendants had orders to wait upon the adulterer. Nothing was wanting to complete the insolence of their conduct, but their being married together; and this was soon after effected. They relied upon the emperor's imbecility for their security, and only waited till he retired to Ostia to put their ill-judged project in execution. In his absence, they celebrated their nuptials with all the ceremonies and splendor which attend the most confident security. Messalina gave a loose to her passion, and appeared as a Bacchanalian with a thyrsus in her hand; while Silius assumed the character of Bacchus, his body being adorned with robes imitating ivy, and his legs covered with buskins. A troop of singers and dancers attended, who heightened the revel with the most lascivious songs and the most indecent attitudes. In the midst of this riot, one Valens, a buffoon, is said to have climbed a tree; and being demanded what he saw, answered that he perceived a dreadful storm coming from Ostia. What this fellow spoke at random was actually at that time in preparation. It seems that some time before there had been a quarrel between Messalina and Narcissus, the emperor's first freedman. This subtle minister therefore desired nothing more than an opportunity of ruining the empress, and he judged this to be a most favourable occasion. He first made the discovery by means of two concubines who attended the emperor, who were instructed to inform him of Messalina's marriage as the news of the day, while Narcissus himself stepped in to confirm their information. Finding it operated upon the emperor's fears as he could wish, he resolved to alarm him still more by a discovery of all Messalina's projects and attempts. He aggravated the danger, and urged the expediency of speedily punishing the delinquents. Claudius, quite terrified at so unexpected a relation, supposed the enemy were already at his gates; and frequently interrupted his freedman, by asking if he was still master of the empire. Being assured that he yet had it in his power to continue so, he resolved to go and punish the affront offered to his dignity without delay. Nothing could exceed the consternation of Messalina and her thoughtless companions, upon being informed that the emper-

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Extrava-
gant lewd-
ness of the
empress
Messalina.

Rome. ror was coming to disturb their festivity. Every one retired in the utmost confusion. Silius was taken. Messalina took shelter in some gardens which she had lately seized upon, having expelled Asiaticus the true owner, and put him to death. From thence she sent Britannicus, her only son by the emperor, with Octavia her daughter, to intercede for her, and implore his mercy. She soon after followed them herself; but Narcissus had so fortified the emperor against her arts, and contrived such methods of diverting his attention from her defence, that she was obliged to return in despair. Narcissus being thus far successful, led Claudius to the house of the adulterer, there showing him the apartments adorned with the spoils of his own palace; and then conducting him to the prætorian camp, revived his courage by giving him assurances of the readiness of the soldiers to defend him. Having thus artfully wrought upon his fears and resentment, the wretched Silius was commanded to appear; who, making no defence, was instantly put to death in the emperor's presence. Several others shared the same fate; but Messalina still flattered herself with hopes of pardon. She resolved to leave neither prayers nor tears unattempted to appease the emperor. She sometimes even gave a loose to her resentment, and threatened her accusers with vengeance. Nor did she want ground for entertaining the most favourable expectations. Claudius having returned from the execution of her paramour, and having allayed his resentment in a banquet, began to relent. He now therefore commanded his attendants to apprise that miserable creature, meaning Messalina, of his resolution to hear her accusation the next day, and ordered her to be in readiness with her defence. The permission to defend herself would have been fatal to Narcissus; wherefore he rushed out, and ordered the tribunes and centurions who were in readiness to execute her immediately by the emperor's command. Claudius was informed of her death in the midst of his banquet; but this insensible idiot showed not the least appearance of emotion. He continued at table with his usual tranquillity; and the day following, while he was sitting at dinner, he asked why Messalina was absent, as if he had totally forgotten her crimes and her punishment.

Claudius being now a widower, declared publicly, that as he had hitherto been unfortunate in his marriages, he would remain single for the future, and that he would be contented to forfeit his life in case he broke his resolution. However, the resolutions of Claudius were but of short continuance. Having been accustomed to live under the controul of women, his present freedom was become irksome to him, and he was entirely unable to live without a director. His freedmen therefore perceiving his inclinations, resolved to procure him another wife; and, after some deliberation, they fixed upon Agrippina, the daughter of his brother Germanicus. This woman was more practised in vice than even the former empress. Her cruelties were more dangerous, as they were directed with greater caution: she had poisoned her former husband, to be at liberty to attend the calls of ambition; and, perfectly acquainted with all the infirmities of Claudius, only made use of his power to advance her own. However, as the late declaration of Claudius seemed to be an obstacle to his marrying again, persons were suborned to

move in the senate, that he should be compelled to take a wife, as a matter of great importance to the commonwealth; and some more determined flatterers than the rest left the house, as with a thorough resolution, that instant, to constrain him. When this decree passed in the senate, Claudius had scarce patience to contain himself a day before the celebration of his nuptials. However, such was the detestation in which the people in general held these incestuous matches, that though they were made lawful, yet only one of his tribunes; and one of his freedmen, followed his example.

Claudius having now received a new director, submitted with more implicit obedience than in any former part of his reign. Agrippina's chief aims were to gain the succession in favour of her own son Nero, and to set aside the claims of young Britannicus, son to the emperor and Messalina. For this purpose she married Nero to the emperor's daughter Octavia, a few days after her own marriage. Not long after this, she urged the emperor to strengthen the succession, in imitation of his predecessors, by making a new adoption; and caused him take in her son Nero, in some measure to divide the fatigues of government. Her next care was to increase her son's popularity, by giving him Seneca for a tutor. This excellent man, by birth a Spaniard, had been banished by Claudius, upon the false testimony of Messalina, who had accused him of adultery with Julia the emperor's niece. The people loved and admired him for his genius, but still more for his strict morality; and a part of his reputation necessarily devolved to his pupil. This subtle woman was not less assiduous in pretending the utmost affection for Britannicus; whom, however, she resolved in a proper time to destroy: but her jealousy was not confined to this child only; she, shortly after her accession, procured the deaths of several ladies who had been her rivals in the emperor's affections. She displaced the captains of the guard, and appointed Burrhus to that command; a person of great military knowledge, and strongly attached to her interests. From that time she took less pains to disguise her power, and frequently entered the Capitol in a chariot; a privilege which none before were allowed, except of the sacerdotal order.

In the 12th year of this monarch's reign, she persuaded him to restore liberty to the Rhodians, of which he had deprived them some years before; and to remit the taxes of the city Ilium, as having been the progenitors of Rome. Her design in this was to increase the popularity of Nero, who pleaded the cause of both cities with great approbation. Thus did this ambitious woman take every step to aggrandize her son, and was even contented to become hateful herself to the public, merely to increase his popularity.

Such a very immoderate abuse of her power served at last to awaken the emperor's suspicions. Agrippina's imperious temper began to grow insupportable to him and he was heard to declare, when heated with wine, that it was his fate to suffer the disorders of his wives, and to be their executioner. This expression sunk deep on her mind, and engaged all her faculties to prevent the blow. Her first care was to remove Narcissus, whom she hated upon many accounts, but particularly for his attachment to Claudius. This minister, for some time, opposed her designs; but at length thought fit to retire, by a voluntary exile, into Campa-

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She is put
to death.

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The emper-
or marries
Agrippina.

nia,

Rome.

nia. The unhappy emperor, thus exposed to all the machinations of his insidious consort, seemed entirely regardless of the danger that threatened his destruction. His affection for Britannicus was perceived every day to increase, which served also to increase the vigilance and jealousy of Agrippina. She now, therefore, resolved not to defer a crime which she had meditated a long while before; namely, that of poisoning her husband. She for some time, however, debated with herself in what manner she should administer the poison; as she feared too strong a dose would discover her treachery, and one too weak might fail of its effects. At length she determined upon a poison of singular efficacy to destroy his intellects, and yet not suddenly to terminate his life. As she had been long conversant in this horrid practice, she applied to a woman called *Locusta*, notorious for assisting on such occasions. The poison was given to the emperor among mushrooms, a dish he was particularly fond of. Shortly after having eaten, he dropped down insensible; but this caused no alarm, as it was usual with him to sit eating till he had stupified all his faculties, and was obliged to be carried off to his bed from the table. However, his constitution seemed to overcome the effects of his poison, when Agrippina resolved to make sure of him: wherefore she directed a wretched physician, who was her creature, to thrust a poisoned feather down his throat, under pretence of making him vomit; and thus dispatched him.

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By whom
he is poi-
soned.

The reign of this emperor, feeble and impotent as he was, produced no great calamities in the state, since his cruelties were chiefly levelled at those about his person. The list of the inhabitants of Rome at this time amounted to six millions eight hundred and forty-four thousand souls; a number little inferior to all the people of England at this day. The general character of the times was that of corruption and luxury: but the military spirit of Rome, though much relaxed from its former severity, still continued to awe mankind; and though during this reign, the empire might be justly said to be without a head, yet the terror of the Roman name alone kept the nations in obedience.

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Nero suc-
ceeds to the
empire.

Claudius being destroyed, Agrippina took every precaution to conceal his death from the public, until she had settled her measures for securing the succession. A strong guard was placed at all the avenues of the palace, while she amused the people with various reports; at one time giving out that he was still alive; at another, that he was recovering. In the meanwhile, she made sure of the person of young Britannicus, under a pretence of affection for him. Like one overcome with the extremity of her grief, she held the child in her arms, calling him the dear image of his father, and thus preventing his escape. She used the same precautions with regard to his sisters, Octavia and Antonia; and even ordered an entertainment in the palace, as if to amuse the emperor. At last, when all things were adjusted, the palace gates were thrown open, and Nero, accompanied by Burrhus, prefect of the Prætorian guards, issued to receive the congratulations of the people and the army. The cohorts then attending, proclaimed him with the loudest acclamations, though not without making some inquiries after Britannicus. He was carried in a chariot to the rest of the army; wherein having made a speech proper to the occasion,

and promising them a donation, in the manner of his predecessors, he was declared emperor by the army, the senate, and the people.

Rome.

Nero's first care was, to show all possible respect to the deceased emperor, in order to cover the guilt of his death. His obsequies were performed with a pomp equal to that of Augustus: the young emperor pronounced his funeral oration, and he was canonized among the gods. The funeral oration, though spoken by Nero, was drawn up by Seneca; and it was remarked, that this was the first time a Roman emperor needed the assistance of another's eloquence.

Nero, though but 17 years of age, began his reign with the general approbation of mankind. As he owed the empire to Agrippina, so in the beginning he submitted to her directions with the most implicit obedience. On her part, she seemed resolved on governing with her natural ferocity, and considered her private animosities as the only rule to guide her in public justice. Immediately after the death of Claudius, she caused Silanus, the pro-consul of Asia, to be assassinated upon very slight suspicions, and without ever acquainting the emperor with her design. The next object of her resentment was Narcissus, the late emperor's favourite; a man equally notorious for the greatness of his wealth and the number of his crimes. He was obliged to put an end to his life by Agrippina's order, though Nero refused his consent.

This bloody onset would have been followed by many severities of the same nature, had not Seneca and Burrhus, the emperor's tutor and general, opposed. These worthy men, although they owed their rise to the empress, were above being the instruments of her cruelty. They, therefore, combined together in an opposition; and gaining the young emperor on their side, formed a plan of power, at once the most merciful and wise. The beginning of this monarch's reign, while he continued to act by their counsels, has always been considered as a model for succeeding princes to govern by. The famous emperor Trajan used to say, "That for the first five years of this prince all other governments came short of his." In fact, the young monarch knew so well how to conceal his innate depravity, that his nearest friends could scarcely perceive his virtues to be but assumed. He appeared just, liberal, and humane. When a warrant for the execution of a criminal was brought to him to be signed, he was heard to cry out, with seeming concern, "Would to Heaven that I had never learned to write!" The senate, upon a certain occasion, giving him their applause for the regularity and justice of his administration; he replied with singular modesty, "That they should defer their thanks till he had deserved them." His condescension and affability were not less than his other virtues; so that the Romans began to think, that the clemency of this prince would compensate for the tyranny of his predecessors.

299
His excel-
lent admi-
nistration
for five
years.

In the mean time, Agrippina, who was excluded from any share in government, attempted, by every possible method, to maintain her declining power. Perceiving that her son had fallen in love with a freed-woman, named *Acte*, and dreading the influence of a concubine, she tried every art to prevent his growing passion. However, in so corrupt a court, it was no difficult matter for the emperor to find other confidants

Rome. dants ready to assist him in his wishes. The gratification of his passion, therefore, in this instance, only served to increase his hatred for the empress. Nor was it long before he gave evident marks of his disobedience, by displacing Pallas her chief favourite. It was upon this occasion that she first perceived the total declension of her authority; which threw her into the most ungovernable fury. In order to give terror to her rage, she proclaimed that Britannicus, the real heir to the throne, was still living, and in a condition to receive his father's empire, which was now possessed by an usurper. She threatened to go to the camp, and there expose his baseness and her own, invoking all the furies to her assistance. These menaces served to alarm the suspicions of Nero; who, though apparently guided by his governors, yet had begun to give way to his natural depravity. He, therefore, determined upon the death of Britannicus, and contrived to have him poisoned at a public banquet. Agrippina, however, still retained her natural ferocity: she took every opportunity of obliging and flattering the tribunes and centurions; she heaped up treasures with a rapacity beyond her natural avarice; all her actions seemed calculated to raise a faction, and make herself formidable to the emperor. Whereupon Nero commanded her German guard to be taken from her, and obliged her to lodge out of the palace. He also forbade particular persons to visit her, and went himself but rarely and ceremoniously to pay her his respects. She now, therefore, began to find, that, with the emperor's favour, she had lost the assiduity of her friends. She was even accused by Silana of conspiring against her son, and of designing to marry Plautius, a person descended from Augustus, and making him emperor. A short time after, Pallas, her favourite, together with Burrhus, were arraigned for a similar offence, and intending to set up Cornelius Sylla. These informations being proved void of any foundation, the informers were banished; a punishment which was considered as very inadequate to the greatness of the offence.

300
He pro-
vokes his
mother.

301
Poisons
his brother.

302
Shameful
behaviour
of the em-
peror.

As Nero increased in years, his crimes seemed to increase in equal proportion. He now began to find a pleasure in running about the city by night, disguised like a slave. In this vile habit he entered taverns and brothels, attended by the lewd ministers of his pleasures, attempting the lives of such as opposed him, and frequently endangering his own. In imitation of the emperor's example, numbers of profligate young men infested the streets likewise; so that every night the city was filled with tumult and disorder. However, the people bore all these levities, which they ascribed to the emperor's youth, with patience, having occasion every day to experience his liberality, and having also been gratified by the abolition of many of their taxes. The provinces also were no way affected by these riots; for except disturbances on the side of the Parthians, which were soon suppressed, they enjoyed the most perfect tranquillity.

But those sensualities, which, for the first four years of his reign, produced but few disorders, in the fifth became alarming. He first began to transgress the bounds of decency, by publicly abandoning Octavia, his present wife, and then by taking Poppea, the wife of his favourite Otho, a woman more celebrated for

her beauty than her virtues. This was another grating circumstance to Agrippina, who vainly used all her interest to disgrace Poppea, and reinstate herself in her son's lost favour. Historians assert, that she even offered to satisfy his passion herself by an incestuous compliance; and that, had not Seneca interposed, the son would have joined in the mother's crime. This, however, does not seem probable, since we find Poppea victorious, soon after, in the contention of interests; and at last impelling Nero to parricide, to satisfy her revenge. She began her arts by urging him to divorce his present wife, and marry herself: she reproached him as a pupil, who wanted not only power over others, but liberty to direct himself. She insinuated the dangerous designs of Agrippina; and, by degrees, accustomed his mind to reflect on parricide without horror. His cruelties against his mother began rather by various circumstances of petty malice than by any downright injury. He encouraged several persons to tease her with litigious suits; and employed some of the meanest of the people to sing satirical songs against her, under her windows: but, at last, finding these ineffectual in breaking her spirit, he resolved on putting her to death. His first attempt was by poison; but this, though twice repeated, proved ineffectual, as she had fortified her constitution against it by antidotes. This failing, a ship was contrived in so artificial a manner as to fall to pieces in the water; on board of which she was invited to sail to the coasts of Calabria. However, this plot was as ineffectual as the former: the mariners, not being apprised of the secret, disturbed each other's operations; so that the ship not sinking as readily as was expected, Agrippina found means to continue swimming, till she was taken up by some trading vessels passing that way. Nero finding all his machinations were discovered, resolved to throw off the mask, and put her openly to death, without further delay. He therefore caused a report to be spread, that she had conspired against him, and that a poniard was dropped at his feet by one who pretended a command from Agrippina to assassinate him. In consequence of this, he applied to his governors Seneca and Burrhus, for their advice how to act, and their assistance in ridding him of his fears. Things were now come to such a crisis, that no middle way could be taken; and either Nero or Agrippina was to fall. Seneca, therefore, kept a profound silence; while Burrhus, with more resolution, refused to be perpetrator of so great a crime; alleging, that the army was entirely devoted to all the descendants of Cæsar, and would never be brought to imbrue their hands in the blood of any of his family. In this embarrassment, Anicetus, the contriver of the ship above-mentioned, offered his services; which Nero accepted with the greatest joy, crying out, "That then was the first moment he ever found himself an emperor." This freedman, therefore, taking with him a body of soldiers, surrounded the house of Agrippina, and then forced open the doors. The executioners having dispatched her with several wounds, left her dead on the couch, and went to inform Nero of what they had done. Some historians say, that Nero came immediately to view the body; that he continued to gaze upon it with pleasure, and ended his horrid survey, by coolly observing, that he never thought his mother had been so handsome.—

Rome.

303
Causes his
mother to
be murder-
ed.

Rome.

304
Folly and
meanness of
Nero.

However this be, he vindicated his conduct next day to the senate; who not only excused, but applauded his impiety.

All the bounds of virtue being thus broken down, Nero now gave a loose to his appetites, that were not only fordid but inhuman. There seemed an odd contrast in his disposition; for while he practised cruelties which were sufficient to make the mind shudder with horror, he was fond of those amusing arts that soften and refine the heart. He was particularly addicted, even from childhood, to music, and not totally ignorant of poetry. But chariot-driving was his favourite pursuit. He never missed the circus, when chariot-races were to be exhibited there; appearing at first privately, and soon after publicly; till at last, his passion increasing by indulgence, he was not content with being merely a spectator, but resolved to become one of the principal performers. His governors, however, did all in their power to restrain this perverted ambition; but finding him resolute, they inclosed a space of ground in the valley of the Vatican, where he first exhibited only to some chosen spectators, but shortly after invited the whole town. The praises of his flattering subjects only stimulated him still more to these unbecoming pursuits; so that he now resolved to assume a new character, and to appear as a singer upon the stage.

His passion for music, as was observed, was no less natural to him than the former; but as it was less manly, so he endeavoured to defend it by the example of some of the most celebrated men, who practised it with the same fondness. He had been instructed in the principles of this art from his childhood; and upon his advancement to the empire, he had put himself under the most celebrated masters. He patiently submitted to their instructions, and used all those methods which singers practise, either to mend the voice, or improve its volubility. Yet, notwithstanding all his assiduity, his voice was but a wretched one, being both feeble and unpleasant. However, he was resolved to produce it to the public, such as it was; for flattery, he knew, would supply every deficiency. His first public appearance was at games of his own institution, called *juveniles*; where he advanced upon the stage, tuning his instrument to his voice with great appearance of skill. A group of tribunes and centurions attended behind him; while his old governor Burrhus stood by his hopeful pupil, with indignation in his countenance, and praises on his lips.

He was desirous also of becoming a poet: but he was unwilling to undergo the pain of study, which a proficiency in that art requires; he was desirous of being a poet ready made. For this purpose, he got together several persons, who were considered as great wits at court, though but very little known as such to the public. These attended him with verses which they had composed at home, or which they blabbed out extemporaneously; and the whole of their compositions being tacked together, by his direction, was called a *poem*. Nor was he without his philosophers also; he took a pleasure in hearing their debates after supper, but he heard them merely for his amusement.

Furnished with such talents as these for giving pleasure, he was resolved to make the tour of his empire, and give the most public display of his abilities wherever he came. The place of his first exhibition,

upon leaving Rome, was Naples. The crowds there were so great, and the curiosity of the people so earnest in hearing him, that they did not perceive an earthquake that happened while he was singing. His desire of gaining the superiority over the other actors was truly ridiculous: he made interest with his judges, reviled his competitors, formed private factions to support him, all in imitation of those who got their livelihood upon the stage. While he continued to perform, no man was permitted to depart from the theatre, upon any pretence whatsoever. Some were so fatigued with hearing him, that they leaped privately from the walls, or pretended to fall into fainting fits, in order to be carried out. Nay, it is said, that several women were delivered in the theatre. Soldiers were placed in several parts to observe the looks and gestures of the spectators, either to direct them where to point their applause, or restrain their displeasure. An old senator, named *Vespasian*, afterwards emperor, happening to fall asleep upon one of these occasions, very narrowly escaped with his life.

After being fatigued with the praises of his countrymen, Nero resolved upon going over into Greece, to receive new theatrical honours. The occasion was this. The cities of Greece had made a law to send him the crowns from all the games; and deputies were accordingly dispatched with this (to him) important embassy. As he one day entertained them at his table in the most sumptuous manner, and conversed with them with the utmost familiarity, they intreated to hear him sing. Upon his complying, the artful Greeks testified all the marks of ecstasy and rapture. Applauses so warm were peculiarly pleasing to Nero: he could not refrain from crying out, That the Greeks alone were worthy to hear him; and accordingly prepared without delay to go into Greece, where he spent the whole year ensuing. In this journey, his retinue resembled an army in number; but it was only composed of singers, dancers, taylor, and other attendants upon the theatre. He passed over all Greece, and exhibited at all their games, which he ordered to be celebrated in one year. At the Olympic games he resolved to show the people something extraordinary; wherefore, he drove a chariot with 10 horses; but being unable to sustain the violence of the motion, he was driven from his seat. The spectators, however, gave their unanimous applause, and he was crowned as conqueror. In this manner he obtained the prize at the Isthmian, Pythian, and Nemean games. The Greeks were not sparing of their crowns; he obtained 1800 of them. An unfortunate singer happened to oppose him on one of these occasions, and exerted all the powers of his art, which, it appears, were prodigious. But he seems to have been a better singer than a politician; for Nero ordered him to be killed on the spot. Upon his return from Greece, he entered Naples, through a breach in the walls of the city, as was customary with those who were conquerors in the Olympic games. But all the splendor of his return was reserved for his entry into Rome. There he appeared seated in the chariot of Augustus, dressed in robes of purple, and crowned with wild olive, which was the Olympic garland. He bore in his hand the Pythian crown, and had 1100 more carried before him.— Beside him sat one Diodorus, a musician; and behind him followed a band of singers, as numerous as a legion,

Rome.

Rome. gion, who sung in honour of his victories. The senate, the knights, and the people, attended this puerile pageant, filling the air with their acclamations. The whole city was illuminated, every street smoked with incense; wherever he passed, victims were slain; the pavement was strewed with saffron, while garlands of flowers, ribbons, fowls, and pasties, (for so we are told), were showered down upon him from the windows as he passed along. So many honours only inflamed his desire of acquiring new; he at last began to take lessons in wrestling; willing to imitate Hercules in strength, as he had rivalled Apollo in activity. He also caused a lion of pasteboard to be made with great art, against which he undauntedly appeared in the theatre, and struck it down with a blow of his club.

365
Burning of
Rome. But his cruelties even outdid all his other extravagancies, a complete list of which would exceed the limits of the present article. He was often heard to observe, that he had rather be hated than loved. When one happened to say in his presence, That the world might be burned when he was dead: "Nay," replied Nero, "let it be burnt while I am alive." In fact, a great part of the city of Rome was consumed by fire shortly after. This remarkable conflagration took place in the 11th year of Nero's reign. The fire began among certain shops, in which were kept such goods as were proper to feed it; and spread every way with such amazing rapidity, that its havock was felt in distant streets, before any measures to stop it could be tried. Besides an infinite number of common houses, all the noble monuments of antiquity, all the stately palaces, temples, porticoes, with goods, riches, furniture, and merchandize, to an immense value, were devoured by the flames, which raged first in the low regions of the city, and then mounted to the higher with such terrible violence and impetuosity, as to frustrate all relief. The shrieks of the women, the various efforts of some endeavouring to save the young and tender, of others attempting to assist the aged and infirm, and the hurry of such as strove only to provide for themselves, occasioned a mutual interruption and universal confusion. Many, while they chiefly regarded the danger that pursued them from behind, found themselves suddenly involved in the flames before and on every side. If they escaped into the quarters adjoining, or into the parts quite remote, there too they met with the devouring flames. At last, not knowing whither to fly, nor where to seek sanctuary, they abandoned the city, and repaired to the open fields. Some, out of despair for the loss of their whole substance, others, through tenderness for their children and relations, whom they had not been able to snatch from the flames, suffered themselves to perish in them, though they might easily have found means to escape. No man dared to stop the progress of the fire, there being many who had no other business but to prevent with repeated menaces all attempts of that nature; nay, some were, in the face of the public, seen to throw lighted firebrands into the houses, loudly declaring that they were authorised so to do; but whether this was only a device to plunder the more freely, or in reality they had such orders, was never certainly known.

Nero, who was then at Antium, did not offer to return to the city, till he heard that the flames were advancing to his palace, which, after his arrival, was, in spite of all opposition, burnt down to the ground,

with all the houses adjoining to it. However, Nero, affecting compassion for the multitude, thus vagabond and bereft of their dwellings, laid open the field of Mars, and all the great edifices erected there by Agrippa, and even his own gardens. He likewise caused tabernacles to be reared in haste for the reception of the forlorn populace; from Ostia, too, and the neighbouring cities, were brought, by his orders, all sorts of furniture and necessaries, and the price of corn was considerably lessened. But these bounties, however generous and popular, were bestowed in vain, because a report was spread abroad, that, during the time of this general conflagration, he mounted his domestic stage, and sung the destruction of Troy, comparing the present desolation to the celebrated calamities of antiquity. At length, on the sixth day, the fury of the flames was stopped at the foot of Mount Esquiline, by levelling with the ground an infinite number of buildings; so that the fire found nothing to encounter but the open fields and empty air.

But scarce had the late alarm ceased, when the fire broke out anew with fresh rage, but in places more wide and spacious; whence fewer persons were destroyed, but more temples and public porticoes were overthrown. As this second conflagration broke out in certain buildings belonging to Tigellinus, they were both generally ascribed to Nero; and it was conjectured, that, by destroying the old city, he aimed at the glory of building a new one, and calling it by his name. Of the fourteen quarters into which Rome was divided, four remained entire, three were laid in ashes, and, in the seven others, there remained here and there a few houses, miserably shattered, and half consumed. Among the many ancient and stately edifices, which the rage of the flames utterly consumed, Tacitus reckons the temple dedicated by Servius Tullius to the Moon; the temple and great altar consecrated by Evander to Hercules; the chapel vowed by Romulus to Jupiter Stator; the court of Numa, with the temple of Vesta, and in it the tutelary gods peculiar to the Romans. In the same fate were involved the inestimable treasures acquired by so many victories, the wonderful works of the best painters and sculptors of Greece, and, what is still more to be lamented, the ancient writings of the celebrated authors, till then preserved perfectly entire. It was observed, that the fire began the same day on which the Gauls, having formerly taken the city, burnt it to the ground.

306
Nero's golden palace. Upon the ruins of the demolished city, Nero found a palace, which he called his *golden house*; though it was not so much admired on account of an immense profusion of gold, precious stones, and other inestimable ornaments, as for its vast extent, containing spacious fields, large wildernesses, artificial lakes, thick woods, orchards, vineyards, hills, groves, &c. The entrance of this stately edifice was wide enough to receive a colossus, representing Nero, 120 feet high: the galleries, which consisted of three rows of tall pillars, were each a full mile in length; the lakes were encompassed with magnificent buildings, in the manner of cities; and the woods stocked with all manner of wild beasts. The house itself was tiled with gold: the walls were covered with the same metal, and richly adorned with precious stones and mother-of-pearl, which in those days was valued above gold: the timber-work and ceil-

Rome.

ings of the rooms were inlaid with gold and ivory: the roof of one of the banqueting-rooms resembled the firmament both in its figure and motion, turning incessantly about night and day, and showering all sorts of sweet waters. When this magnificent structure was finished, Nero approved of it only so far as to say, that *at length he began to lodge like a man.* Pliny tells us, that this palace extended quite round the city. Nero, it seems, did not finish it; for the first order Otho signed was, as we read in Suetonius, for fifty millions of sesterces to be employed in perfecting the golden palace which Nero had begun.

307
Undertakes
to cut a
canal from
Avernus to
the Tiber.

The projectors of the plan were Severus and Celer, two bold and enterprising men, who soon after put the emperor upon a still more expensive and arduous undertaking, namely, that of cutting a canal through hard rocks and steep mountains, from the lake Avernus to the mouth of the Tiber, 160 miles in length, and of such breadth that two galleys of five ranks of oars might easily pass abreast. His view in this was to open a communication between Rome and Campania, free from the troubles and dangers of the sea; for this very year, a great number of vessels laden with corn were shipwrecked at Misenum, the pilots choosing rather to venture out in a violent storm, than not to arrive at the time they were expected by Nero. For the executing of this great undertaking, the emperor ordered the prisoners from all parts to be transported into Italy; and such as were convicted, whatever their crimes were, to be condemned only to his works. Nero, who undertook nothing with more ardour and readiness than what was deemed impossible, expended incredible sums in this rash undertaking, and exerted all his might to cut through the mountains adjoining to the lake Avernus; but, not being able to remove by art the obstacles of nature, he was in the end obliged to drop the enterprise.

308
Rome re-
built.

The ground that was not taken up by the foundations of Nero's own palace, he assigned for houses, which were not placed, as after the burning of the city by the Gauls, at random, and without order; but the streets were laid out regularly, spacious and straight; the edifices restrained to a certain height, perhaps of 70 feet, according to the plan of Augustus; the courts were widened; and to all the great houses which stood by themselves, and were called *isles*, large porticoes were added, which Nero engaged to raise at his own expence, and to deliver to each proprietor the squares about them clear from all rubbish. He likewise promised rewards according to every man's rank and substance; and fixed a day for the performance of his promise, on condition that against that day their several houses and palaces were finished. He moreover made the following wise regulations to obviate such a dreadful calamity for the future; to wit, That the new buildings should be raised to a certain height without timber; that they should be arched with stone from the quarries of Gabii and Alba, which were proof against fire; that over the common springs, which were diverted by private men for their own uses, overseers should be placed to prevent that abuse; that every citizen should have ready in his house some machine proper to extinguish the fire; that no wall should be common to two houses, but every house be inclosed within its own pecu-

liar walls, &c. Thus the city in a short time rose out of its ashes with new lustre, and more beautiful than ever. However, some believed, that the ancient form was more conducive to health, the rays of the sun being hardly felt on account of the narrowness of the streets, and the height of the buildings, whereas now there was no shelter against the scorching heat. We are told, that Nero designed to extend the walls to Ostia, and to bring from thence by a canal the sea into the city.

Rome.

The emperor used every art to throw the odium of this conflagration upon the Christians, who were at that time gaining ground in Rome. Nothing could be more dreadful than the persecution raised against them upon this false accusation, of which an account is given under the article *Ecclesiastical HISTORY*. Hitherto, however, the citizens of Rome seemed comparatively exempted from his cruelties, which chiefly fell upon strangers and his nearest connections; but a conspiracy formed against him by Piso, a man of great power and integrity, which was prematurely discovered, opened a new train of suspicions that destroyed many of the principal families in Rome. This conspiracy, in which several of the chief men of the city were concerned, was first discovered by the indiscreet zeal of a woman named *Epicharis*, who, by some means now unknown, had been let into the plot, which she revealed to Volusius, a tribune, in order to prevail upon him to be an accomplice. Volusius, instead of coming into her design, went and discovered what he had learned to Nero, who immediately put Epicharis in prison. Soon after, a freedman belonging to Scænius, one of the accomplices, made a farther discovery. The conspirators were examined apart; and as their testimonies differed, they were put to the torture. Natalis was the first who made a confession of his own guilt and that of many others. Scænius gave a list of the conspirators still more ample. Lucan, the poet, was amongst the number; and he, like the rest, in order to save himself, still farther enlarged the catalogue, naming, among others, Attilia, his own mother. Epicharis was now, therefore, again called upon and put to the torture; but her fortitude was proof against all the tyrant's cruelty; neither scourging nor burning, nor all the malicious methods used by the executioners, could extort the smallest confession. She was therefore remanded to prison, with orders to have her tortures renewed the day following. In the meantime, she found an opportunity of strangling herself with her handkerchief, by hanging it against the back of her chair. On the discoveries already made, Piso, Lateranus, Fennius Rufus, Subrius Flavius, Sulpicius Asper, Vestinus the consul, and numberless others, were all executed without mercy. But the two most remarkable personages who fell on this occasion were Seneca the philosopher, and Lucan the poet, who was his nephew. It is not certainly known whether Seneca was really concerned in this conspiracy or not.— This great man had for some time perceived the outrageous conduct of his pupil; and, finding himself incapable of controuling his savage disposition, had retired from court into solitude and privacy. However, his retreat did not now protect him; for Nero, either having real testimony against him, or else hating him for his virtues, sent a tribune to inform him that he was suspected

309
The conspi-
racy of Piso.

Rome. suspected as an accomplice, and soon after sent him an order to put himself to death, with which he complied.

In this manner was the whole city filled with slaughter, and frightful instances of treachery. No master was secure from the vengeance of his slaves, nor even parents from the baser attempts of their children. Not only throughout Rome, but the whole country round, bodies of soldiers were seen in pursuit of the suspected and the guilty. Whole crowds of wretches loaded with chains were led every day to the gates of the palace, to wait their sentence from the tyrant's own lips. He always presided at the torture in person, attended by Tigellinus, captain of the guard, who, from being the most abandoned man in Rome, was now become his principal minister and favourite.

Nor were the Roman provinces in a better situation than the capital city. The example of the tyrant seemed to influence his governors, who gave instances not only of their rapacity, but of their cruelty, in every part of the empire. In the seventh year of his reign, the Britons revolted, under the conduct of their queen Boadicea*; but were at last so completely defeated, that ever after, during the continuance of the Romans among them, they lost not only all hopes, but even all desire of freedom.

* See *England*.

310
Success
against
the
Parthians,
&c.

A war also was carried on against the Parthians for the greatest part of this reign, conducted by Corbulo; who, after many successes, had dispossessed Tiridates, and settled Tigranes in Armenia in his room. Tiridates, however, was soon after restored by an invasion of the Parthians into that country; but being once more opposed by Corbulo, the Romans and Parthians came to an agreement, that Tiridates should continue to govern Armenia, upon condition that he should lay down his crown at the feet of the emperor's statue, and receive it as coming from him; all which he shortly after performed. A ceremony, however, which Nero desired to have repeated to his person; wherefore by letters and promises he invited Tiridates to Rome, granting him the most magnificent supplies for his journey. Nero attended his arrival with very sumptuous preparations. He received him seated on a throne, accompanied by the senate standing round him, and the whole army drawn out with all imaginable splendour.—Tiridates ascended the throne with great reverence; and approaching the emperor fell down at his feet, and in the most abject terms acknowledged himself his slave. Nero raised him up, telling him with equal arrogance, that he did well, and that by his submission he had gained a kingdom which his ancestors could never acquire by their arms. He then placed the crown on his head, and, after the most costly ceremonies and entertainments, he was sent back to Armenia, with incredible sums of money to defray the expences of his return.

311
Revolt of
the Jews.

In the 12th year of this emperor's reign, the Jews also revolted, having been severely oppressed by the Roman governor. It is said that Florus, in particular, was arrived at that degree of tyranny, that by public proclamation he gave permission to plunder the country, provided he received half the spoil. These oppressions drew such a train of calamities after them, that the sufferings of all other nations were slight in comparison to what this devoted people afterwards endured, as is related under the article *Jews*. In the mean time,

Rome. Nero proceeded in his cruelties at Rome with unabated severity.

The valiant Corbulo, who had gained so many victories over the Parthians, could not escape his fury. Nor did the empress Poppæa herself escape; whom, in a fit of anger, he kicked when she was pregnant, by which she miscarried and died. At last the Romans began to grow weary of such a monster, and there appeared a general revolution in all the provinces.

The first appeared in Gaul, under Julius Vindex, who commanded the legions there, and publicly protested against the tyrannical government of Nero. He appeared to have no other motive for this revolt than that of freeing the world from an oppressor; for when it was told him that Nero had set a reward upon his head of 10,000,000 of sesterces, he made this gallant answer, "Whoever brings me Nero's head, shall, if he pleases, have mine." But still more to show that he was not actuated by motives of private ambition, he proclaimed Sergius Galba emperor, and invited him to join in the revolt. Galba, who was at that time governor of Spain, was equally remarkable for his wisdom in peace and his courage in war. But as all talents under corrupt princes are dangerous, he for some years had seemed willing to court obscurity, giving himself up to an inactive life, and avoiding all opportunities of signaling his valour. He now therefore, either through the caution attending old age, or from a total want of ambition, appeared little inclined to join with Vindex, and continued for some time to deliberate with his friends on the part he should take.

In the mean time, Nero, who had been apprised of the proceedings against him in Gaul, appeared totally regardless of the danger, privately flattering himself that the suppression of this revolt would give him an opportunity for fresh confiscations. But the actual revolt of Galba, the news of which arrived soon after, affected him in a very different manner. The reputation of that general was such, that from the moment he declared against him, Nero considered himself as undone. He received the account as he was at supper; and instantly, struck with terror, overturned the table with his foot, breaking two crystal vases of immense value. He then fell into a swoon; from which when he recovered, he tore his clothes, and struck his head, crying out, "that he was utterly undone." He then began to meditate slaughters more extensive than he yet had committed. He resolved to massacre all the governors of provinces, to destroy all exiles, and to murder all the Gauls in Rome, as a punishment for the treachery of their countrymen. In short, in the wildness of his rage, he thought of poisoning the whole senate, of burning the city, and turning the lions kept for the purposes of the theatre out upon the people. These designs being impracticable, he resolved at last to face the danger in person. But his very preparations served to mark the infatuation of his mind. His principal care was, to provide waggons for the convenient carriage of his musical instruments; and to dress out his concubines like Amazons, with whom he intended to face the enemy. He also made a resolution, that if he came off with safety and empire, he would appear again upon the theatre with the lute, and would equip himself as a pantomime.

While Nero was thus frivolously employed, the revolt became

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Revolt of
Vindex in
Gaul,

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and of
Galba.

Rome.

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Miserable
situation of
Nero.

became general. Not only the armies in Spain and Gaul, but also the legions in Germany, Africa, and Lusitania, declared against him. Virginius Rufus alone, who commanded an army on the Upper Rhine, for a while continued in suspense; during which his forces, without his permission, falling upon the Gauls, routed them with great slaughter, and Vindex slew himself. But this ill success no way advanced the interests of Nero; he was so detested by the whole empire, that he could find none of the armies faithful to him, however they might disagree with each other. He therefore called for Locusta to furnish him with poison; and, thus prepared for the worst, he retired to the Servilian gardens, with a resolution of flying into Egypt. He accordingly dispatched the freedmen, in whom he had the most confidence, to prepare a fleet at Ostia; and in the meanwhile founded, in person, the tribunes and centurions of the guard, to know if they were willing to share his fortunes. But they all excused themselves, under divers pretexts. One of them had the boldness to answer him by part of a line from Virgil: *Usque adeone miserum est mori?* "Is death then such a misfortune?" Thus destitute of every resource, all the expedients that cowardice, revenge, or terror could produce, took place in his mind by turns. He at one time resolved to take refuge among the Parthians; at another, to deliver himself up to the mercy of the insurgents: one while, he determined to mount the rostrum, to ask pardon for what was past, and to conclude with promises of amendment for the future. With these gloomy deliberations he went to bed; but waking about midnight, he was surprised to find his guards had left him. The prætorian soldiers, in fact, having been corrupted by their commander, had retired to their camp, and proclaimed Galba emperor. Nero immediately sent for his friends to deliberate upon his present exigence; but his friends also forsook him. He went in person from house to house; but all the doors were shut against him, and none were found to answer his inquiries. While he was pursuing this inquiry, his very domestics followed the general defection; and having plundered his apartment, escaped different ways. Being now reduced to desperation, he desired that one of his favourite gladiators might come and dispatch him: but even in this request there was none found to obey. "Alas! (cried he) have I neither friend nor enemy?" And then running desperately forth, he seemed resolved to plunge headlong into the Tiber. But just then his courage beginning to fail him, he made a sudden stop, as if willing to recollect his reason; and asked for some secret place, where he might re-assume his courage, and meet death with becoming fortitude. In this distress, Phaon, one of his freedmen, offered him his country-house, at about four miles distant, where he might for some time remain concealed. Nero accepted his offer; and, half-dressed as he was, with his head covered, and hiding his face with a handkerchief, he mounted on horseback, attended by four of his domestics, of whom the wretched Sporus was one. His journey, though quite short, was crowded with adventures. Round him he heard nothing but confused noises from the camp, and the cries of the soldiers, imprecating a thousand evils upon his head. A passenger, meeting him on the way, cried, "There go men in pursuit of Nero." Another asked him, if there was any news of Nero in the city? His

horse taking fright at a dead body that lay near the road, he dropped his handkerchief; and a soldier that was near, addressed him by name. He now therefore quitted his horse, and forsaking the highway, entered a thicket that led towards the back part of Phaon's house, through which he crept, making the best of his way among the reeds and brambles, with which the place was overgrown. When he was arrived at the back part of the house, while he was waiting till there should be a breach made in the wall, he took up some water in the hollow of his hands from a pool to drink; saying, "To this liquor is Nero reduced." When the hole was made large enough to admit him, he crept in upon all-fours, and took a short repose upon a wretched pallet, that had been prepared for his reception. Being pressed by hunger, he demanded somewhat to eat: they brought him a piece of brown bread, which he refused; but he drank a little water. During this interval, the senate finding the prætorian guards had taken part with Galba, declared him emperor, and condemned Nero to die *more majorum*; that is, "according to the rigour of the ancient laws." These dreadful tidings were quickly brought by one of Phaon's slaves from the city, while Nero yet continued lingering between his hopes and his fears. When he was told of the resolution of the senate against him, he asked the messenger what he meant by being punished "according to the rigour of the ancient laws?" To this he was answered, that the criminal was to be stripped naked, his head was to be fixed in a pillory, and in that posture he was to be scourged to death. Nero was so terrified at this, that he seized two poniards which he had brought with him, and examining their points, returned them to their sheaths, saying, that the fatal moment was not yet arrived. However, he had little time to spare; for the soldiers who had been sent in pursuit of him were just then approaching the house: wherefore hearing the found of the horses feet, he set a dagger to his throat, with which, by the assistance of Epaphroditus, his freedman and secretary, he gave himself a mortal wound. He was not quite dead when one of the cen-

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His death.

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Uneasiness
of Galba in
the begin-
ning of his
reign.
Galba was 72 years old when he was declared emperor, and was then in Spain with his legions. However, he soon found that his being raised to the throne was but an inlet to new disquietudes. His first embarkment arose from a disorder in his own army; for upon his approaching the camp, one of the wings of horse repenting of their choice, prepared to revolt, and he found it no easy matter to reconcile them to their duty. He also narrowly escaped assassination from some slaves, who were presented to him by one of Nero's freedmen with that intent. The death of Vindex also served to add not a little to his disquietudes; for upon his very entrance into the empire he had some thoughts of putting an end to his own life. But hearing from Rome that Nero was dead, and the empire transferred to him, he immediately assumed the title and ensigns of command. In his journey towards Rome he

Rome. he was met by Rufus Virginius, who, finding the senate had decreed him the government, came to yield him obedience. This general had more than once refused the empire himself, which was offered him by his soldiers; alleging, that the senate alone had the disposal of it, and from them only he would accept the honour.

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Faults in
his admini-
stration.

Galba having been brought to the empire by means of his army, was at the same time willing to suppress their power to commit any future disturbance. His first approach to Rome was attended with one of those rigorous strokes of justice which ought rather to be denominated *cruelty* than any thing else. A body of mariners, whom Nero had taken from the oar and enlisted among the legions, went to meet Galba, three miles from the city, and with loud importunities demanded a confirmation of what his predecessor had done in their favour. Galba, who was rigidly attached to the ancient discipline, deferred their request to another time. But they, considering this delay as equivalent to an absolute denial, insisted in a very disrespectful manner; and some of them even had recourse to arms: whereupon Galba ordered a body of horse attending him to ride in among them, and thus killed 7000 of them; but not content with this punishment, he afterwards ordered them to be decimated. Their insolence demanded correction; but such extensive punishments deviated into cruelty. His next step to curb the insolence of the soldiers, was his discharging the German cohort, which had been established by the former emperors as a guard to their persons. Those he sent home to their own country unrewarded, pretending they were disaffected to his person. He seemed to have two other objects also in view; namely, to punish those vices which had come to an enormous height in the last reign, with the strictest severity; and to replenish the exchequer, which had been quite drained by the prodigality of his predecessors. But these attempts only brought on him the imputation of severity and avarice; for the state was too much corrupted to admit of such an immediate transition from vice to virtue. The people had long been maintained in sloth and luxury by the prodigality of the former emperors, and could not think of being obliged to seek for new means of subsistence, and to retrench their superfluities. They began, therefore, to satirize the old man, and turn the simplicity of his manners into ridicule. Among the marks of avarice recorded of him, he is said to have groaned upon having an expensive soup served up to his table; he is said to have presented to his steward, for his fidelity, a plate of beans; a famous player upon the flute, named *Canus*, having greatly delighted him, it is reported, that he drew out his purse, and gave him five-pence, telling him, that it was private and not public money. By such ill-judged frugalities, at such a time, Galba began to lose his popularity; and he, who before his accession was esteemed by all, being become emperor, was considered with ridicule and contempt. But there are some circumstances alleged against him, less equivocal than those trifling ones already mentioned. Shortly after his coming to Rome, the people were presented with a most grateful spectacle, which was that of Locusta, Elius, Policletus, Petronius, and Petinus, all the bloody ministers of Nero's cruelty, drawn in fetters through the city, and publicly executed. But Tigellinus, who had been more active

than all the rest, was not there. The crafty villain had taken care for his own safety, by the largeness of his bribes: and though the people cried out for vengeance against him at the theatre and at the circus, yet the emperor granted him his life and pardon. Helotus the eunuch, also, who had been the instrument of poisoning Claudius, escaped, and owed his safety to the proper application of his wealth. Thus, by the inequality of his conduct, he became despicable to his subjects. At one time shewing himself severe and frugal, at another remiss and prodigal; condemning some illustrious persons without any hearing, and pardoning others though guilty: in short, nothing was done but by the mediation of his favourites; all offices were venal, and all punishments redeemable by money.

Affairs were in this unsettled posture at Rome, when the provinces were yet in a worse condition. The success of the army in Spain in choosing an emperor induced the legions in the other parts to wish for a similar opportunity. Accordingly, many seditions were kindled, and several factions promoted in different parts of the empire, but particularly in Germany. There were then in that province two Roman armies; the one which had lately attempted to make Rufus Virginius emperor, as has been already mentioned, and which was commanded by his lieutenant; the other commanded by Vitellius, who long had an ambition to obtain the empire for himself. The former of these armies despising their present general, and considering themselves as suspected by the emperor for having been the last to acknowledge his title, resolved now to be foremost in denying it. Accordingly, when they were summoned to take the oaths of homage and fidelity, they refused to acknowledge any other commands but those of the senate. This refusal they backed by a message of the prætorian bands, importing, that they were resolved not to acquiesce in the election of an emperor created in Spain, and desiring that the senate should proceed to a new choice.

Galba being informed of this commotion, was sensible, that, besides his age, he was less respected for want of an heir. He resolved therefore to put what he had formerly designed in execution, and to adopt some person whose virtues might deserve such advancement, and protect his declining age from danger. His favourites understanding his determination, instantly resolved to give him an heir of their own choosing; so that there arose a great contention among them upon this occasion. Otho made warm application for himself; alleging the great services he had done the emperor, as being the first man of note who came to his assistance when he had declared against Nero. However, Galba, being fully resolved to consult the public good alone, rejected his suit; and on a day appointed ordered Piso Lucinianus to attend him. The character given by historians of Piso is, that he was every way worthy of the honour designed him. He was noway related to Galba; and had no other interest but merit to recommend him to his favour. Taking this youth therefore by the hand, in the presence of his friends, he adopted him to succeed in the empire, giving him the most wholesome lessons for guiding his future conduct. Piso's conduct showed that he was highly deserving this distinction: in all his deportment there appeared such modesty, firmness, and equality of mind,

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Rome. mind, as bespoke him rather capable of discharging, than ambitious of obtaining, his present dignity. But the army and the senate did not seem equally disinterested upon this occasion; they had been so long used to bribery and corruption, that they could now bear no emperor who was not in a capacity of satisfying their avarice. The adoption therefore of Piso was but coldly received; for his virtues were no recommendation in a nation of universal depravity.

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Otho declared emperor.

Otho now finding his hopes of adoption wholly frustrated, and still further stimulated by the immense load of debt which he had contracted by his riotous way of living, resolved upon obtaining the empire by force, since he could not by peaceable succession. In fact, his circumstances were so very desperate, that he was heard to say, that it was equal to him whether he fell by his enemies in the field or by his creditors in the city. He therefore raised a moderate sum of money, by selling his interest to a person who wanted a place; and with this bribed two subaltern officers in the pretorian bands, supplying the deficiency of largesses by promises and plausible pretences. Having in this manner, in less than eight days, corrupted the fidelity of the soldiers, he stole secretly from the emperor while he was sacrificing; and assembling the soldiers, in a short speech urged the cruelties and avarice of Galba. Finding these his invectives received with universal shouts by the whole army, he entirely threw off the mask, and avowed his intentions of dethroning him. The soldiers being ripe for sedition, immediately seconded his views: taking Otho upon their shoulders, they instantly proclaimed him emperor; and, to strike the citizens with terror, carried him with their swords drawn into the camp.

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Galba murdered.

Galba, in the mean time, being informed of the revolt of the army, seemed utterly confounded, and in want of sufficient resolution to face an event which he should have long foreseen. In this manner the poor old man continued wavering and doubtful; till at last, being deluded by a false report of Otho's being slain, he rode into the forum in complete armour, attended by many of his followers. Just at the same instant a body of horse sent from the camp to destroy him entered on the opposite side, and each party prepared for the encounter. For some time hostilities were suspended on each side; Galba, confused and irresolute, and his antagonists struck with horror at the baseness of their enterprise. At length, however, finding the emperor in some measure deserted by his adherents, they rushed in upon him, trampling under foot the crowds of people that then filled the forum. Galba seeing them approach, seemed to recollect all his former fortitude; and bending his head forward, bid the assassins strike it off if it were for the good of the people. This was quickly performed; and his head being set upon the point of a lance, was presented to Otho, who ordered it to be contemptuously carried round the camp; his body remaining exposed in the streets till it was buried by one of his slaves. He died in the 73d year of his age, after a short reign of seven months.

No sooner was Galba thus murdered, than the senate and people ran in crowds to the camp, contending who should be foremost in extolling the virtues of the new emperor, and depressing the character of him they had so unjustly destroyed. Each laboured to ex-

cel the rest in his instances of homage; and the less his affections were for him, the more did he indulge all the vehemence of exaggerated praise. Otho finding himself surrounded by congratulating multitudes, immediately repaired to the senate, where he received the titles usually given to the emperors; and from thence returned to the palace, seemingly resolved to reform his life, and assume manners becoming the greatness of his station.

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He began his reign by a signal instance of clemency, in pardoning Marius Celsus, who had been highly favoured by Galba; and not contented with barely forgiving, he advanced him to the highest honours; asserting, that "fidelity deserved every reward." This act of clemency was followed by another of justice, equally agreeable to the people. Tigellinus, Nero's favourite, he who had been the promoter of all his cruelties, was now put to death; and all such as had been unjustly banished, or stripped, at his instigation, during Nero's reign, were restored to their country and fortunes.

In the mean time, the legions in Lower Germany³²⁰ having been purchased by the large gifts and specious promises of Vitellius their general, were at length induced to proclaim him emperor; and regardless of the senate, declared that they had an equal right to appoint to that high station with the cohorts at Rome. The news of this conduct in the army soon spread consternation throughout Rome; but Otho was particularly struck with the account, as being apprehensive that nothing but the blood of his countrymen could decide a contest of which his own ambition only was the cause. He now therefore sought to come to an agreement with Vitellius; but this not succeeding, both sides began their preparations for war. News being received that Vitellius was upon his march to Italy, Otho departed from Rome with a vast army to oppose him. But though he was very powerful with regard to numbers, his men, being little used to war, could not be relied on. He seemed by his behaviour sensible of the disproportion of his forces; and he is said to have been tortured with frightful dreams and the most uneasy apprehensions. It is also reported by some, that one night fetching many profound sighs in his sleep, his servants ran hastily to his bed-side, and found him stretched on the ground. He alleged he had seen the ghost of Galba, which had, in a threatening manner, beat and pushed him from the bed; and he afterwards used many expiations to appease it. However this be, he proceeded with a great show of courage till he arrived at the city of Brixellum, on the river Po, where he remained, sending his forces before him under the conduct of his generals Suetonius and Celsus, who made what haste they could to give the enemy battle. The army of Vitellius, which consisted of 70,000 men, was commanded by his generals Valens and Cecina, he himself remaining in Gaul in order to bring up the rest of his forces. Thus both sides hastened to meet each other with so much animosity and precipitation, that three considerable battles were fought in the space of three days. One near Placentia, another near Cremona, and a third at a place called *Cassor*; in all which Otho had the advantage. But these successes were but of short-lived continuance; for Valens and Cecina, who had hitherto acted separately, joining

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joining their forces, and reinforcing their armies with fresh supplies, resolved to come to a general engagement. Otho, who by this time had joined his army at a little village called *Bedriacum*, finding the enemy, notwithstanding their late losses, inclined to come to a battle, resolved to call a council of war to determine upon the proper measures to be taken. His generals were of opinion to protract the war: but others, whose inexperience had given them confidence, declared, that nothing but a battle could relieve the miseries of the state; protesting, that Fortune, and all the gods, with the divinity of the emperor himself, favoured the design, and would undoubtedly prosper the enterprise. In this advice Otho acquiesced: he had been for some time so uneasy under the war, that he seemed willing to exchange suspense for danger. However, he was so surrounded with flatterers, that he was prohibited from being personally present in the engagement, but prevailed upon to reserve himself for the fortune of the empire, and wait the event at Brixellum. The affairs of both armies being thus adjusted, they came to an engagement at *Bedriacum*; where, in the beginning, those on the side of Otho seemed to have the advantage. At length, the superior discipline of the legions of Vitellius turned the scale of victory. Otho's army fled in great confusion towards *Bedriacum*, being pursued with a miserable slaughter all the way.

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Despairs,
and kills
himself

In the mean time, Otho waited for the news of the battle with great impatience, and seemed to tax his messengers with delay. The first account of his defeat was brought him by a common soldier, who had escaped from the field of battle. However, Otho, who was still surrounded by flatterers, was desired to give no credit to a base fugitive, who was guilty of falsehood only to cover his own cowardice. The soldier, however, still persisted in the veracity of his report; and, finding none inclined to believe him, immediately fell upon his sword, and expired at the emperor's feet. Otho was so much struck with the death of this man, that he cried out, that he would cause the ruin of no more such valiant and worthy soldiers, but would end the contest the shortest way; and therefore having exhorted his followers to submit to Vitellius, he put an end to his own life.

It was no sooner known that Otho had killed himself, than all the soldiers repaired to Virginius, the commander of the German legions, earnestly intreating him to take upon him the reins of government; or at least, intreating his mediation with the generals of Vitellius in their favour. Upon his declining their request, Rubrius Gallus, a person of considerable note, undertook their embassy to the generals of the conquering army; and soon after obtained a pardon for all the adherents of Otho.

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Vitellius
declared
emperor.

Vitellius was immediately after declared emperor by the senate; and received the marks of distinction which were now accustomed to follow the appointment of the strongest side. At the same time, Italy was severely distressed by the soldiers, who committed such outrages as exceeded all the oppressions of the most calamitous war. Vitellius, who was yet in Gaul, resolved, before he set out for Rome, to punish the prætorian cohorts, who had been the instruments of all the late disturbances in the state. He therefore caused them to be disbanded, and deprived of the name and honour of soldiers. He

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also ordered 150 of those who were most guilty to be put to death.

As he approached towards Rome, he passed through the towns with all imaginable splendor; his passage by water was in painted galleys, adorned with garlands of flowers, and profusely furnished with the greatest delicacies. In his journey there was neither order nor discipline among his soldiers; they plundered wherever they came with impunity; and he seemed no way displeased with the licentiousness of their behaviour.

Upon his arrival at Rome, he entered the city, not as a place he came to govern with justice, but as a town that became his own by the laws of conquest. He marched through the streets mounted on horseback, all in armour; the senate and people going before him, as if the captives of his late victory. He the next day made the senate a speech, in which he magnified his own actions, and promised them extraordinary advantages from his administration. He then harangued the people, who, being now long accustomed to flatter all in authority, highly applauded and blessed their new emperor.

In the mean time, his soldiers being permitted to satiate themselves in the debaucheries of the city, grew totally unfit for war. The principal affairs of the state were managed by the lowest wretches. Vitellius, more abandoned than they, gave himself up to all kinds of luxury and profuseness; but gluttony was his favourite vice, so that he brought himself to a habit of vomiting, in order to renew his meals at pleasure. His entertainments, though seldom at his own cost, were prodigiously expensive; he frequently invited himself to the tables of his subjects, breakfasting with one, dining with another, and supping with a third, all in the same day. The most memorable of these entertainments was that made for him by his brother on his arrival at Rome. In this were served up 2000 several dishes of fish, and 7000 of fowl, of the most valuable kinds. But in one particular dish he seemed to have outdone all the former profusion of the most luxurious Romans. This dish, which was of such magnitude as to be called the *shield of Minerva*, was filled with an olio made from the sounds of the fish called *scarri*, the brains of pheasants and woodcocks, the tongues of the most costly birds, and the spawn of lampreys brought from the Caspian sea. In order to cook this dish properly, a furnace was built in the fields, as it was too large for any kitchen to contain it.

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His shame-
ful glut-
tony, and
other vices.

In this manner did Vitellius proceed; so that Josephus tells us, if he had reigned long, the whole empire would not have been sufficient to have maintained his gluttony. All the attendants of his court sought to raise themselves, not by their virtues and abilities, but the sumptuousness of their entertainments. This prodigality produced its attendant, want; and that, in turn, gave rise to cruelty.

Those who had formerly been his associates were now destroyed without mercy. Going to visit one of them in a violent fever, he mingled poison with his water, and delivered it to him with his own hands. He never pardoned those money-lenders who came to demand payment of his former debts. One of the number coming to salute him, he immediately ordered him to be carried off to execution; but shortly after, commanding him to be brought back, when all his attend-

D d

ants

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ants thought it was to pardon the unhappy creditor, Vitellius gave them soon to understand that it was merely to have the pleasure of feeding his eyes with his torments. Having condemned another to death, he executed his two sons with him, only for their presuming to intercede for their father. A Roman knight being dragged away to execution, and crying out that he had made the emperor his heir, Vitellius demanded to see the will, where finding himself joint heir with another, he ordered both to be executed, that he might enjoy the legacy without a partner.

By the continuance of such vices and cruelties as these he became odious to all mankind, and the astrologers began to prognosticate his ruin. A writing was set up in the forum to this effect; "We, in the name of the ancient Chaldeans, give Vitellius warning to depart this life by the kalends of October." Vitellius, on his part, received this information with terror, and ordered all the astrologers to be banished from Rome. An old woman having foretold, that if he survived his mother, he should reign many years in happiness and security, this gave him a desire of putting her to death; which he did, by refusing her sustenance, under the pretence of its being prejudicial to her health. But he soon saw the futility of relying upon such vain prognostications; for his soldiers, by their cruelty and rapine, having become insupportable to the inhabitants of Rome, the legions of the East, who had at first acquiesced in his dominion, began to revolt, and shortly after unanimously resolved to make Vespasian emperor.

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Vespasian
proclaimed
emperor.

Vespasian, who was appointed commander against the rebellious Jews, had reduced most of their country, except Jerusalem, to subjection. The death of Nero, however, had at first interrupted the progress of his arms, and the succession of Galba gave a temporary check to his conquests, as he was obliged to send his son Titus to Rome, to receive that emperor's commands. Titus, however, was so long detained by contrary winds, that he received news of Galba's death before he set sail. He then resolved to continue neuter during the civil wars between Otho and Vitellius; and when the latter prevailed, he gave him his homage with reluctance. But being desirous of acquiring reputation, though he disliked the government, he determined to lay siege to Jerusalem, and actually made preparations for that great undertaking, when he was given to understand that Vitellius was detested by all ranks in the empire. These murmurings increased every day, while Vespasian secretly endeavoured to advance the discontents of the army. By these means they began at length to fix their eyes upon him as the person the most capable and willing to terminate the miseries of his country, and put a period to the injuries it suffered. Not only the legions under his command, but those in Mæsia and Pannonia, came to the same resolution, so that they declared themselves for Vespasian. He was also without his own consent proclaimed emperor at Alexandria, the army there confirming it with extraordinary applause, and paying their accustomed homage. Still, however, Vespasian seemed to decline the honour done him; till at length his soldiers compelled him, with their threats of immediate death, to accept a title which, in all probability, he wished to enjoy. He now, therefore, called a council of war: where it was resolved, that his son Titus should carry on the war against the Jews; and that Mutianus,

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one of his generals, should, with the greatest part of his legions, enter Italy; while Vespasian himself should levy forces in all parts of the east, in order to reinforce them in case of necessity.

During these preparations, Vitellius, though buried in sloth and luxury, was resolved to make an effort to defend the empire; wherefore his chief commanders, Valens and Cecina, were ordered to make all possible preparations to resist the invaders. The first army that entered Italy with an hostile intention was under the command of Antonius Primus, who was met by Cecina near Cremona. A battle was expected to ensue; but a negotiation taking place, Cecina was prevailed upon to change sides, and declare for Vespasian. His army, however, quickly repented of what they had done; and imprisoning their general, attacked Antonius, though without a leader. The engagement continued during the whole night: in the morning, after a short repast, both armies engaged a second time; when the soldiers of Antonius saluting the rising sun, according to custom, the Vitellians supposing that they had received new reinforcements, betook themselves to flight, with the loss of 30,000 men. Shortly after, freeing their general Cecina from prison, they prevailed upon him to intercede with the conquerors for pardon; which they obtained, though not without the most horrid barbarities committed upon Cremona, the city to which they had retired for shelter.

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Vitellius
defeated.

When Vitellius was informed of the defeat of his army, his former insolence was converted into an extreme of timidity and irresolution. At length he commanded Julius Priscus and Alphenus Varus, with some forces that were in readiness, to guard the passes of the Apennines, to prevent the enemy's march to Rome; reserving the principal body of his army to secure the city, under the command of his brother Lucius. But being persuaded to repair to his army in person, his presence only served to increase the contempt of his soldiers. He there appeared irresolute, and still luxurious, without counsel or conduct, ignorant of war, and demanding from others those instructions which it was his duty to give. After a short continuance in the camp, and understanding the revolt of his fleet, he returned once more to Rome: but every day only served to render his affairs still more desperate; till at last he made offers to Vespasian of resigning the empire, provided his life were granted, and a sufficient revenue for his support. In order to enforce his request, he issued from his palace in deep mourning, with all his domestics weeping round him. He then went to offer the sword of justice to Cecilius, the consul; which he refusing, the abject emperor prepared to lay down the ensigns of the empire in the temple of Concord. But being interrupted by some, who cried out, That he himself was Concord, he resolved, upon so weak an encouragement, still to maintain his power, and immediately prepared for his defence.

During this fluctuation of counsels, one Sabinus, who had advised Vitellius to resign, perceiving his desperate situation, resolved, by a bold step, to oblige Vespasian, and accordingly seized upon the Capitol. But he was premature in his attempt; for the soldiers of Vitellius attacked him with great fury, and, prevailing by their numbers, soon laid that beautiful building in ashes. During this dreadful conflagration, Vitellius was feasting.

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The Cap-
itol burnt.

Rome.

ing in the palace of Tiberius, and beholding all the horrors of the assault with great satisfaction. Sabinus was taken prisoner, and shortly after executed by the emperor's command. Young Domitian, his nephew, who was afterwards emperor, escaped by flight, in the habit of a priest; and all the rest who survived the fire were put to the sword.

330
Dreadful
situation
of Rome.

But this success served little to improve the affairs of Vitellius. He vainly sent messenger after messenger to bring Vespasian's general, Antonius, to a composition. This commander gave no answer to his requests, but still continued his march towards Rome. Being arrived before the walls of the city, the forces of Vitellius were resolved upon defending it to the utmost extremity. It was attacked on three sides with the utmost fury; while the army within, rallying upon the besiegers, defended it with equal obstinacy. The battle lasted a whole day, till at last the besieged were driven into the city, and a dreadful slaughter made of them in all the streets, which they vainly attempted to defend. In the mean time, the citizens stood by, looking on as both sides fought; and, as if they had been in a theatre, clapped their hands; at one time encouraging one party, and again the other. As either turned their backs, the citizens would then fall upon them in their places of refuge, and so kill and plunder them without mercy. But what was still more remarkable, during these dreadful slaughters both within and without the city, the people would not be prevented from celebrating one of their riotous feasts, called the *Saturnalia*; so that at one time might have been seen a strange mixture of mirth and misery, of cruelty and lewdness; in one place, burials and slaughters; in another, drunkenness and feasting; in a word, all the horrors of a civil war, and all the licentiousness of the most abandoned security!

During this complicated scene of misery, Vitellius retired privately to his wife's house, upon Mount Aventine, designing that night to fly to the army commanded by his brother at Tarracina. But, quite incapable, through fear, of forming any resolution, he changed his mind, and returned again to his palace, now void and desolate; all his slaves forsaking him in his distress, and purposely avoiding his presence. There, after wandering for some time quite disconsolate, and fearing the face of every creature he met, he hid himself in an obscure corner, from whence he was soon taken by a party of the conquering soldiers. Still, however, willing to add a few hours more to his miserable life, he begged to be kept in prison till the arrival of Vespasian at Rome, pretending that he had secrets of importance to discover. But his entreaties were vain: the soldiers binding his hands behind him, and throwing an halter round his neck, led him along, half naked, into the public forum, upbraiding him, as they proceeded, with all those bitter reproaches their malice could suggest, or his own cruelties deserve. They also tied his hair backwards, as was usual with the most infamous malefactors, and held the point of a sword under his chin, to prevent his hiding his face from the public. Some cast dirt and filth upon him as he passed, others struck him with their hands; some ridiculed the defects of his person, his red fiery face, and the enormous greatness of his belly. At length, being come to the place of punishment, they killed him with many blows; and then dragging the dead body

through the streets with an hook, they threw it, with all possible ignominy, into the river Tiber. Such was the miserable end of this emperor, in the 57th year of his age, after a short reign of eight months and five days.

Rome.

Vitellius being dead, the conquering army pursued their enemies throughout the city, while neither houses nor temples afforded refuge to the fugitives. The streets and public places were all strewed with dead, each man lying slain where it was his misfortune to be overtaken by his unmerciful pursuers. But not only the enemy suffered in this manner, but many of the citizens, who were obnoxious to the soldiers, were dragged from their houses, and killed without any form of trial. The heat of their resentment being somewhat abated, they next began to seek for plunder; and under pretence of searching for the enemy, left no place without marks of their rage or rapacity. Besides the soldiers, the lower rabble joined in these detestable outrages; some slaves came and discovered the riches of their masters; some were detected by their nearest friends; the whole city was filled with outcry and lamentation; in so much, that the former ravages of Otho and Vitellius were now considered as slight evils in comparison.

331
Dreadful
cruelties
practised
by the sol-
diers.

Upon the arrival of Mutianus, general to Vespasian, these slaughters ceased, and the state began to assume the appearance of former tranquillity. Vespasian was declared emperor by the unanimous consent both of the senate and the army; and dignified with all those titles, which now followed rather the power than the merit of those who were appointed to govern. Messengers were dispatched to him into Egypt, desiring his return, and testifying the utmost desire for his government. However, the winter being dangerous for sailing, he deferred his voyage to a more convenient season. Perhaps, also, the dissensions in other parts of the empire retarded his return to Rome; for one Claudius Civilis, in Lower Germany, excited his countrymen to revolt, and destroyed the Roman garrisons, which were placed in different parts of that province. But, to give his rebellion an air of justice, he caused his army to swear allegiance to Vespasian, until he found himself in a condition to throw off the mask. When he thought himself sufficiently powerful, he disclaimed all submission to the Roman government; and having overcome one or two of the lieutenants of the empire, and being joined by such of the Romans as refused obedience to the new emperor, he boldly advanced to give Cerealis, Vespasian's general, battle. In the beginning of this engagement, he seemed successful, breaking the Roman legions, and putting their cavalry to flight. But at length Cerealis by his conduct turned the fate of the day, and not only routed the enemy, but took and destroyed their camp. This engagement, however, was not decisive; several others ensued with doubtful success. An accommodation at length took place. Civilis obtained peace for his countrymen, and pardon for himself; for the Roman empire was, at this time, so torn by its own divisions, that the barbarous nations around made incursions with impunity, and were sure of obtaining peace whenever they thought proper to demand it.

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Vespasian
proclaimed
emperor of
Rome.333
Revolt of
Claudius
Civilis.

During the time of these commotions in Germany, the Sarmatians, a barbarous nation in the north-east of the empire, suddenly passed the river Iser, and marched into the Roman dominions with such celerity and fury,

334
Irruption
of the Sar-
matians.

Rome.

as to destroy several garrisons, and an army under the command of Fonteius Agrippa. They were driven back by Rubrius Gallus, Vespasian's lieutenant, into their native forests; where several attempts were made to confine them by garrisons and forts, placed along the confines of their country. But these hardy nations, having once found the way into the empire, never after desisted from invading it upon every opportunity, till at length they overran and destroyed it entirely.

Vespasian continued some months at Alexandria in Egypt, where it is said he cured a blind and a lame man by touching them. Before he set out for Rome, he gave his son Titus the command of the army which was to lay siege to Jerusalem; while he himself went forward, and was met many miles from Rome by all the senate, and near half the inhabitants, who gave the sincerest testimonies of their joy, in having an emperor of such great and experienced virtues. Nor did he in the least disappoint their expectations; being equally assiduous in rewarding merit, and pardoning his adversaries; in reforming the manners of the citizens, and setting them the best example in his own.

In the mean time, Titus carried on the war against the Jews with vigour, which ended in the terrible destruction of the city, mentioned under the article Jews. After which his soldiers would have crowned Titus as conqueror; but he refused the honour, alleging that he was only an instrument in the hand of Heaven, that manifestly declared its wrath against the Jews. At Rome, however, all mouths were filled with the praises of the conqueror, who had not only showed himself an excellent general, but a courageous combatant: his return, therefore, in triumph, which he did with his father, was marked with all the magnificence and joy that was in the power of men to express. All things that were esteemed valuable or beautiful among men were brought to adorn this great occasion. Among the rich spoils were exposed vast quantities of gold taken out of the temple; but the book of their law was not the least remarkable amongst the magnificent profusion. A triumphal arch was erected upon this occasion, on which were described all the victories of Titus over the Jews, which remains almost entire to this very day. Vespasian likewise built a temple to Peace, wherein were deposited most of the Jewish spoils; and having now calmed all the commotions in every part of the empire, he shut up the temple of Janus, which had been open about five or six years.

Vespasian having thus given security and peace to the empire, resolved to correct numberless abuses which had grown up under the tyranny of his predecessors. To effect this with greater ease, he joined Titus with him in the consulship and tribunitial power, and in some measure admitted him a partner in all the highest offices of the state. He began with restraining the licentiousness of the army, and forcing them back to their pristine discipline. He abridged the processes that had been carried to an unreasonable length in the courts of justice. He took care to rebuild such parts of the city as had suffered in the late commotions; particularly the Capitol, which had been lately burnt; and which he now restored to more than former magnificence. He likewise built a famous amphitheatre, the ruins of which are to this day an evidence of its ancient grandeur. The other ruinous cities of the empire also shared his pater-

nal care; and improved such as were declining, adorned others, and built many anew. In such acts as these he passed a long reign of clemency and moderation; so that it is said, no man suffered by an unjust or a severe decree during his administration.

Julius Sabinus seems to be the only person who was treated with greater rigour than was usual with this emperor. Sabinus was commander of a small army in Gaul, and had declared himself emperor upon the death of Vitellius. But his army was shortly after overcome by Vespasian's general, and he himself compelled to seek safety by flight. He wandered for some time through the Roman provinces, without being discovered: but finding the pursuit every day become closer, he was obliged to hide himself in a cave; and in it he remained concealed for no less than nine years, attended all the time by his faithful wife Empona, who provided provisions for him by day, and repaired to him by night. She was at last discovered in the performance of this pious office, and Sabinus was taken prisoner and carried to Rome. Great intercession was made to the emperor in his behalf: Empona herself appearing with her two children, and imploring her husband's pardon. But neither her tears nor intreaties could prevail; Sabinus had been too dangerous a rival for mercy; so that, though she and her children were spared, her husband suffered by the executioner.

But this seems to be the only instance in which he repented past offences. He caused the daughter of Vitellius, his avowed enemy, to be married into a noble family, and he himself provided her a suitable fortune. One of Nero's servants coming to beg for pardon for having once rudely thrust him out of the palace, and insulted him when in office, Vespasian only took his revenge by serving him just in the same manner. When any plots or conspiracies were formed against him, he disdained to punish the guilty, saying, That they deserved rather his contempt for their ignorance, than his resentment; as they seemed to envy him a dignity of which he daily experienced the uneasiness. His liberality towards the encouragement of arts and learning, was not less than his clemency. He settled a constant salary of 100,000 sesterces upon the teachers of rhetoric. He was particularly favourable to Josephus, the Jewish historian. Quintilian the orator, and Pliny the naturalist, flourished in his reign, and were highly esteemed by him. He was no less an encourager of all other excellencies in art; and invited the greatest masters and artificers from all parts of the world, making them considerable presents, as he found occasion.

Yet all his numerous acts of generosity and magnificence could not preserve his character from the imputation of rapacity and avarice. He revived many obsolete methods of taxation; and even bought and sold commodities himself, in order to increase his fortune. He is charged with advancing the most avaricious governors to the provinces, in order to share their plunder on their return to Rome. He descended to some very unusual and dishonourable imposts, even to the laying a tax upon urine. When his son Titus remonstrated against the meanness of such a tax, Vespasian taking a piece of money, demanded if the smell offended him; and then added, that this very money was produced by urine. But in excuse for this, we must observe, that the exchequer, when Vespasian came to the throne, was

Rome.

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Adventures
and death
of Julius Sa-
binus.

338

Clemency
and good
qualities of
the empe-
ror.

335
Titus sent
against Je-
rusalem.

336
Various
abuses re-
formed by
Vespasian.

was

Rome. was so much exhausted, that he informed the senate that it would require a supply of three hundred millions (of our money) to re-establish the commonwealth. This necessity must naturally produce more numerous and heavy taxations than the empire had hitherto experienced: but while the provinces were thus obliged to contribute to the support of his power, he took every precaution to provide for their safety; so that we find but two insurrections in this reign.—In the fourth year of his reign, Antiochus king of Comagena, holding a private correspondence with the Parthians, the declared enemies of Rome, was taken prisoner in Cilicia, by Pyrrhus the governor, and sent bound to Rome. But Vespasian generously prevented all ill treatment, by giving him a residence at Lacedæmon, and allowing him a revenue suitable to his dignity. About the same time also, the Alani, a barbarous people inhabiting along the river Tanais, abandoned their barren wilds, and invaded the kingdom of Media. From thence passing into Armenia, after great ravages, they overthrew Tiridates, the king of that country, with prodigious slaughter. Titus was at length sent to chastise their insolence: but the barbarians retired at the approach of the Roman army, loaded with plunder; being compelled to wait a more favourable opportunity of renewing their irruptions. These incursions, however, were but a transient storm, the effects of which were soon repaired by the emperor's moderation and assiduity. We are told, that he now formed and established a thousand nations, which had scarcely before amounted to 200. No provinces in the empire lay out of his view and protection. He had, during his whole reign, a particular regard to Britain; his generals, Petilius Cerealis, and Julius Frontinus, brought the greatest part of the island into subjection; and Agricola, who succeeded soon after, completed what they had begun. See ENGLAND.

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Death of
Vespasian.

In this manner, having reigned 10 years, loved by his subjects, and deserving their affection, he was surprised by an indisposition at Campania, which he at once declared would be fatal, crying out, in the spirit of Paganism, "Methinks I am going to be a god." Removing from thence to the city, and afterwards to a country-seat near Reate, he was there taken with a flux, which brought him to the last extremity. However, perceiving his end approach, and just going to expire, he cried out, that an emperor ought to die standing; wherefore, raising himself upon his feet, he expired in the hands of those that sustained him.

340
Titus suc-
ceeds to the
empire.

Titus being joyfully received as emperor, notwithstanding a slight opposition from his brother Domitian, who maintained that he himself was appointed, and that Titus had falsified the will, began his reign with every virtue that became an emperor and a man. During the life of his father there had been many imputations against him; but upon his exaltation to the throne he seemed entirely to take leave of his former vices, and became an example of the greatest moderation and humanity. He had long loved Berenice, sister to Agrippa king of Judea, a woman of the greatest beauty and allurements. But knowing that the connection with her was entirely disagreeable to the people of Rome, he sent her away, notwithstanding their mutual passion and the many arts she used to induce him to change his resolutions. He next discarded all those who had been

Rome. the former ministers of his pleasures, and forbore to countenance the companions of his looser recreations, though he had formerly taken great pains in the selection. This moderation, added to his justice and generosity, procured him the love of all good men, and the appellation of the *delight of mankind*, which all his actions seemed calculated to ensure. As he came to the throne with all the advantages of his father's popularity, he was resolved to use every method to increase it. He therefore took particular care to punish all informers, false witnesses, and promoters of dissension, condemning them to be scourged in the most public streets, next to be dragged through the theatre, and then to be banished to the uninhabited parts of the empire, and sold as slaves. His courtesy and readiness to do good have been celebrated even by Christian writers; his principal rule being, never to send any petitioner dissatisfied away. One night, recollecting that he had done nothing beneficial to mankind the day preceding, he cried out among his friends, "I have lost a day." A sentence too remarkable not to be universally known.

In this reign, an eruption of Mount Vesuvius did considerable damage, overwhelming many towns, and sending its ashes into countries more than 100 miles distant. Upon this memorable occasion, Pliny the naturalist lost his life; for, being impelled by too eager a curiosity to observe the eruption, he was suffocated in the flames*. There happened also about this time a fire at Rome, which continued three days and nights successively, which was followed by a plague, in which 10,000 men were buried in a day. The emperor, however, did all that lay in his power to repair the damage sustained by the public; and, with respect to the city, declared that he would take the whole loss of it upon himself. These disasters were in some measure counterbalanced by the successes in Britain, under Agricola. This excellent general having been sent into that country towards the latter end of Vespasian's reign, showed himself equally expert in quelling the refractory, and civilizing those who had formerly submitted to the Roman power. The Ordovices, or inhabitants of North Wales, were the first that were subdued. He then made a descent upon Mona, or the island of Anglesea; which surrendered at discretion. Having thus rendered himself master of the whole country, he took every method to restore discipline to his own army, and to introduce some share of politeness among those whom he had conquered. He exhorted them, both by advice and example, to build temples, theatres, and stately houses. He caused the sons of their nobility to be instructed in the liberal arts; he had them taught the Latin language, and induced them to imitate the Roman modes of dressing and living. Thus, by degrees, this barbarous people began to assume the luxurious manners of their conquerors, and in time even outdid them in all the refinements of sensual pleasure. For the success in Britain, Titus was saluted emperor the 15th time; but he did not long survive his honours, being seized with a violent fever at a little distance from Rome. Perceiving his death to approach, he declared that during the whole course of his life he knew but of one action which he repented of; but that action he did not think proper to express. Shortly after, he died (not without suspicion of treachery from his brother Domitian, who had long wished to govern) in the 41st year of

Rome.

341
A dread-
ful erup-
tion of Ve-
suvius.

* See *Vesuvius*.

342
Agricola
civilizes
the Bri-
tons.

343
Titus dies.

of.

Rome.

of his age, having reigned two years two months and twenty days.

344
Succeeded
by Domitian.

The love which all ranks of people bore to Titus, facilitated the election of his brother Domitian, notwithstanding the ill opinion many had already conceived of him. His ambition was already but too well known, and his pride soon appeared upon his coming to the throne; having been heard to declare, that he had given the empire to his father and brother, and now received it again as his due.

The beginning of his reign was universally acceptable to the people, as he appeared equally remarkable for his clemency, liberality, and justice. He carried his abhorrence of cruelty so far, as at one time to forbid the sacrificing of oxen. His liberality was such, that he would not accept of the legacies that were left him by such as had children of their own. His justice was such, that he would sit whole days and reverse the partial sentences of the ordinary judges. He appeared very careful and liberal in repairing the libraries which had been burnt, and recovering copies of such books as had been lost, sending on purpose to Alexandria to transcribe them. But he soon began to show the natural deformity of his mind. Instead of cultivating literature, as his father and brother had done, he neglected all kinds of study, addicting himself wholly to the meaner pursuits, particularly archery and gaming. No emperor before him entertained the people with such various and expensive shows. During these diversions he distributed great rewards; sitting as president himself, adorned with a purple robe and crown, with the priests of Jupiter and the college of Flavian priests about him. The meanness of his occupations in solitude were a just contrast to his exhibitions in public ostentation. He usually spent his hours of retirement in catching flies, and sticking them through with a bodkin; so that one of his servants being asked if the emperor was alone, he answered, that he had not so much as a fly to bear him company. His vices seemed every day to increase with the duration of his reign; and as he thus became more odious to his people, all their murmurs only served to add strength to his suspicions, and malice to his cruelty. His ungrateful treatment of Agricola seemed the first symptom of his natural malevolence. Domitian was always particularly fond of obtaining a military reputation, and therefore jealous of it in others. He had marched some time before into Gaul, upon a pretended expedition against the Catti, a people of Germany; and, without ever seeing the enemy, resolved to have the honour of a triumph upon his return to Rome. For that purpose he purchased a number of slaves, whom he dressed in German habits; and at the head of this miserable procession entered the city, amidst the apparent acclamations and concealed contempt of all his subjects. The successes, therefore, of Agricola in Britain affected him with an extreme degree of envy. This admirable general, who is scarce mentioned by any writer except Tacitus, pursued the advantages which he had already obtained. He routed the Caledonians; overcame Galgacus, the British chief, at the head of 30,000 men; and afterwards sending out a fleet to scour the coast, first discovered Great Britain to be an island*. He likewise discovered and subdued the Orkneys, and thus reduced the whole into a civilized province of the Roman empire. When the account of these successes

345
His enormous vices.

* See Scotland.

I

Rome.

was brought to Domitian, he received it with a seeming pleasure, but real uneasiness. He thought Agricola's rising reputation a reproach upon his own inactivity; and, instead of attempting to emulate, he resolved to suppress the merit of his services. He ordered him, therefore, the external marks of his approbation, and took care that triumphant ornaments, statues, and other honours, should be decreed him; but at the same time he removed him from his command, under a pretence of appointing him to the government of Syria. By these means, Agricola surrendered up his government to Salustius Lucullus, but soon found that Syria was otherwise disposed of. Upon his return to Rome, which was privately and by night, he was coolly received by the emperor; and dying some time after in retirement, it was supposed by some that his end was hastened by Domitian's direction.

Domitian soon after found the want of so experienced a commander in the many irruptions of the barbarous nations that surrounded the empire. The Sarmatians in Europe, joined with those in Asia, made a formidable invasion; at once destroying a whole legion, and a general of the Romans. The Dacians, under the conduct of Decebalus their king, made an irruption, and overthrew the Romans in several engagements. Losses were followed by losses, so that every season became memorable for some remarkable overthrow. At last, however, the state making a vigorous exertion of its internal power, the barbarians were repelled, partly by force and partly by the assistance of money, which only served to enable them to make future invasions to greater advantage. But in whatever manner the enemy might have been repelled, Domitian was resolved not to lose the honour of a triumph. He returned in great splendor to Rome; and not contented with thus triumphing twice without a victory, he resolved to take the surname of *Germanicus*, for his conquest over a people with whom he never contended.

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Many barbarous nations invade the empire.

In proportion as the ridicule increased against him, his pride seemed every day to demand greater homage. He would permit his statues to be made only of gold and silver; assumed to himself divine honours; and ordered that all men should treat him with the same appellations which they gave to the divinity. His cruelty was not behind his arrogance; he caused numbers of the most illustrious senators and others to be put to death upon the most trifling pretences. Salustius Lucullus, his lieutenant in Britain, was destroyed only for having given his own name to a new sort of lances of his own invention. Junius Rusticus died for publishing a book, in which he commended Thrasea and Priscus, two philosophers who opposed Vespasian's coming to the throne.

Such cruelties as these, that seem almost without a motive, may naturally be supposed to have produced rebellion. Lucius Antonius, governor in Upper Germany, knowing how much the emperor was detested at home, assumed the ensigns of imperial dignity. As he was at the head of a formidable army, his success remained long doubtful; but a sudden overflowing of the Rhine dividing his army, he was set upon at that juncture by Normandus, the emperor's general, and totally routed. The news of this victory, we are told, was brought to Rome by supernatural means, on the same day that the battle was fought. Domitian's severity

was

Rome. was greatly increased by this success, of short duration. In order to discover those who were accomplices with the adverse party, he invented new tortures, sometimes cutting off the hands, at other times thrusting fire into the privities, of the people whom he suspected of being his enemies. During these cruelties, he aggravated their guilt by hypocrisy, never pronouncing sentence without a preamble full of gentleness and mercy. He was particularly terrible to the senate and nobility, the whole body of whom he frequently threatened entirely to extirpate. At one time, he surrounded the senate-house with his troops, to the great consternation of the senators. At another, he resolved to amuse himself with their terrors in a different manner. Having invited them to a public entertainment, he received them all very formally at the entrance of his palace, and conducted them into a spacious hall, hung round with black, and illuminated by a few melancholy lamps, that diffused light only sufficient to show the horrors of the place. All around were to be seen nothing but coffins, with the names of each of the senators written upon them, together with other objects of terror, and instruments of execution. While the company beheld all the preparations with silent agony, several men, having their bodies blackened, each with a drawn sword in one hand and a flaming torch in the other, entered the hall, and danced round them. After some time, when the guests expected nothing less than instant death, well knowing Domitian's capricious cruelty, the doors were set open, and one of the servants came to inform them, that the emperor gave all the company leave to withdraw.

These cruelties were rendered still more odious by his lust and avarice. Frequently after presiding at an execution, he would retire with the lowliest prostitutes, and use the same baths which they did. His avarice, which was the consequence of his profusion, knew no bounds. He seized upon the estates of all against whom he could find the smallest pretensions; the most trifling action or word against the majesty of the prince was sufficient to ruin the possessor. He particularly exacted large sums from the rich Jews; who even then began to practise the art of peculation, for which they are at present so remarkable. He was excited against them, not only by avarice, but by jealousy. A prophecy had been long current in the east, that a person from the line of David should rule the world. Whereupon, this suspicious tyrant, willing to evade the prediction, commanded all the Jews of the lineage of David to be diligently sought out, and put to death. Two Christians, grandsons of St. Jude the apostle, of that line, were brought before him; but finding them poor, and no way ambitious of temporal power, he dismissed them, considering them as objects too mean for his jealousy. However, his persecution of the Christians was more severe than that of any of his predecessors. By his letters and edicts they were banished in several parts of the empire, and put to death with all the tortures of ingenious cruelty. The predictions of Chaldeans and astrologers also, concerning his death, gave him most violent apprehensions, and kept him in the most tormenting disquietude. As he approached towards the end of his reign, he would permit no criminal, or prisoner, to be brought into his presence, till they were bound in such a manner as to be incapable of injuring

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Monstrous
cruelty of
the emper-
ror.

348
He persec-
utes the
Jews and
Christians.

him; and he generally secured their chains in his own hands. His jealousies increased to that degree, that he ordered the gallery in which he walked to be set round with a pellucid stone, which served as a mirror to reflect the persons of all such as approached him from behind. Every omen and prodigy gave him fresh anxiety.

But a period was soon to be put to this monster's cruelty. Among the number of those whom he at once caressed and suspected, was his wife Domitia, whom he had taken from Ælius Lama, her former husband. This woman, however, was become obnoxious to him, for having placed her affections upon one Paris, a player; and he resolved to dispatch her, with several others that he either hated or suspected. It was the tyrant's method to put down the names of all such as he intended to destroy in his tablets, which he kept about him with great circumspection. Domitia, fortunately happening to get a sight of them, was struck at finding her own name in the catalogue of those fated to destruction. She showed the fatal list to Norbanus and Petronius, præfects of the prætorian bands, who found themselves set down; as likewise to Stephanus, the comptroller of the household, who came into the conspiracy with alacrity. Parthenius also, the chief chamberlain, was of the number. These, after many consultations, determined on the first opportunity to put their design in execution; and at length fixed on the 18th day of September for the completion of their attempt. Domitian, whose death was every day foretold by the astrologers, who, of consequence, must at last be right in their predictions, was in some measure apprehensive of that day; and as he had been ever timorous, so he was now more particularly upon his guard. He had some time before secluded himself in the most secret recesses of his palace; and at midnight was so affrighted as to leap out of his bed, inquiring of his attendants what hour of the night it was. Upon their falsely assuring him that it was an hour later than that which he was taught to apprehend, quite transported, as if all danger was past, he prepared to go to the bath. Just then, Parthenius his chamberlain came to inform him that Stephanus the comptroller of his household desired to speak to him upon an affair of the utmost importance. The emperor having given orders that his attendants should retire, Stephanus entered with his hand in a scarf, which he had worn thus for some days, the better to conceal a dagger, as none were permitted to approach the emperor except unarmed.—He began by giving information of a pretended conspiracy, and exhibited a paper in which the particulars were specified. While Domitian was reading the contents with an eager curiosity, Stephanus drew his dagger, and struck him in the groin. The wound not being mortal, Domitian caught hold of the assassin, and threw him upon the ground, calling out for assistance. He demanded also his sword, that was usually placed under his pillow; and a boy who attended in the apartment running to fetch it, found only the scabbard, for Parthenius had previously removed the blade. The struggle with Stephanus still continued: Domitian still kept him under, and at one time attempted to wrest the dagger from his hand, at another to tear out his eyes with his fingers. But Parthenius, with his freedman, a gladiator, and two subaltern officers, now coming in, ran all furiously upon the emperor, and dispatched him with

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A conspi-
racy form-
ed against
him.

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He is mur-
dered.

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with many wounds. In the mean time, some of the officers of the guard being alarmed, came to his assistance, but too late to save him; however, they slew Stephanus on the spot.

When it was publicly known that Domitian was slain, the joy of the senate was so great, that being assembled with the utmost haste, they began to load his memory with every reproach. His statues were commanded to be taken down; and a decree was made, that all his inscriptions should be erased, his name struck out of the registers of fame, and his funeral omitted. The people, who now took little part in the affairs of government, looked on his death with indifference; the soldiers alone, whom he had loaded with favours, and enriched by largesses, sincerely regretted their benefactor. The senate, therefore, resolved to provide a successor before the army could have an opportunity of taking the appointment upon themselves: and Cocceius Nerva was chosen to the empire the very day on which the tyrant was slain.

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Cocceius
Nerva
made em-
peror.

Nerva was of an illustrious family, as most say, by birth a Spaniard, and above 65 years old when he was called to the throne. He was, at that time, the most remarkable man in Rome, for his virtues, moderation, and respect to the laws; and he owed his exaltation to the blameless conduct of his former life. When the senate went to pay him their submissions, he received them with his accustomed humility; while Arius Antonius, his most intimate friend, having embraced him with great familiarity, congratulated him on his accession to the empire: and indeed no emperor had ever shewn himself more worthy of the throne than Nerva; his only fault being that he was too indulgent, and often made a prey by his insidious courtiers.

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His great
clemency
and mode-
ration.

However, an excess of indulgence and humanity were faults that Rome could easily pardon, after the cruelties of such an emperor as Domitian. Being long accustomed to tyranny, they regarded Nerva's gentle reign with rapture, and even gave his imbecility the name of benevolence. Upon coming to the throne, he solemnly swore that no senator of Rome should be put to death by his command, during his reign, though they gave ever so just a cause. He conferred great favours, and bestowed large gifts, upon his particular friends. His liberality was so extensive, that, upon his first promotion to the empire, he was constrained to sell his gold and silver plate, with his other rich moveables, to enable him to continue his liberalities. He released the cities of the empire from many severe impositions, which had been laid upon them by Vespasian; took off a rigorous tribute, which had been laid upon carriages; and restored those to their property who had been unjustly dispossessed by Domitian.

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Makes fe-
veral good
laws.

During his short reign he made several good laws. He particularly prohibited the castration of male children; which had been likewise condemned by his predecessor, but not wholly removed. He put all those slaves to death who had, during the last reign, informed against their masters. He permitted no statues to be erected to honour him, and converted into money such of Domitian's as had been spared by the senate. He sold many rich robes, and much of the splendid furniture of the palace, and retrenched several unreasonable expences at court. At the same time, he had so little regard for money, that when Herodes Atticus,

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one of his subjects, had found a large treasure, and wrote to the emperor how to dispose of it, he received for answer, that he might *use it*; but the finder still informing the emperor that it was a fortune too large for a private person, Nerva, admiring his honesty, wrote him word, that then he might *abuse it*.

A life of such generosity and mildness was not, however, without its enemies. Calpurnius Crassus, with some others, formed a dangerous conspiracy to destroy him; but Nerva would use no severity: he rested satisfied with banishing those who were culpable, though the senate were for inflicting more rigorous punishments. But the most dangerous insurrection against his interests was from the prætorian bands; who, headed by Casparius Orianus, insisted upon revenging the late emperor's death, whose memory was still dear to them from his frequent liberalities. Nerva, whose kindness to good men rendered him still more obnoxious to the vicious, did all in his power to stop the progress of this insurrection; he presented himself to the mutinous soldiers, and, opening his bosom, desired them to strike there, rather than be guilty of so much injustice. The soldiers, however, paid no regard to his remonstrances; but, seizing upon Petronius and Parthenius, slew them in the most ignominious manner. Not content with this, they even compelled the emperor to approve of their sedition, and to make a speech to the people, in which he thanked the cohorts for their fidelity. So disagreeable a constraint upon the emperor's inclinations was, in the end, attended with the most happy effects, as it caused the adoption of Trajan to succeed him in the empire. Nerva perceived that in the present turbulent disposition of the times, he stood in need of an assistant in the empire, who might share the fatigues of government, and contribute to keep the licentious in awe. For this purpose, setting aside all his own relations, he fixed upon Ulpian Trajan, an utter stranger to his family, who was then governor in Upper Germany, to succeed him. Having put his determination in execution, and performed the accustomed solemnities, he instantly sent off ambassadors to Cologne, where Trajan then resided, intreating his assistance in punishing those from whom he had received such an insult. The adoption of this admirable man, proved so great a curb to the licentiousness of the soldiery, that they continued in perfect obedience during the rest of this reign; and Casparius being sent to him, was, by his command, either banished or put to death.

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Adopts
Trajan as
his succes-
sor.

The adopting Trajan was the last public act of Nerva. In about three months after, having put himself in a violent passion with one Regulus a senator, he was seized with a fever, of which he shortly after died, after a short reign of one year four months and nine days. He was the first foreign emperor who reigned in Rome, and justly reputed a prince of great generosity and moderation. He is also celebrated for his wisdom, though with less reason, the greatest instance he gave of it, during his reign, being in the choice of his successor.

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Death of
Nerva.

Trajan's family was originally from Italy, but he himself was born in Seville in Spain. He very early accompanied his father, who was a general of the Romans, in his expeditions along the Euphrates and the Rhine; and while yet very young, acquired a considerable reputation for military accomplishments. He enured his body to fatigue; he made long marches on foot;

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Great qua-
lities of
Trajan.

Rome. foot; and laboured to acquire all that skill in war which was necessary for a commander. When he was made general of the army in Lower Germany, which was one of the most considerable employments in the empire, it made no alteration in his manners or way of living; and the commander was seen noway differing from the private tribune, except in his superior wisdom and virtues. The great qualities of his mind were accompanied with all the advantages of person. His body was majestic and vigorous; he was at that middle time of life which is happily tempered with the warmth of youth and the caution of age, being 42 years old. To these qualities were added, a modesty that seemed peculiar to himself alone; so that mankind found a pleasure in praising those accomplishments of which the possessor seemed no way conscious. Upon the whole, Trajan is distinguished as the greatest and the best emperor of Rome. Others might have equalled him in war, and some might have been his rivals in clemency and goodness; but he seems the only prince who united these talents in the greatest perfection, and who appears equally to engage our admiration and our regard. Upon being informed of the death of Nerva, he prepared to return to Rome, whither he was invited by the united intreaties of the state. He therefore began his march with a discipline that was for a long time unknown in the armies of the empire. The countries through which he passed were neither ravaged nor taxed, and he entered the city, not in a triumphant manner, though he had deserved it often, but on foot, attended by the civil officers of the state, and followed by his soldiers, who marched silently forward with modesty and respect. It would be tedious and unnecessary to enter into a detail of this good monarch's labours for the state. His application to business, his moderation to his enemies, his modesty in exaltation, his liberality to the deserving, and his frugality in his own expences; these have all been the subject of panegyric among his contemporaries, and they continue to be the admiration of posterity. Upon giving the prefect of the pretorian band the sword, according to custom, he made use of this remarkable expression, "Take this sword, and use it, if I have merit, for me; if otherwise, against me." After which he added, "That he who gave laws was the first who was bound to observe them. His failings were his love of women, which, however, never hurried him beyond the bounds of decency; and his immoderate passion for war, to which he had been bred up from his childhood. The first war he was engaged in after his coming to the throne was with the Dacians, who, during the reign of Domitian, had committed numberless ravages upon the provinces of the empire. He therefore raised a powerful army, and with great expedition marched into those barbarous countries, where he was vigorously opposed by Decebalus, the Dacian king, who for a long time withstood his boldest efforts; but was at last entirely reduced, and his kingdom made a Roman province, See DACIA. At his return to Rome, he entered the city in triumph; and the rejoicings for his victories lasted for the space of 120 days.

Having thus given peace and prosperity to the empire, Trajan continued his reign, loved, honoured, and almost adored, by his subjects. He adorned the city with public buildings; he freed it from such men as lived by their vices; he entertained persons of merit

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Rome. with the utmost familiarity; and so little feared his enemies, that he could scarcely be induced to suppose that he had any.

It had been happy for this great prince's memory, ³⁵⁷ if he had shown equal clemency to all his subjects; but, ^{He persecutes the Christians} about the ninth year of his reign, he was persuaded to look upon the Christians with a suspicious eye. The extreme veneration which he professed for the religion of the empire, set him sedulously to oppose every innovation, and the progress of Christianity seemed to alarm him. A law had for some time before been passed, in which all Heteriæ, or societies dissenting from the established religion, were considered as illegal, being reputed nurseries of imposture and sedition. Under the sanction of this law, the Christians were persecuted in all parts of the empire. Great numbers of them were put to death, as well by popular tumults as by edicts and judicial proceedings. However, the persecution ceased after some time; for the emperor having advice from Pliny, the proconsul in Bithynia, of the innocence and simplicity of the Christians, and of their inoffensive and moral way of living, he suspended their punishments. But a total stop was put to them upon Tiberianus the governor of Palestine's sending him word, "That he was wearied out with executing the laws against the Galileans, who crowded to execution in such multitudes, that he was at a loss how to proceed. Upon this information, the emperor gave orders, that the Christians should not be sought after; but if any offered themselves, that they should suffer. In this manner the rage of persecution ceased, and the emperor found leisure to turn the force of his arms against the Armenians and Parthians, who now began to throw off all submission to Rome.

While he was employed in these wars, there was a ³⁵⁸ dreadful insurrection of the Jews in all parts of the empire. This wretched people, still infatuated, and ever expecting some signal deliverer, took the advantage of Trajan's absence in the east to massacre all the Greeks and Romans whom they got into their power, without reluctance or mercy. This rebellion first began in Cyrene, a Roman province in Africa; from thence the flame extended to Egypt, and next to the island of Cyprus. These places were in a manner dispeopled with ungovernable fury. Their barbarities were such, that they ate the flesh of their enemies, wore their skins, sawed them asunder, cast them to wild beasts, made them kill each other, and studied new torments by which to destroy them. However, these cruelties were of no long duration: the governors of the respective provinces making head against their tumultuous fury, soon treated them with a retaliation of cruelty, and put them to death, not as human beings, but as outrageous pests to society. As the Jews had practised their cruelties in Cyprus particularly, a law was publicly enacted, by which it was made capital for any Jew to set foot on the island.

During these bloody transactions, Trajan was ³⁵⁹ successful in prosecuting his successes in the east. His first march was into Armenia, the king of which country had disclaimed all alliance with Rome, and received the ensigns of royalty and dominion from the monarch of Parthia. However, upon the news of Trajan's expedition, his fears were so great, that he abandoned his country to the invaders; while the greatest part of his governors and

E c

nobility

Rome.

nobility came submissively to the emperor, acknowledging themselves his subjects, and making him the most costly presents. Having in this manner taken possession of the whole country, and gotten the king into his power, he marched into the dominions of the king of Parthia. There entering the opulent kingdom of Mesopotamia, he reduced it into the form of a Roman province. From thence he went against the Parthians, marching on foot at the head of his army; in this manner crossing the rivers, and conforming to all the severities of discipline which were imposed on the meanest soldier. His successes against the Parthians were great and numerous. He conquered Syria and Chaldea, and took the famous city of Babylon. Here, attempting to cross the Euphrates, he was opposed by the enemy, who were resolved to stop his passage: but he secretly caused boats to be made upon the adjoining mountains; and bringing them to the water side, passed his army with great expedition, not, however, without great slaughter on both sides. From thence he traversed tracts of country which had never before been invaded by a Roman army, and seemed to take a pleasure in pursuing the same march which Alexander the Great had formerly marked out for him. Having passed the rapid streams of the Tigris, he advanced to the city of Ctesiphon, which he took, and opened himself a passage into Persia, where he made many conquests, that were rather splendid than serviceable. After subduing all the country bordering on the Tigris, he marched southward to the Persian gulf, where he subdued a monarch who possessed a considerable island made by the divided streams of that river. Here, winter coming on, he was in danger of losing the greatest part of his army by the inclemency of the climate and the inundations of the river. He therefore with indefatigable pains fitted out a fleet, and sailing down the Persian gulf, entered the Indian ocean, conquering, even to the Indies, and subduing a part of them to the Roman empire. He was prevented from pursuing further conquests in this distant country, both by the revolt of many of the provinces he had already subdued, and by the scarcity of provisions, which seemed to contradict the reports of the fertility of the countries he was induced to invade. The inconveniences of increasing age also contributed to damp the ardour of this enterprise, which at one time he intended to pursue to the confines of the earth. Returning, therefore, along the Persian gulf, and sending the senate a particular account of all the nations he had conquered, the names of which alone composed a long catalogue, he prepared to punish those countries which had revolted from him. He began by laying the famous city of Edeffa, in Mesopotamia, in ashes; and in a short space of time, not only retook all those places which had before acknowledged subjection, but conquered many other provinces, so as to make himself master of the most fertile kingdoms of all Asia. In this train of successes he scarce met with a repulse, except before the city Atra, in the deserts of Arabia. Wherefore judging that this was a proper time for bounding his conquests, he resolved to give a master to the countries he had subdued. With this resolution he repaired to the city Ctesiphon, in Persia; and there, with great ceremony, crowned Parthaspates king of Parthia, to the great joy of all his subjects. He established another king also over the

kingdom of Albania, near the Caspian sea. Then placing governors and lieutenants in other provinces, he resolved to return to his capital in a more magnificent manner than any of his predecessors had done before him. He accordingly left Adrian general of all his forces in the east; and continued his journey towards Rome, where the most magnificent preparations were made for his arrival. But he had not proceeded farther than the province of Cilicia, when he found himself too weak to travel in his usual manner. He therefore caused himself to be carried on ship-board to the city of Seleucia, where he died of apoplexy, having been once before attacked by that disorder. During the time of his indisposition, his wife Plotina constantly attended near him; and, knowing the emperor's dislike to Adrian, it is thought forged the will, by which he was adopted to succeed.

Trajan died in the 63d year of his age, after a reign of nineteen years six months and fifteen days. ³⁶⁰How and is succeeded by Adrian. highly he was esteemed by his subjects appears by their manner of blessing his successors, always wishing them the fortune of Augustus, and the goodness of Trajan. His military virtues, however, upon which he chiefly valued himself, produced no real advantages to his country; and all his conquests disappeared, when the power was withdrawn that enforced them.

Adrian was by descent a Spaniard, and his ancestors were of the same city where Trajan was born. He was nephew to Trajan, and married to Sabina his grand-niece. When Trajan was adopted to the empire, Adrian was a tribune of the army in Mæsia, and was sent by the troops to congratulate the emperor on his advancement. However, his brother-in-law, who desired to have an opportunity of congratulating Trajan himself, supplied Adrian with a carriage that broke down on the way. But Adrian was resolved to lose no time, and performed the rest of the journey on foot. This assiduity was very pleasing to the emperor; but he disliked Adrian from several more prevailing motives. His kinsman was expensive, and involved in debt. He was, besides, inconstant, capricious, and apt to envy another's reputation. These were faults that, in Trajan's opinion, could not be compensated either by his learning or his talents. His great skill in the Greek and Latin languages, his intimate acquaintance with the laws of his country and the philosophy of the times, were no inducement to Trajan, who, being bred himself a soldier, desired to have a military man to succeed him. For this reason it was that the dying emperor would by no means appoint a successor; fearful, perhaps, of injuring his great reputation, by adopting a person that was unworthy. His death, therefore, was concealed for some time by Plotina his wife, till Adrian had sound the inclinations of the army, and found them firm in his interests. They then produced a forged instrument, importing that Adrian was adopted to succeed in the empire. By this artifice he was elected by all orders of the state, though then absent from Rome, being left at Antioch as general of the forces in the east.

Upon Adrian's election, his first care was to write the senate, excusing himself for assuming the empire without their previous approbation; imputing it to the hasty zeal of the army, who rightly judged that the senate ought not long to remain without a head. He then

Rome. then began to pursue a course quite opposite to that of his predecessor, taking every method of declining war, and promoting the arts of peace. He was quite satisfied with preserving the ancient limits of the empire, and seemed no way ambitious of extensive conquest. 361 He abandoned all the eastern conquests of Trajan. For this reason he abandoned all the conquests that Trajan had made, judging them to be rather an inconvenience than an advantage to the empire; and made the river Euphrates the boundary of the empire, placing the legions along its banks to prevent the incursons of the enemy.

Having thus settled the affairs of the east, and leaving Severus governor of Syria, he took his journey by land to Rome, sending the ashes of Trajan thither by sea. Upon his approach to the city, he was informed of a magnificent triumph that was preparing for him; but this he modestly declined, desiring that those honours might be paid to Trajan's memory which they had designed for him. In consequence of this command, a most superb triumph was decreed, in which Trajan's statue was carried as a principal figure in the procession, it being remarked that he was the only man that ever triumphed after he was dead. Not content with paying him these extraordinary honours, his ashes were placed in a golden urn, upon the top of a column 140 feet high. On this were engraven the particulars of all his exploits in basso relievo; a work of great labour, and which is still remaining. These testimonies of respect to the memory of his predecessor did great honour to the heart of Adrian. His virtues, however, were contrasted by a strange mixture of vices; or to say the truth, he wanted strength of mind to preserve his general rectitude of character without deviation. As an emperor, however, his conduct was most admirable, as all his public transactions appear dictated by the soundest policy and the most disinterested wisdom. But these being already enumerated under the article ADRIAN, it would be superfluous to repeat them in this place. He was succeeded by Marcus Antoninus, afterwards surnamed the *Pious*, whom he had adopted some time before his death. See *ANTONINUS Pius*.

From the beginning of the reign of Antoninus Pius,

Rome. we may date the decline of the Roman empire. From the time of Cæsar to that of Trajan, scarce any of the emperors had either abilities or inclination to extend the limits of the empire, or even to defend it against the barbarous nations who surrounded it. During all this space, only some inconsiderable provinces to the northward of Italy, and part of the island of Britain, had been subjugated. However, as yet, nothing was lost; but the degeneracy and corruption of the people had sown those seeds of dissolution which the empire quickly began to feel. The disorders were grown to such an height, that even Trajan himself could not cure them. Indeed his eastern conquests could scarce have been preserved though the republic had been existing in all its glory; and therefore they were quietly resigned by his successor Adrian, as too distant, disaffected, and ready to be overrun by the barbarous nations. The province of Dacia, being nearer to the centre of government, was more easily preserved; and of consequence remained for a long time subject to Rome. During the 23 years of the reign of Antoninus, few remarkable events happened. The historians of those times are excessive in their praises of his justice, generosity, and other virtues, both public and private. He put a stop to the persecution of the Christians, which raged in the time of Trajan and Adrian, and reduced the Brigantes, a tribe of Britons, who had revolted. During his reign, several calamities befel the empire. The Tiber, overflowing its banks, laid the lower part of Rome under water. The inundation was followed by a fire, and this by a famine, which swept off great numbers, though the emperor took the utmost care to supply the city from the most distant provinces. At the same time the cities of Narbonne in Gaul, and Antioch in Syria, together with the great square in Carthage, were destroyed by fire; however, the emperor soon restored them to their former condition. He died in the year 163, universally lamented by his subjects, and was succeeded by Marcus Aurelius, surnamed the *Philosopher*, whom he had adopted towards the latter end of his reign.

The transactions of this emperor the reader will find related under the article *ANTONINUS Philosophus* (A).

E e 2

After

(A) As, after the death of Marcus Aurelius, the Roman empire declined very fast, it may not be amiss here to give some account of the military and other establishments of the Roman emperors. Mr Gibbon observes, that, in the times of the commonwealth, the use of arms was confined to those who had some property to defend, and an interest in maintaining the laws which were proposed to be enacted. But, as the public freedom declined, and war became degraded into a trade, those who had the property of the country chose rather to hire others than to expose their own persons, as is the case with our modern armies. Yet, even after all consideration of property had been laid aside among the common soldiers, the officers continued to be chosen from among those who had a liberal education, together with a good share of property. However, as the common soldiers, in which the strength of an army consists, had now no more of that virtue called *patriotism*, the legions which were formerly almost invincible, no longer fought with the same ardour as before. In former times, the profession of a soldier was more honourable than any other; but, when the soldiers came to be looked upon as hirelings, the honour of the profession sunk of course, and, by this means, one of the strongest motives which the soldiers had to submit to their severe discipline, and exert themselves against their enemies, was removed. On the very first entrance of a soldier into the Roman service, a solemn oath was administered to him, by which he engaged never to desert his standard; to submit his own will to that of his leaders, and to sacrifice his life for the safety of the emperor and the empire. The attachment which the Romans had to their standards was indeed astonishing. The golden eagle, which appeared in the front of the legion, was almost an object of adoration with them; and it was esteemed impious, as well as ignominious, to abandon that sacred ensign

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He abandons all the eastern conquests of Trajan.

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Causes of the decline of the Roman empire.

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After the death of Marcus Aurelius, his son Commodus succeeded to the imperial throne without opposition. He was in every respect unworthy of his fa-

ther: and so prone to vice, that he was generally believed to have been the son, not of Marcus Aurelius, but of a celebrated gladiator, with whom the empress Faustina

Rome.

sign in the time of danger. The centurions had a right to punish with blows, the generals with death; and it was an inflexible maxim of the Roman discipline, that a good soldier should dread his officers much more than the enemy.

Notwithstanding all this, so sensible were the Romans of the insufficiency of mere valour without skill, that military exercises were the unremitting object of their discipline. The recruits and young soldiers were constantly trained both in the morning and evening; and even the veterans were not excused from the daily repetition of their exercise. Large sheds were erected in the winter-quarters of the troops, that these useful labours might not be interrupted by tempestuous weather, and the weapons used in these imitations of war were always swiftness as heavy as those made use of in real action. The soldiers were diligently instructed to march, to run, leap, swim, carry heavy burdens, and handle every species of weapon either for offence or defence; to form a variety of evolutions; and to move to the sound of flutes in the pyrrhic or martial dance. It was the policy of the ablest generals, and even of the emperors themselves, to encourage these military studies by their presence and example; and we are informed that Adrian, as well as Trajan, frequently condescended to instruct the unexperienced soldiers, to reward the diligent, and sometimes to dispute with them the prize of superior strength and dexterity. Under the reigns of those princes, the science of tactics was cultivated with success; and, as long as the empire retained any vigour, their military instructions were respected as the most perfect model of Roman discipline.

From the foundation of the city, as the Romans had in a manner been continually engaged in war, many alterations had taken place in the constitution of the legions. In the time of the emperors, the heavy-armed infantry, which composed its principal strength, was divided into 10 cohorts and 55 companies, under the orders of a correspondent number of tribunes and centurions. The first cohort, which always claimed the post of honour and the custody of the eagle, was formed of 1105 soldiers, the most approved for valour and fidelity. The remaining nine cohorts consisted each of 555; and the whole body of legionary infantry consisted of 6100 men. Their arms were uniform, and excellently adapted to the nature of their service; an open helmet with a lofty crest; a breastplate or coat of mail; greaves on their legs, and a large buckler on their left arm. Their buckler was of an oblong and concave figure, four feet in length, and two and an half in breadth; framed of a light wood, covered with a bull's hide, and strongly guarded with brass plates. Besides a lighter spear, the legionary carried the pilum, a ponderous javelin about six feet long, and terminated by a massy triangular point of steel 18 inches in length. This weapon could do execution at the distance of 10 or 12 paces; but its stroke was so powerful, that no cavalry durst venture within its reach, and scarce any armour could be formed proof against it. As soon as the Roman had darted his pilum, he drew his sword, and rushed forward to close with the enemy. It was a short well-tempered Spanish blade with a double edge, and equally calculated for the purposes of pushing and striking; but the soldier was always instructed to prefer the former use of his own weapon, as his body remained thereby the less exposed, while at the same time he inflicted a more dangerous wound on his adversary. The legion was usually drawn up eight deep; and the regular distance of three feet was left between the files and ranks. Thus the soldier possessed a free space for his arms and motions; and sufficient intervals were allowed, through which seasonable reinforcements might be introduced to the relief of the combatants. The cavalry, without which the force of the legion remained imperfect, was divided into ten troops or squadrons: the first, as the companion of the first cohort, consisted of 132 men; whilst each of the other nine amounted only to 66. The entire establishment formed a body of 726 horse, naturally connected with its respective legion; but occasionally acting in the line, and composing a part of the wings of the army. The cavalry of the ancient republic was composed of the noblest youths of Rome and Italy, who, by performing their military services on horseback, prepared themselves for the offices of senator and consul; but after the alteration of manners and government which took place at the end of the commonwealth, the most wealthy of the equestrian order were engaged in the administration of justice and of the revenue; and, whenever they embraced the profession of arms, they were immediately entrusted with a troop of horse or a cohort of foot, and the cavalry, as well as the infantry, were recruited from the provinces. The horses were bred for the most part in Spain, or in Cappadocia. The Roman troopers despised the complete armour which encumbered the cavalry of the east. Instead of this, their arms consisted only of an helmet, an oblong shield, light boots, and a coat of mail. A javelin and a long broadsword were their principal offensive weapons. They seem to have borrowed the use of lances and iron maces from the barbarians.

Besides the legionaries, the Romans, especially in the times of the emperors, began to take auxiliaries into their pay. Considerable levies were regularly made among those provincials who had not yet attained to the rank of Roman citizens. Many dependent princes and communities, dispersed round the frontiers, were permitted, for a while, to hold their freedom and security by the tenure of military service. Even select troops of barbarians were compelled to enter into the service; which was afterwards found to be a most destructive expedient, not only as it carried the Roman military skill among barbarians who were otherwise unacquainted with it, but it gave these auxiliaries themselves frequent opportunities of revolting, and at last of dethroning the emperors at pleasure, and even of overturning the empire itself. The number of auxiliaries was seldom inferior to that of the

Rome. Faustina was supposed to be intimate. According to Mr Gibbon, however, Commodus was not, as has been represented, a tiger born with an insatiate thirst of human blood, and capable from his infancy of the most inhuman actions. Nature had formed him of a weak, rather than a wicked disposition. His simplicity and timidity

the legionaries themselves. The bravest and most faithful bands among them were placed under the command of prefects and centurions, and severely trained in the arts of Roman discipline; but the far greater part retained those arms which they had used in their native country. By this institution, each legion, to whom a certain number of auxiliaries was allotted, contained within itself every species of lighter troops, and of missile weapons; and was capable of encountering every nation with the advantages of its respective arms and discipline. Nor was the legion destitute of what, in modern language, would be styled a train of artillery. This consisted of 10 military engines of the largest size, and 56 smaller ones; but all of them, either in an oblique or horizontal manner, discharged stones and darts with irresistible violence.

The camp of a Roman legion presented the appearance of a fortified city. As soon as the space was marked out, the pioneers carefully levelled the ground, and removed every impediment that might interrupt its perfect regularity. Its form was an exact quadrangle; and it may be computed that a square of 700 yards was sufficient for the encampment of 20,000 Romans, though a similar number of modern troops would expose to the enemy a front of more than treble that extent. In the midst of the camp, the prætorium, or general's tent, arose above the others; and the cavalry, infantry, and auxiliaries, had each their respective stations appointed them. The streets were broad, and perfectly straight; and a vacant space of 200 feet was left on all sides between the tents and rampart. The rampart itself was 12 feet high, armed with a line of strong and intricate palisades, and defended by a ditch 12 feet deep and as much broad. This labour was performed by the legions themselves, to whom the use of the spade and the pick-axe was no less familiar than that of the sword or pilum. Whenever the trumpet gave the signal of departure, the camp was almost instantly broke up, and the troops fell into their ranks without delay or confusion. Besides their arms, which the soldiers scarcely considered as an incumbrance, they were laden with their kitchen-furniture, the instruments of fortification, and provisions for many days. Under this weight, which would oppress a modern soldier, they were taught to advance by a regular step, near 20 miles in six hours. On the appearance of an enemy, they threw aside their baggage, and, by easy and rapid evolutions, converted the column of march into an order of battle. The slingers and archers skirmished in the front; the auxiliaries formed the first line, and were seconded or sustained by the legions. The cavalry covered the flanks, and the military engineers were placed in the rear.

The numbers of the Roman armies are not easily calculated with any tolerable accuracy. We may compute, however, that the legion, which consisted of 6831 Romans, might, with its attendant auxiliaries, amount to 12,500 men. The peace establishment of Adrian and his successors was composed of no fewer than 30 of these formidable brigades; and most probably formed an army of 370,000 men. Instead of being confined within the walls of fortified cities, which the Romans considered as the refuge of weakness or pusillanimity, the legions were encamped on the banks of the great rivers, and along the frontiers of the barbarians. Three legions were sufficient for Britain. The principal strength lay upon the Rhine and Danube, and consisted of 16 legions, disposed in the following proportions: two in the Lower, and three in the Upper Germany; one in Rhætia; one in Noricum; four in Pannonia; three in Mæsia; and two in Dacia. The defence of the Euphrates was intrusted to eight legions, six of whom were placed in Syria, and the other two in Cappadocia. With regard to Egypt, Africa, and Spain, as they were far removed from any important scene of war, a single legion maintained the domestic tranquillity of each of those great provinces. Italy was defended by the city cohorts and prætorian guards formerly mentioned. These differed nothing from the legions in their arms and institutions, except in a more splendid appearance, and a less rigid discipline.

The Roman navy, though sufficient for every useful purpose of government, never seemed adequate to the greatness of the empire. The policy of the emperors was directed only to preserve the peaceful dominion of the Mediterranean sea, which was included within their dominions, and to protect the commerce of their subjects. Two permanent fleets were stationed by Augustus, one at Ravenna on the Adriatic, and the other at Misenum in the bay of Naples. A very considerable force was also stationed at Frejus in Provence; and the Euxine was guarded by 40 ships and 3000 soldiers. To all these we may add the fleet which preserved the communication between Gaul and Britain, and a great number of vessels constantly maintained on the Rhine and Danube to harass the enemy, or intercept the passage of the barbarians. The whole military establishment by sea and land amounted to about 450,000 men.

It was not, however, to this formidable power alone that the empire owed its greatness. The policy of the laws contributed as much to its support as the martial establishment itself. According to Mr Gibbon, though the provinces might occasionally suffer from the partial abuse of delegated authority, the general principle of government was wise, simple, and beneficent. Among these beneficent principles he reckons that of universal toleration; but to this there were several exceptions: for the British Druids were persecuted and destroyed by the Romans on account of their religion; the Egyptians and Jews were sometimes persecuted; and the Christians were frequently so, and that even under the very best emperors, Trajan and Marcus Aurelius. However, as a very general toleration of religious sentiments did take place under the heathen emperors of Rome, we must certainly look upon this as one of the causes of the prosperity of the empire.

Another thing which greatly contributed to the strength and prosperity of the empire, was the extending of the freedom.

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Monstrous
cruelty of
Commodus.

timidity rendered him the slave of his attendants, who gradually corrupted his mind. His cruelty, which at first obeyed the dictates of others, degenerated into habit, and at length became the ruling passion of his soul." But, however this may be, it is certain that the actions of this emperor were flagitious almost beyond

Rome.
a

freedom of Rome to so many people. "The narrow policy (says Mr Gibbon) of preserving, without any foreign mixture, the pure blood of the ancient citizens, had checked the fortune and hastened the ruin of Athens and Sparta. During the most flourishing era of the Athenian commonwealth, the number of citizens decreased gradually from about 30,000 to 21,000. If, on the contrary, we study the growth of the Roman republic, we may discover, that notwithstanding the incessant demands of wars and colonies, the citizens, who, in the time of Servius Tullius, amounted to no more than 83,000, were multiplied, before the end of the social war, to the number of 463,000 men able to bear arms in the service of their country. When the allies of Rome claimed an equal share of honours and privileges, the senate preferred the chance of war to a concession; however, at last, all the Italian states, except the Samnites and Lucanians, were admitted into the bosom of the republic, and soon contributed to the ruin of public freedom. When the popular assemblies had been suppressed by the administration of the emperors, the conquerors were distinguished from the vanquished nations only as the first and most honourable order of subjects; and their increase, however rapid, was no longer exposed to the same dangers. Yet the princes who adopted the maxims of Augustus, guarded with the strictest care the dignity of the Roman name, and diffused the freedom of the city with a prudent liberality.

"Till the privileges of the Romans had been progressively extended to all the inhabitants of the empire, an important distinction was preserved between Italy and the provinces. The estates of the Italians were exempted from taxes, and their persons from the arbitrary jurisdiction of governors. From the foot of the Alps to the extremity of Calabria, all the natives of Italy were born citizens of Rome. The provinces of the empire were destitute of any public force or constitutional freedom. The free states and cities, which had embraced the cause of Rome, were insensibly sunk into real servitude. The public authority was everywhere engrossed by the ministers of the senate and of the emperors, and that authority was absolute. But the same salutary maxims of government which had secured the peace and obedience of Italy, were extended to the most distant conquests. A nation of Romans was gradually formed in the provinces, by the double expedient of introducing colonies, and of admitting the most faithful and deserving provincials to the freedom of Rome.

"So sensible were the Romans of the influence of language over national manners, that it was their most serious care to extend, with the progress of their arms, the use of the Latin tongue. The eastern provinces, however, were less docile in this respect than the western ones; and this obvious difference made a distinction between the two portions of the empire, which became very remarkable when it began to decline. Nor was the influence of the Greek language and sentiments confined to the narrow limits of that once celebrated country. Their empire, by the progress of colonies and conquest, had been diffused from the Adriatic to the Euphrates and Nile. Asia was covered with Greek cities, and the long reign of the Macedonian kings had introduced a silent revolution into Syria and Egypt. In their pompous courts, those princes united the elegance of Athens with the luxury of the east; and the example of the court was imitated, at an humble distance, by the higher ranks of their subjects. Such was the general division of the Roman empire into the Latin and Greek languages; to which we may add a third distinction for the body of the natives in Syria, and especially in Egypt. The use of their ancient dialects, by secluding them from the commerce of mankind, checked the improvements of these barbarians. The slothful effeminacy of the former exposed them to the contempt, the sullen ferociousness of the latter excited the aversion, of the Roman conquerors. They seldom desired or deserved the freedom of the city; and it is remarked, that more than 230 years elapsed after the ruin of the Ptolemies, before a native Egyptian was admitted into the senate of Rome.

"The number of subjects who acknowledged the laws of Rome, of citizens, of provincials, and of slaves, cannot now be fixed with such accuracy as the importance of the object would deserve. We are informed, that when the emperor Claudius exercised the office of censor, he took an account of 6,945,000 Roman citizens; who, with the proportion of women and children, must have amounted to about 20,000,000 of souls. The multitude of subjects of an inferior rank was uncertain and fluctuating: but after weighing with attention every circumstance which could influence the balance, it seems probable that there existed, in the time of Claudius, about twice as many provincials as there were Roman citizens, of either sex, and of every age; and that the slaves were at least equal in number to the free inhabitants of the Roman world. The total amount of this imperfect calculation would rise to about 120 millions of persons; a degree of population which possibly exceeds that of modern Europe, and forms the most numerous society that has ever been united under the same system of government.

"Domestic peace and union were the natural consequences of the moderate and comprehensive policy embraced by the Romans. The vanquished nations, blended into one great people, resigned the hope, nay even the wish, of resuming their independence, and scarcely considered their own existence as distinct from the existence of Rome. The established authority of the emperors pervaded, without an effort, the wide extent of their dominions, and was exercised with the same facility on the banks of the Thames, or of the Nile, as on those of the Tiber. The legions were destined to serve against the public enemy, and the civil magistrate seldom required the aid of a military force.

"It was scarcely possible that the eyes of contemporaries should discover in the public felicity the latent causes of decay and corruption. This long peace, and the uniform government of the Romans, introduced a slow and

Rome. a parallel. Many very strange instances of his cruelty are related by the ancients. He is said to have cut a sunder a corpulent man whom he saw walking along the street; partly, to try his own strength, in which he greatly excelled; and partly, as he himself owned, out of curiosity, to see his entrails drop out at once. He took pleasure in cutting off the feet, and putting out the eyes, of such as he met in his rambles through the city; telling the former, after he had thus maimed them, that now they belonged to the nation of *Monopodii*; and the latter, that they were now become *Luscini*, alluding to the word *luscus*, "one-eyed." Some he murdered because they were negligently dressed; others, because they seemed to be trimmed with too much nicety. He pretended to great skill in surgery, especially at letting blood: but sometimes, instead of easing by that means those whom he visited, or who were prevailed upon to recur to him, he cut off, by way of diversion, their ears and noses. His lewdness and debaucheries were equally remarkable, and equally infamous. However, he is said to have been exceedingly well skilled in archery, and to have performed incredible feats in that way. He excelled all men in strength; and is said to have run an elephant through with his spear, and to have killed in the amphitheatre 100 lions, one after another, and each of them at one blow. Forgetful of his dignity, he entered the lists with the common gladiators, and came off conqueror 735 times; whence he often subscribed himself in his letters, *the conqueror of 1000 gladiators*.

The public transactions of this reign were but very few. Soon after his father's death, Commodus concluded a peace with the Marcomanni, Quadi, &c. on the following conditions. 1. That they should not settle within five miles of the Danube. 2. That they should deliver up their arms, and supply the Romans with a certain number of troops when required. 3. That they should assemble but once a month, in one place only, and that in presence of a Roman centurion. 4. That they should not make war upon the Jazyges, Buri, or Vandals, without the consent of the people of Rome. On the other hand, Commodus promised to abandon, which accordingly he did, all the castles and fortresses held by the Romans in their country, excepting such as were within five miles of the Danube. With the other German nations, whom his father had almost entirely reduced, he concluded a very dishonourable peace; nay, of some he purchased it with large sums of money.

Soon after the return of the emperor to Rome, his sister Lucilla, perceiving that he was universally abhorred on account of his cruelty, formed a conspiracy against his life. Among the conspirators were many senators of distinction. It was agreed among them that they should fall upon the emperor while he was going to the amphitheatre through a narrow and dark passage; and that Claudius Pompeianus, to whom Lucilla had betrothed her daughter, should give the first blow. But he, instead of striking at once, showed him the naked dagger, and cried out, "This present the senate sends you."

secret poison into the vitals of the empire. The minds of men were gradually reduced to the same level; the fire of genius was extinguished, and even the military spirit evaporated. The natives of Europe were brave and robust. Spain, Gaul, Britain, and Illyricum, supplied the legions with excellent soldiers, and constituted the real strength of the monarchy. Their personal valour remained; but they no longer possessed that public courage which is nourished by the love of independence, the sense of national honour, the presence of danger, and the habit of command. They received laws and governors from the will of their sovereign, and trusted for their defence to a mercenary army. The posterity of their boldest leaders were contented with the rank of citizens and subjects. The most aspiring spirits resorted to the court or standard of the emperors; and the deserted provinces, deprived of political strength or union, insensibly sunk into the languid indifference of private life.

"The love of letters, almost inseparable from peace and refinement, was fashionable among the subjects of Adrian and the Antonines; who were themselves men of learning and curiosity. It was diffused over the whole extent of their empire; the most northern tribes of Britons had acquired a taste for rhetoric; Homer as well as Virgil were transcribed and studied on the banks of the Rhine and Danube; and the most liberal rewards sought out the faintest glimmerings of literary merit. The sciences of physic and astronomy were cultivated with some degree of reputation; but, if we except Lucian, an age of indolence passed away without producing a single writer of genius who deserved the attention of posterity. The authority of Plato, of Aristotle, of Zeno, and Epicurus, still reigned in the schools; and their systems, transmitted with blind deference from one generation of disciples to another, precluded every generous attempt to correct the errors or enlarge the bounds of the human mind. The beauties of the poets and orators, instead of kindling a fire like their own, produced only servile imitations; or, if any ventured to deviate from these models, they deviated at the same time from good sense and propriety. The provincials of Rome, trained by an uniform artificial education, were engaged in a very unequal competition with those bold ancients, who, by expressing their genuine feelings in their native tongue, had already occupied every place of honour. The name of *poet* was almost forgotten; that of *orator* was usurped by the sophists. A cloud of critics, of compilers, of commentators, darkened the face of learning, and the decline of genius was soon followed by the corruption of taste.

"Longinus observes and laments the degeneracy of his contemporaries, which debased their sentiments, enervated their courage, and depressed their talents; comparing them to pigmies, whose stature has been diminished by constant pressure on their limbs. This diminutive stature of mankind was constantly sinking below the old standard, and the Roman world was indeed peopled by a race of pigmies; when the fierce giants of the north broke in and mended the puny breed. They restored a manly freedom; and, after the revolution of ten centuries, freedom became the happy parent of taste and science."

Rome.

you:" so that the guards had time to rescue the emperor, and to seize the conspirators, who were soon after put to death. The emperor banished his sister to the island of Capreae, where he soon after caused her to be privately murdered.

The favourite minister of Commodus was one Peregrius; who in oppression and cruelty seems to have been nothing inferior to those of the most tyrannical emperors. During the first part of the reign of Commodus, he ruled with an absolute sway; but at last was torn in pieces by the enraged soldiery, whom he had offended by his too great severity. He was succeeded in his place by a freedman named Cleander; for the emperor himself was so much taken up with his pleasures, that he could not bestow even a moment on the affairs of state. The new minister abused his power in a more flagrant manner than even his predecessor had done. By him all things were openly set to sale; offices, provinces, public revenues, justice, and the lives of men both innocent and guilty. The minister, who ruled the emperor without controul, infused such terrors into his timorous mind, that he changed the captains of his guards almost continually. One Niger enjoyed the dignity only six hours; another only five days; and several others a still shorter space. Most of those officers lost their lives along with their employments; being accused of treason by Cleander, who continually solicited, and at last obtained, that important post for himself.

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Revolt of
Maternus.

In the year 187 happened a remarkable revolt. One Maternus, a common soldier, having fled from his colours, and being joined by many others guilty of the same crime, grew in a short time so powerful, the banditti flocking to him from all parts, that he overran and plundered great part of Gaul and Spain; stormed the strongest cities; and struck the emperor and people of Rome with such terror, that troops were raised, and armies dispatched against him. Pescennius Niger was sent to make head against him in Gaul, where he became very intimate with Severus, who was then governor of Lyons, and who wrote a letter to the emperor, commending the prudent and gallant behaviour of Niger in pursuing the rebels. Maternus, finding himself reduced to great straits, divided his men into several small bands, and marched privately with them by different ways into Italy; having nothing less in view than to murder the emperor during the solemnity which was kept annually in honour of the mother of the gods, and on his death to seize upon the empire for himself. They all arrived at Rome undiscovered; and several of his men had already mixed themselves with the emperor's guards, when others of his own party betrayed him. He was immediately seized and executed; and his death put an end to the disturbances which some of his followers had begun to raise in other provinces. In the same year broke out the most dreadful plague, says Dio Cassius, that had been known. It lasted two or three years; and raged with the greatest violence at Rome, where it frequently carried off 2000 persons a-day. The following year, a dreadful fire, which consumed a great part of the city, was kindled by lightning; and at the same time the people were afflicted with a dreadful famine, occasioned, according to some authors, by Cleander, who, having now in view nothing less than the sovereignty itself, bought up underhand

all the corn, in order to raise the price of it, and gain the affections of the soldiery and people by distributing it among them. Others tell us, however, that Papius Dionysius, whose province it was to supply the city with provisions, contributed towards the famine, in order to make the people rise against Cleander. Be this as it will, the populace ascribed all their calamities to this hated minister; and one day, while the people were celebrating the Circensian games, a troop of children, having at their head a young woman of an extraordinary stature and fierce aspect, entering the circus, began to utter aloud many bitter invectives and dreadful curses against Cleander; which being for some time answered by the people with other invectives and curses, the whole multitude arose all of a sudden, and flew to the place where Cleander at that time resided with the emperor. There, renewing their invectives, they demanded the head of the minister who had been the occasion of so many calamities. Hereupon Cleander ordered the prætorian cavalry to charge the multitude; which they did accordingly, driving them with great slaughter into the city. But the populace discharging showers of stones, bricks, and tiles, from the tops of the houses and from the windows, and the city-guards at the same time taking part with the people, the prætorian horse were soon obliged to save themselves by flight: nor was the slaughter ended till the emperor, apprised of the tumult, caused the head of Cleander to be struck off and thrown out to the enraged populace. The emperor himself did not long survive Cleander; being cut off by a conspiracy of Marcia his favourite concubine, Lætus captain of the guards, and Eclectus his chamberlain.

Rome.

No sooner was the death of Commodus known, than the senate assembled, and declared him a public enemy, loading him with curses, ordering his statues to be broken to pieces, and his name to be rased out of all public inscriptions; and demanded his body, that it might be dragged through the streets, and thrown into the Tiber. But Helvius Pertinax, whom the conspirators had previously designed for the empire, and who had already assumed it, prevented such an outrage, by letting the senators know that Commodus was already buried. This extraordinary personage had passed through many changes of fortune. He was originally the son of an enfranchised slave, called *Ælius*, who only gave him so much learning as to qualify him for keeping a little shop in the city. He then became a schoolmaster, afterwards studied the law, and after that became a soldier; in which station his behaviour was such as caused him to be soon made captain of a cohort against the Parthians. Being thus introduced to arms, he went through the usual gradation of military preferment in Britain and Mœsia, until he became the commander of a legion under Aurelius. In this station he performed such excellent services against the barbarians, that he was made consul, and successively governor of Dacia, Syria, and Asia Minor. In the reign of Commodus he was banished; but soon after recalled, and sent into Britain to reform the abuses in the army. In this employment his usual extraordinary fortune attended him: he was opposed by a sedition among the legions, and left for dead among many others that were slain. However, he got over this danger, severely punished the mutineers, and established

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Commodus
murdered.

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Pertinax
raised to the
empire.

Rome. ed regularity and discipline among the troops he was sent to command. From thence he was removed into Africa, where the sedition of the soldiers had like to have been as fatal to him as in his former government. Removing from Africa, and fatigued with an active life, he betook himself to retirement: but Commodus, willing to keep him still in view, made him prefect of the city; which employment he filled, when the conspirators fixed upon him as the properest person to succeed to the empire.

His being advanced by Commodus only served to increase his fears of falling as an object of his suspicions; when therefore the conspirators repaired to his house by night, he considered their arrival as a command from the emperor for his death. Upon Lætus entering his apartment, Pertinax, without any show of fear, cried out, That for many days he had expected to end his life in that manner, wondering that the emperor had deferred it so long. However, he was not a little surprised when informed of the real cause of their visit; and being strongly urged to accept of the empire, he at last complied with their offer.

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His excellent reign.

Being carried to the camp, Pertinax was proclaimed emperor: soon after the citizens and senate consented; the joy for the election of a new sovereign being scarcely equal to that for the death of the former. The provinces quickly followed the example of Rome; so that he began his reign with universal satisfaction to the whole empire, in the 68th year of his age.

Nothing could exceed the wisdom and justice of this monarch's reign the short time it continued. He punished all those who had served to corrupt the late emperor, and disposed of his ill-got possessions to public uses. He attempted to restrain the licentiousness of the prætorian bands, and put a stop to the injuries and insolences they committed against the people. He sold most of the buffoons and jesters of Commodus as slaves; particularly such as had obscene names. He continually frequented the senate as often as it sat, and never refused an audience even to the meanest of the people. His success in foreign affairs was equal to his internal policy. When the barbarous nations abroad had certain intelligence that he was emperor, they immediately laid down their arms, well knowing the opposition they were to expect from so experienced a commander. His great error was avarice; and that, in some measure, served to hasten his ruin.

The prætorian soldiers, whose manners he had attempted to reform, having been long corrupted by the indulgence and profusion of their former monarchs, began to hate him for the parsimony and discipline he had introduced among them. They therefore resolved to dethrone him; and for that purpose declared Maternus, an ancient senator, emperor, and endeavoured to carry him to the camp to proclaim him. Maternus, however, was too just to the merits of Pertinax, and too faithful a subject, to concur in their seditious designs; wherefore escaping out of their hands, he fled, first to the emperor, and then out of the city. They then nominated one Falco, another senator; whom the senate would have ordered for execution, had not Pertinax interposed, who declared that during his reign no senator should suffer death.

The prætorian soldiers then resolved unanimously not to use any secret conspiracies, or private contrivances,

but boldly to seize upon the emperor and empire at once. They accordingly, in a tumultuous manner, marched through the streets of Rome, and entered the palace without opposition. Such was the terror at their approach, that the greatest part of the emperor's attendants forsook him; while those who remained earnestly intreated him to fly to the body of the people and interest them in his defence. However, he rejected their advice; declaring, that it was unworthy his imperial dignity, and all his past actions, to save himself by flight. Having thus resolved to face the rebels, he had some hopes that his presence alone would terrify and confound them. But what could his former virtues, or the dignity of command, avail against a tumultuous rabble, nursed up in vice, and ministers of former tyranny? One Thraſius, a Tungrian, struck him with his lance on the breast, crying out, "The soldiers send you this." Pertinax finding all was over, covered his head with his robe, and sunk down, mangled with a multitude of wounds, which he received from various assassins. Eclæctus, and some more of his attendants, who attempted to defend him, were also slain: his son and daughter only escaped, who happened to be lodged out of the palace. Thus, after a reign of three months, Pertinax fell a sacrifice to the licentious fury of the prætorian army. From the number of his adventures, he was called the *tennis-ball of Fortune*; and certainly no man ever experienced such a variety of situations with so blameless a character.

Rome. 370
Is murdered by the prætorian soldiers.

The soldiers having committed this outrage, retired with great precipitation; and getting out of the city to the rest of their companions, expeditiously fortified their camp, expecting to be attacked by the citizens. Two days having passed without any attempt of this kind, they became more insolent; and willing to make use of the power of which they found themselves possessed, made proclamation, that they would sell the empire to whoever would purchase it at the highest price. In consequence of this proclamation, so odious and unjust, only two bidders were found; namely, Sulpicianus and Didius Julianus: The former, a consular person, præfect of the city, and son-in-law to the late emperor Pertinax; the latter, a consular person likewise, a great lawyer, and the wealthiest man in the city. He was sitting with some friends at dinner when the proclamation was published; and being charmed with the prospect of unbounded power, immediately rose from table and hastened to the camp. Sulpicianus was got there before him; but as he had rather promises than treasure to bestow, the offers of Didius, who produced immense sums of ready money, prevailed. He was received into the camp by a ladder, and they instantly swore to obey him as emperor. From the camp he was attended by his new electors into the city; the whole body of his guards, which consisted of 10,000 men, ranged around him in such order as if they had prepared for battle, and not for a peaceful ceremony. The citizens, however, refused to confirm his election; but rather cursed him as he passed. Upon being conducted to the senate-house, he addressed the few senators that were present in a very laconic speech: "Fathers, you want an emperor; and I am the fittest person you can choose." But even this, short as it seems, was unnecessary, since the senate had it not in their power to refuse their approbation. His speech

371
The empire exposed to sale, and bought by Didius Julianus.

Rome.

being backed by the army, to whom he had given about a million of our money, succeeded. The choice of the soldiers was confirmed by the senate, and Didius was acknowledged emperor, now in the 57th year of his age.

It should seem by this weak monarch's conduct when seated on the throne, that he thought the government of an empire rather a pleasure than a toil. Instead of attempting to gain the hearts of his subjects, he gave himself up to ease and inactivity, utterly regardless of the duties of his station. He was mild and gentle indeed; neither injuring any nor expecting to be injured. But that avarice, by which he became opulent, still followed him in his exaltation; so that the very soldiers who elected him, soon began to detest him for those qualities, so very opposite to a military character. The people also, against whose consent he was chosen, were no less inimical. Whenever he issued from his palace, they openly poured forth their imprecations against him; crying out, that he was a thief, and had stolen the empire. Didius, however, in the true spirit of a trader, patiently bore it all; sometimes beckoning them with smiles to approach him, and testifying his regard by every kind of submission.

372
Pescennius Niger and Septimius Severus assume the empire.

While Didius was thus contemptuously treated at home, two valiant generals, in different parts of the empire, disclaimed his authority, and boldly resolved to attempt the throne for themselves. These were, Pescennius Niger, governor of Syria; and Septimius Severus, commander of the German legions. Niger was beloved by the people for his clemency and valour; and the report of his proposing Pertinax for his model, and resolving to revenge his death, gained him universal esteem among the people. Being thus apprised of their inclinations, he easily induced his army in Syria to proclaim him emperor; and his title was, shortly after, acknowledged by all the kings and potentates in Asia, who sent their ambassadors to him as their lawful prince. The pleasure of being thus treated as a monarch, in some measure retarded his endeavours to secure his title. Entirely satisfied with the homage of those about him, he neglected the opportunities of suppressing his rivals; and gave himself up to luxury and feasting at Antioch. The conduct of Severus, an African by birth, was very different. Being proclaimed by his army, he began by promising to revenge the death of Pertinax, and took upon him his name. He next secured the fidelity of all the strong places in his province; and then resolved, with the utmost expedition, to march with his whole force directly to Rome.

373
Julianus deposed and put to death.

In the mean time, Didius, who disregarded the attempts of Niger, was greatly alarmed at those of Severus. He first, with many solicitations, procured the senate to proclaim him a traitor. He then applied himself to make the necessary provisions to oppose him, in which he found nothing but disappointment. The cohorts that elected him were enervated by vice and luxury; the people detested his cause; and the cities of Italy had long been disused to the arts of war. Some advised him to march forward, and meet Severus as he was crossing the Alps; others were for sending the generals upon that expedition. The unfortunate Didius, unequal to the task of empire, and quite confounded with the multiplicity of counsels, could take no other

Rome.

resolution but that of awaiting his rival's coming at Rome. Accordingly, soon after being informed of his approach, he obtained the consent of the senate to send his ambassadors, offering to make him a partner of the empire. But Severus rejected this offer, conscious of his own strength, and of the weakness of the proposer. The senate soon appeared of the same sentiments; and perceiving the timidity and weakness of their present master, began to abandon him, alleging, that he who could not defend the empire was not worthy to govern it. Didius vainly endeavoured to reduce them to their duty, first by intreaties, and then by threats; but these only served to hasten his destruction. The senate being called together, as was formerly practised in the times of the commonwealth by the consuls, they unanimously decreed, That Didius should be deprived of the empire, and that Severus should be proclaimed in his stead. They then commanded Didius to be slain; and sent messengers for this purpose to the palace, where they found him disarmed, and weeping among a few friends that still adhered to his interest. When the executioners began to prepare for their fatal errand, he expostulated with them, demanding what crime he had committed? He could not be persuaded to think, that paying his money, and receiving an empire in exchange, deserved so severe a punishment. The executioners, however, were neither able nor willing to enter into the merits of the cause; they presently led him into the secret baths of the palace, and obliging him to stretch his neck forwards, after the manner of condemned criminals, struck off his head, and placed it up in those courts where he had formerly pleaded with great success.

The senate having thus dispatched Didius, sent ambassadors to Severus, yielding him obedience, granting him the ensigns and the usual titles of empire, and informing him of the death of Didius. Severus, who was now about 47 years of age, received them with all proper respect; and entertaining them honourably, continued his march towards Rome. As he came near the city, his first exertion of power was, to have all the prætorian soldiers who had lately sold the empire come forth unarmed to meet him. These, though sensible of their danger, had no other resource left but compliance; and accordingly came forward with branches of laurel, as if to welcome his approach. Severus, however, soon showed how little capable their present submission was to atone for their past offences: after upbraiding them, in a short speech, with all their crimes, he commanded them to be instantly stripped of their military habits, deprived of the name and honour of soldiers, and banished 100 miles from Rome. He then entered the city in a military manner, took possession of the palace, and promised the senate to conduct himself with clemency and justice. However, though he united great vigour with the most refined policy, yet his African cunning was considered as a particular defect in him. He is celebrated for his wit, learning, and prudence; but equally blamed for infidelity and cruelty. In short, he seemed alike disposed to the performance of the greatest acts of virtue and the most bloody severities. He began his command, by seizing all the children of such as had employments or authority in the east, and detained them as pledges for their fathers loyalty. He next supplied the city

374
Severus declared emperor.

Rome. city with corn; and then with all possible expedition marched against Niger, who was still considered and honoured as emperor of the east.

374
Niger de-
feated and
killed.

One of the chief obstacles to his march was, the leaving behind him Clodius Albinus, commander of the legions in Britain, whom he by all means wished to secure in his interests. For this end, he endeavoured to prevail upon him, by giving him hopes of succeeding to the empire; insinuating, that he himself was declining, and his children were as yet but infants. To deceive him still farther, he wrote in the same style to the senate, gave him the title of *Cæsar*, and ordered money to be coined with his image. These artifices serving to lull Albinus into false security, Severus marched against Niger with all his forces. After some undecided conflicts, the last great battle that was fought between these extraordinary men was upon the plains of Illus, on the very spot where Alexander had formerly conquered Darius. Besides the two great armies drawn up on the plain, the neighbouring mountains were covered with infinite numbers of people, who were merely led by curiosity to become spectators of an engagement that was to determine the empire of the world. Severus was conqueror; and Niger's head being struck off by some soldiers of the conquering army, was insultingly carried through the camp on the point of a lance.

This victory secured Severus in the possession of the throne. However, the Parthians, Persians, and some other neighbouring nations, took up arms, under a pretence of vindicating Niger's cause. The emperor marched against them in person, had many engagements with them, and obtained such signal victories over them, as enlarged the empire, and established peace in the east.

375
Albinus
defeated
and de-
stroyed.

Niger being no more, Severus now turned his views against Albinus, whom he resolved by every means to destroy. For this purpose he sent assassins into Britain, under a pretence of bringing him letters, but in reality to dispatch him. Albinus being apprised of their designs, prevented their attempt by recurring to open force and proclaiming himself emperor. Nor was he without a powerful army to support his pretensions; of which Severus being sensible, bent his whole force to oppose him. From the east he continued his course across the straits of Byzantium, into the most western parts of Europe, without intermission. Albinus being informed of his approach, went over to meet him with his forces into Gaul; so that the campaign on both sides was carried on with great vigour. Fortune seemed for a while variable; but at last a decisive engagement came on, which was one of the most desperate recorded in the Roman history. It lasted from morning till night, without any seeming advantage on either side; at length the troops of Severus began to fly, and he himself happening to fall from his horse, the army of Albinus cried out, Victory. But the engagement was soon renewed with vigour by Lætus, one of Severus's commanders, who came up with a body of reserve, designing to destroy both parties and make himself emperor. This attempt, though designed against both, turned out entirely to the advantage of Severus. He therefore again charged with such fury and exactness, that he soon plucked the victory from those who but a short time before seemed conquerors; and pursuing them into the city of Lyons, took Albinus prisoner, and cut off his

Rome. head; treating his dead body with insults that could only flow from a mean and revengeful temper. All the senators who were slain in battle he ordered to be quartered, and such as were taken alive were immediately executed.

Having thus secured himself in possession of the empire, upon his return to Rome he loaded his soldiers with rewards and honours; giving them such privileges as strengthened his own power, while they destroyed that of the state. For the soldiers, who had hitherto showed the strongest inclination to an abuse of power, were now made arbiters of the fate of emperors; and we shall henceforward behold them setting them up, and de-throning them, at pleasure.

Being thus secure of his army, he resolved to give way to his natural turn for conquest, and to oppose his arms against the Parthians, who were then invading the frontiers of the empire. Having therefore previously given the government of domestic policy to one Plautianus, a particular favourite of his, to whose daughter he married his son Caracalla, he set out for the east, and prosecuted the war with his usual expedition and success. He forced submission from the king of Armenia, destroyed several cities in Arabia Felix, landed on the Parthian coasts, took and plundered the famous city Ctesiphon, marched back through Palestine and Egypt, and at length returned to Rome in triumph.

During this interval, Plautianus, who was left to direct the affairs of Rome, began to think of aspiring to the empire himself. Upon the emperor's return, he employed a tribune of the prætorian cohorts, of which he was the commander, to assassinate him, as likewise his son Caracalla. The tribune seemed cheerfully to undertake this dangerous office; but instead of going through with it, informed Severus of his favourite's treachery. He at first received it as an improbable story, and as the artifice of some one who envied his favourite's fortune. However, he was at last persuaded to permit the tribune to conduct Plautianus to the emperor's apartments. With this intent, the tribune went and amused him with a pretended account of his killing the emperor and his son, desiring him, if he thought it fit to see them dead, to come with him to the palace. As Plautianus ardently desired their deaths, he readily gave credit to this relation; and following the tribune, he was conducted at midnight into the innermost recesses of the palace. But what must have been his disappointment, when, instead of finding the emperor lying dead, as he expected, he beheld the room lighted up with torches, and Severus, surrounded by his friends, prepared in array to receive him. Being asked by the emperor, with a stern countenance, what had brought him there at that unseasonable time? he was at first utterly confounded; wherefore, not knowing what excuse to make, he ingenuously confessed the whole, intreating forgiveness for what he had intended. The emperor seemed in the beginning inclined to pardon; but Caracalla his son, who from the earliest age showed a disposition to cruelty, spurned him away in the midst of his supplications, and with his sword ran him through the body.

Severus having escaped this danger, spent a considerable time in visiting some cities in Italy, permitting none of his officers to sell places of trust or dignity, and distributing justice with the strictest impartiality. He took such an exact order in managing his exchequer,

Rome. that, notwithstanding his great expences, he left more money behind him than any of his predecessors. His armies also were kept upon the most respectable footing; so that he feared no invasion. Being equally attentive to the preservation of all parts of the empire, he resolved to make his last expedition into Britain, where the Romans were in danger of being destroyed or compelled to fly the province. Wherefore, after appointing his two sons Caracalla and Geta joint successors in the empire, and taking them with him, he landed in Britain, to the great terror of such as had drawn down his resentment. Upon his progress into the country, he left his son Geta in the southern part of the province, which had continued in obedience, and marched with his son Caracalla against the Caledonians. In this expedition, his army suffered prodigious hardships in pursuing the enemy; they were obliged to hew their way through intricate forests, to drain extensive marshes, and form bridges over rapid rivers; so that he lost 50,000 men by fatigue and sickness. However, he supported all these inconveniences with the greatest bravery; and is said to have prosecuted his successes with such vigour, that he compelled the enemy to sue for peace; which they obtained, not without the surrender of a considerable part of their country. We must here observe, however, that the Picts and Caledonians are so often confounded together by historians, that many mistakes have thence arisen concerning the progress and conquests of the Romans in the north of Britain. But from the boundary formed by the famous wall of Severus (see *SEVERUS'S WALL*), we must conclude, that no part of Caledonia, properly so called, had been either on this or any other occasion ceded to him; and there is reason to believe, that he rather received checks from the people of that territory, than was ever able to make any considerable impression upon them. Be this, however, as it may, after having made peace, and built his wall, he retired to York; where, partly through grief at the irreclaimable life of Caracalla, he found himself daily declining, having already lost the use of his feet. To add to the distress of his situation, he was informed that the soldiers had revolted, and declared his son emperor. In this exigence, he seemed once more to recal his natural vigour; he got himself immediately put into his litter, and commanded the new emperor, with the tribunes and centurions, to be brought before him. Though all were willing to court the favour of the young emperor, such was the authority of Severus, that none dared to disobey. They appeared before him confounded and trembling, and implored pardon upon their knees. Upon which, putting his hand to his head, he cried out, "Know, that it is the head that governs, and not the feet." However, soon perceiving his disorder to increase, and knowing that he could not outlive it, he called for poison; which being refused him, he loaded his stomach with food; which not being able to digest, it soon brought him to his end, in the 65th year of his age, after an active though cruel reign of about 18 years.

376
Expedition
of Severus
into Bri-
tain.

377
Severus
dies.

378
Caracalla
and Geta
succeed.

Caracalla and Geta being acknowledged as emperors by the army, began to show a mutual hatred to each other even before their arrival at Rome. Their only agreement was, in resolving to deify Severus their father; but soon after, each sought to attach the senate and army to his own particular interest. They were

of very opposite dispositions: Caracalla was fierce and cruel to an extreme degree; Geta was mild and merciful; so that the city soon found the dangerous effects of being governed by two princes of equal power and contrary inclinations.

But this opposition was of no long continuance; for Caracalla being resolved to govern alone, furiously entered Geta's apartment, and, followed by ruffians, flew him in his mother's arms. Having committed this detestable murder, he issued with great haste from the palace, crying out, That his brother would have slain him; and that he was obliged, in self-defence, to retaliate the intended injury. He then took refuge among the prætorian cohorts, and in a pathetic tone began to implore their assistance, still making the same excuse for his conduct. To this he added a much more prevailing argument, promising to bestow upon them the largesses usually given upon the election of new emperors, and distributing among them almost all the treasures which had been amassed by his father. By such persuasives the soldiers did not hesitate to proclaim him sole emperor, and to stigmatize the memory of his brother Geta as a traitor and an enemy to the commonwealth. The senators were soon after induced, either through favour or fear, to approve what had been done by the army: Caracalla wept for the death of his brother whom he had slain; and, to carry his hypocrisy to the utmost extreme, ordered him to be adored as a god.

Being now emperor, he went on to mark his course with blood. Whatever was done by Domitian or Nero fell short of this monster's barbarities. Lætus, who first advised him to murder his brother, was the first who fell a sacrifice to his jealousy. His own wife Plautina followed. Papinian, the renowned civilian, was beheaded for refusing to write in vindication of his cruelty; answering the emperor's request, by observing, That it was much easier to commit a parricide than to defend it. He commanded all governors to be slain that his brother had appointed; and destroyed not less than 2000 persons who had adhered to his party. Whole nights were spent in the execution of his bloody decrees; and the dead bodies of people of all ranks were carried out of the city in carts, where they were burnt in heaps, without any of the ceremonies of a funeral. Upon a certain occasion, he ordered his soldiers to set upon a crowded audience in the theatre, only for discountenancing a charioteer whom he happened to favour. Perceiving himself hated by the people, he publicly said, that he could insure his own safety though not their love; so that he neither valued their reproaches nor feared their hatred.

This safety which he so much built upon was placed in the protection of his soldiers. He had exhausted the treasury, drained the provinces, and committed a thousand acts of rapacity, merely to keep them steadfast in his interests; and being disposed to trust himself with them particularly, he resolved to lead them upon a visit through all the provinces of the empire. He first went into Germany; where, to oblige the natives, he dressed himself in the habit of their country. From thence he travelled into Macedonia, where he pretended to be a great admirer of Alexander the Great; and among other extravagancies caused a statue of that monarch to be made with two faces; one of which resembled

Rome.

379
Geta mur-
dered by
Caracalla.

380
Who proves
a most
bloody ty-
rant.

381
His extra-
vagant fol-
lowing, cruelty
and trea-
chery.

Rome. fumbled Alexander and the other himself. He was so corrupted by flattery, that he called himself *Alexander*; walked as he was told that monarch had walked; and, like him, bent his head to one shoulder. Shortly after, arriving at Lesser Asia and the ruins of Troy, as he was viewing the tomb of Achilles, he took it into his head to resemble that hero; and one of his freedmen happening to die at that time, he used the same ceremonies that were performed at the tomb of Patroclus. Passing thence into Egypt, he massacred in the most terrible manner the inhabitants of Alexandria, on account of the satires they composed on him, as is related under the article ALEXANDRIA.

Going from thence into Syria, he invited Artabanus king of Parthia to a conference; desiring his daughter in marriage, and promising him the most honourable protection. In consequence of this, that king met him on a spacious plain, unarmed, and only attended with a vast concourse of his nobles. This was what Caracalla desired. Regardless of his promise, or the law of nations, he instantly surrounded him with armed troops, let in wild beasts among his attendants, and made a most terrible slaughter among them; Artabanus himself escaping with the utmost difficulty. For this vile treachery he obtained from the senate the surname of *Parthicus*.

382
Marries his
father's
wife.

Upon his return towards Rome, it would seem as if his vices were inexhaustible; for having been guilty of parricide, he now resolved to marry the mother of Geta whom he had slain. It happened that one day seeing her drop her veil, which disclosed her naked bosom, which was extremely beautiful, he told her, that he would possess those charms he beheld, if it were lawful. To this unnatural request she hesitated not to answer, that he might enjoy all things who possessed all. Whereupon, setting aside all duty and respect for his deceased father, he celebrated his nuptials with her in public, totally disregarding the censures and the sarcasms of mankind.

However, though he disregarded shame, he was not insensible to fear. He was ever uneasy in the consciousness of being universally hated; and was continually consulting astrologers concerning what death he should die. Among others, he sent one of his confidants, named *Maternianus*, with orders to consult all the astrologers in the city concerning his end. *Maternianus* considered this as a proper time to get rid of *Macrinus*, the emperor's principal commander in Mesopotamia; a man who was daily supplanting him in his master's favour. He therefore informed him by letter, as if from the astrologers, that *Macrinus* had a design against his life; and they consequently advised him to put the conspirator to death. This letter was sent sealed, and made up, amongst many others, to be conveyed with the greater secrecy, and delivered to the emperor as he was preparing for a chariot-race. However, as it never was his custom to interrupt his pleasures for his business, he gave the packet to *Macrinus* to read over, and to inform him of the contents when more at leisure. In perusing these letters, when *Macrinus* came to that which regarded himself, he was unable to contain his surprise and terror. His first care was, to reserve the letter in question to himself, and to acquaint the emperor only with the substance of the rest. He then set about the most probable means of compassing his

death, by which alone he could expect any safety. At length he determined to apply to one *Martialis*, a man of great strength, and a centurion of the guards, who hated the emperor from various motives; particularly for the death of a brother, whom *Caracalla* had ordered to be slain. Him therefore *Macrinus* exhorted to revenge his brother's death, by killing the tyrant, which he might easily effect, as being always so near his person. *Martialis* readily undertook the dangerous task; being willing to meet death himself, so he might obtain his desire of seeing the tyrant expire before him. Accordingly, as the emperor was riding out one day near a little city called *Carræ*, he happened to withdraw himself privately, upon a natural occasion, with only one page to hold his horse. This was the opportunity *Martialis* had so long and ardently desired; wherefore running to him as if he had been called, he stabbed the emperor in the back, so that he died immediately. *Martialis* unconcernedly returned to his troop; but retiring by insensible degrees, he endeavoured to secure himself by flight. But his companions soon missing him, and the page giving information of what had been done, he was pursued by the German horse and cut in pieces.

During the reign of this execrable tyrant, which continued six years, the empire was every day declining; the soldiers were entirely masters of every election; and as there were various armies in different parts, so there were as many interests all opposite to each other. *Caracalla*, by satisfying their most unreasonable appetites, destroyed all discipline among them, and all subordination in the state.

The soldiers, now without an emperor, after a suspense of two days, fixed upon *Macrinus*, who took all possible methods to conceal his being privy to *Caracalla's* murder. The senate confirmed their choice shortly after; and likewise that of his son *Diadumenus*, whom he took as a partner in the empire. *Macrinus* was 53 years old when he entered upon the government of the empire. He was of obscure parentage; some say by birth a Moor, who by the mere rotation of office, being first made præfect of the prætorian bands, was now, by treason and accident, called to fill the throne. We are told but little of this emperor, except his engaging in a bloody though undecided battle with *Artabanus* king of Parthia, who came to take vengeance for the injury he had sustained in the late reign: however, this monarch finding his real enemy dead, was content to make peace, and returned into Parthia. Something is also said of the severity of this emperor's discipline; for to such a pitch of licentiousness was the Roman army now arrived, that the most severe punishments were unable to restrain the soldiers; and yet the most gentle inflictions were looked upon as severity. It was this rigorous discipline, together with the artifices of *Mæsa*, grandmother to *Heliogabalus* the natural son of *Caracalla*, that caused the emperor's ruin. *Heliogabalus* was priest of a temple dedicated to the Sun, in *Emesa*, a city of Phœnicia; and though but 14 years old was greatly loved by the army for the beauty of his person, and the memory of his father, whom they still considered as their greatest benefactor. This was soon perceived by the grandmother; who being very rich in gold and jewels, gave liberal presents among them, while they frequently repaired to the temple;

383
He is murdered.
383
Macrinus succeeds.
384
Heliogabalus revolts against him.
both

Rome. both from the garrison in the city and the camp of Macrinus. This intercourse growing every day more frequent, the soldiers, being disgusted with the severities of their present emperor, began to think of placing Heliogabalus in his stead. Accordingly, sending for him to their camp, he was immediately proclaimed; and such were the hopes of his virtues, that all men began to affect his interests.

385
Macrinus
defeated,
and put to
death.

Macrinus, who at this time was pursuing his pleasures at Antioch, gave but little attention to the first report; only sending his lieutenant Julian, with some legions, to quell the insurrection. However, these, like the rest, soon declared for Heliogabalus, and slew their general. It was then that Macrinus found he had treated the rebellion too slightly; he therefore resolved, with his son, to march directly against the seditious legions, and force them to their duty. Both parties met on the confines of Syria: the battle was for some time furious and obstinate; but at last Macrinus was overthrown, and obliged to seek safety by flight. His principal aim was to get to Rome, where he knew his presence was desired; wherefore he travelled through the provinces of Asia Minor with the utmost expedition and privacy, but unfortunately fell sick at the city of Chalcedon. There those who were sent in pursuit, overtook and put him to death, together with his son Diadumenus, after a short reign of one year and two months.

386
Heliogabalus worse
than any of
his predecessors.

The senate and citizens of Rome being obliged to submit to the appointment of the army as usual, Heliogabalus ascended the throne at the age of 14. One at so early an age, invested with unlimited power, and surrounded with flatterers, could be expected to act only as they thought proper to direct. This young emperor was entirely led by them; and being sensible that it was in his power to indulge all his appetites, he studied only their gratification. As he is described by historians, he appears a monster of sensuality. His short life therefore is but a tissue of effeminacy, lust, and extravagance. He married, in the small space of four years, six wives, and divorced them all. He built a temple to the sun; and willing that his god should have a wife as well as himself, he married him to Pallas, and shortly after to the moon. His palace was a place of rendezvous for all the prostitutes of Rome, whom he frequently met naked, calling them *his fellow soldiers, and companions in the field*. He was so fond of the sex, that he carried his mother with him to the senate-house, and demanded that she should always be present when matters of importance were debated. He even went so far as to build a senate-house for women, with suitable orders, habits, and distinctions, of which his mother was made president. They met several times; all their debates turning upon the fashions of the day, and the different formalities to be used in giving and receiving visits. To these follies, he added great cruelty and boundless prodigality; so that he was heard to say, that such dishes as were cheaply obtained were scarcely worth eating. His suppers therefore generally cost 6000 crowns, and often 60,000. He was always dressed in cloth of gold and purple, enriched with precious stones, and yet never wore the same habit twice. His palace, his chambers, and his beds, were all furnished of the richest stuffs, covered with gold and jewels. Whenever he took horse, all the way between his apartment

and the place of mounting was covered with gold and silver dust strewn at his approach.

Rome.

These excesses were soon perceived by his grandmother Maesa, whose intrigues had first raised him to the throne; so that she thought to lessen his power by dividing it. For this purpose, under a pretence of freeing him from the cares of public business, she persuaded him to adopt his cousin-german, Alexander, as his successor; and likewise to make him his partner in the consulship. Heliogabalus, having thus raised his cousin, had scarcely given him his power, when he wished again to take it away; but the virtues of this young prince had so greatly endeared the people and the army to him, that the attempt had like to have been fatal to the tyrant himself. The prætorian soldiers mutinying, attempted to kill him as he was walking in his gardens; but he escaped, by hiding himself from their fury. However, upon returning to their camp, they continued the sedition; requiring that the emperor should remove such persons from about him as oppressed the subject, and contributed to contaminate him. They required also the being permitted to guard the young prince themselves, and that none of the emperor's favourites or familiars should ever be permitted to converse with him. Heliogabalus was reluctantly obliged to comply; and conscious of the danger he was in, made preparations for death, when it should arrive, in a manner truly whimsical and peculiar. He built a lofty tower with steps of gold and pearl, from whence to throw himself headlong in case of necessity. He also prepared cords of purple silk and gold to strangle himself with; he provided golden swords and daggers to stab himself with; and poison to be kept in boxes of emerald, in order to obtain what death he chose best. Thus fearing all things, but particularly suspicious of the designs of the senate, he banished them all out of the city: he next attempted to poison Alexander, and spread a report of his death; but perceiving the soldiers begin to mutiny, he immediately took him in his chariot to the camp, where he experienced a fresh mortification, by finding all the acclamations of the army directed only to his successor. This not a little raised his indignation, and excited his desire of revenge. He returned towards the city, threatening the most severe punishments against those who had displeased him, and meditating fresh cruelties. However, the soldiers were unwilling to give him time to put his designs in execution: they followed him directly to his palace, pursued him from apartment to apartment, and at last found him concealed in a privy; a situation very different from that in which he expected to die. Having dragged him from thence through the streets, with the most bitter invectives, and having dispatched him, they attempted once more to squeeze his pampered body into a privy; but not easily effecting this, they threw it into the Tiber, with heavy weights, that none might afterwards find or give it burial. This was the miserable and ignominious death of Heliogabalus, in the 18th year of his age, after a detestable reign of four years. His mother also was slain at the same time by the soldiers; as were also many of the opprobrious associates of his criminal pleasures.

387
Adopts Alexander,
and takes
him for his
colleague.

388
Is murdered
by the soldiers.

Alexander being, without opposition, declared emperor, the senate, in their usual method of adulation, were for conferring new titles upon him; but he modestly

389
Virtues of
Alexander.

Rome. destly declined them all, alleging, that titles were only honourable when given to virtue, not to station. This outset was a happy omen of his future virtues; and few princes in history have been more commended by contemporaries, or indeed more deserved commendation. To the most rigid justice he added the greatest humanity. He loved the good, and was a severe reprover of the lewd and infamous. His accomplishments were equal to his virtues. He was an excellent mathematician, geometrician, and musician; he was equally skilled in painting and sculpture; and in poetry few of his time could equal him. In short, such were his talents, and such the solidity of his judgement, that though but 16 years of age, he was considered as a wise old man.

The first part of his reign was spent in a reformation of the abuses of his predecessor. He restored the senators to their rank; nothing being undertaken without the most sage advisers, and most mature deliberation. Among the number of his advisers was his mother Mammæa; a woman eminent for her virtues and accomplishments, and who made use of her power as well to secure her son the affections of his subjects, as to procure them the most just administration. He was a rigid punisher of such magistrates as took bribes, saying, That it was not enough to deprive such of their places; for their trusts being great, their lives, in most cases, ought to pay for a breach of them. On the contrary, he thought he could never sufficiently reward such as had been remarkable for their justice and integrity, keeping a register of their names, and sometimes asking such of them as appeared modest and unwilling to approach him, why they were so backward in demanding their reward, and why they suffered him to be in their debt? His clemency extended even to the Christians, who had been punished in the former reigns with unrelenting barbarity. Upon a contest between them and a company of cooks and vintners, about a piece of public ground, which the one claimed as a place for public worship, and the other for exercising their respective trades, he decided the point by his rescript, in these words: "It is better that God be worshipped there in any manner, than that the place should be put to uses of drunkenness and debauchery."

390
Restores
the affairs
of the em-
pire,

His abilities in war were not inferior to his assiduity in peace. The empire, which from the remissness and debauchery of the preceding reigns now began to be attacked on every side, wanted a person of vigour and conduct to defend it. Alexander faced the enemy wherever the invasion was most formidable, and for a short time deferred its ruin. His first expedition, in the tenth year of his reign, was against the Parthians and Persians, whom he opposed with a powerful army.—The Persians were routed in a decisive engagement with great slaughter; the cities of Ctesiphon and Babylon were once more taken, and the Roman empire was restored to its former limits. Upon his return to Antioch, his mother Mammæa sent for the famous Origen, to be instructed by him in the principles of Christianity; and after discoursing with him for some time upon the subject, dismissed him, with a proper safeguard, to his native city of Alexandria. About the same time that Alexander was victorious in the East, Furius Celsus, his general, obtained a signal victory over the Mauritanians in Africa. Varius Macrinus was

successful in Germany, and Junius Palmatus returned with conquest from Armenia. However, the number of these victories only hastened the decline of the empire, which was wasted by the exertion of its own strength, and was now becoming little more than a splendid ruin.

About the 13th year of his reign, the Upper Germans, and other northern nations, began to pour down immense swarms of people upon the more southern parts of the empire. They passed the Rhine and the Danube with such fury, that all Italy was thrown into the most extreme consternation. The emperor, ever ready to expose himself for the safety of his people, made what levies he could, and went in person to stem the torrent; which he speedily effected. It was in the course of his successes against the enemy, that he was cut off by a mutiny among his soldiers. The legions encamped about Moguntia, having been abominably corrupted during the reign of Heliogabalus, and trained up in all kinds of rapine and disobedience, required the most strict command. Alexander could neither endure their tumultuary obedience, nor they his regular discipline. His own faults, and those of his mother Mammæa, were objected against him. They openly exclaimed, That they were governed by an avaricious woman, and a mean-spirited boy; and resolved upon electing an emperor capable of ruling alone. In this general revolt, Maximinus, an old and experienced commander, held frequent conferences with the soldiers, and enflamed the sedition. At length, being determined to dispatch their present emperor, they sent an executioner into his tent; who immediately struck off his head, and, shortly after, that of his mother. He died in the 29th year of his age, after a prosperous reign of thirteen years and nine days.

Rome.

The tumults occasioned by the death of Alexander being appeased, Maximinus, who had been the chief promoter of the sedition, was chosen emperor. This extraordinary man, whose character deserves particular attention, was born of very obscure parentage, being the son of a poor herdsman of Thrace. In the beginning he followed his father's profession, and only exercised his personal courage against the robbers who infested the part of the country in which he lived. Soon after, his ambition increasing, he left his poor employment, and enlisted in the Roman army; where he soon became remarkable for his great strength, discipline, and courage. This gigantic man was no less than eight feet and a half high; he had a body and strength corresponding to his size, being not less remarkable for the magnitude than the symmetry of his person. His wife's bracelet usually served him for a thumb-ring; and his strength was so great, that he was able to draw a carriage which two oxen could not move. He could strike out a horse's teeth with a blow of his fist, and break its thigh with a kick. His diet was as extraordinary as the rest of his endowments; he generally ate 40 pounds weight of flesh every day, and drank six gallons of wine, without committing any debauch in either. With a frame so athletic, he was possessed of a mind undaunted in danger, and neither fearing nor regarding any man. The first time he was made known to the emperor Severus, was upon his celebrating games on the birth-day of his son Geta. Maximinus was then a rude countryman, and requested the emperor to be permitted

391
is murder-

392
Succeeded
by Maxi-
mirus, a
man of gi-
gantic sta-
ture and
extraordi-
nary
strength.

Rome.

to contend for the prizes which were distributed to the best runners, wrestlers, and boxers, of the army. Severus, unwilling to infringe the military discipline, would not permit him at first to combat, except with slaves, against whom his strength appeared astonishing. He overcame 16 in running, one after the other: he then kept up with the emperor on horseback; and having fatigued him in the course, he was opposed to seven of the most active soldiers, and overcame them with the greatest ease. From that time he was particularly noticed, and taken into the emperor's body-guards, in which his assiduity and prompt obedience were particularly remarkable. In the reign of Caracalla, he was made a centurion, and distinguished himself in this station by his strict attention to the morals and discipline of those he commanded. When made a tribune, he still retained the hard simplicity of his life; ate as the meanest centinel; spent whole days in exercising his troops; and would now and then himself wrestle with eight or ten of the strongest men in the army, whom he threw with scarce any effort. Being thus become one of the most remarkable men in the empire, both for courage, discipline, and personal activity, he gave, shortly after, a very high instance of his unshaken fidelity: for when Macrinus was made emperor, he refused to serve under a prince that had betrayed his sovereign; and retired to Thrace, his native country, where he followed commerce, and purchased some lands, content with privacy rather than a guilty dependence. Upon the accession of Heliogabalus to the throne, this bold veteran once more returned to the army; but was, in the very beginning, disgusted at the base effeminacy of the emperor; who, hearing amazing instances of his strength, asked him, if he were equally capable in combats of another nature? This lewd demand was so little suitable to the temper of Maximinus, that he instantly left the court. Upon the death of Heliogabalus, he again returned to Rome, and was received with great kindness by Alexander, who particularly recommended him to the senate, and made him commander of the fourth legion, which consisted of new-raised soldiers. Maximinus gladly accepted of this charge, and performed his duty with great exactness and success, setting an example of virtue and discipline to all the commanders of the army. Nor was his valour less apparent against the Germans, whither he was sent with his legion; so that he was unanimously considered as the boldest, bravest, most valiant, and most virtuous soldier in the whole empire. He soon, however, forfeited all these justly merited titles, when he was raised to the throne; and, from being the most loved commander in the army, he became the most cruel tyrant upon earth. Yet in fact, his former virtues were all of the severe and rigid kind, which, without any education, might very easily degenerate into tyranny; so that he might have mistaken his succeeding cruelty for discipline, and his severity for justice. However this be, Maximinus is considered as one of the greatest monsters of cruelty that ever disgraced power; and, fearful of nothing himself, he seemed to sport with the terrors of all mankind.

393
Becomes a
cruel ty-
rant.

He began his reign, by endeavouring to force obedience from every rank of people, and by vindicating his authority by violence. The senate and people of Rome were the first that incurred his resentment.

1

They utterly refusing to confirm the election of the army, he was the first emperor who reigned without their concurrence or approbation. However, he seemed regardless of their opposition, proceeding to secure his election by putting all such to death as had been raised by his predecessors. The Christians also, having found favour in the former reign, felt the weight of his resentment; and were persecuted in several parts of the empire, particularly in those where he himself resided. His cruelty likewise extended to the rich, whose lives and estates became a frequent sacrifice to avarice and suspicion. But what appears still a more extraordinary instance of his cruelty, being ashamed of the meanness of his extraction, he commanded all such as were best acquainted with him and his parentage to be slain, although there were some among the number that had received him in his low condition.

Rome.

However, his cruelties did not retard his military operations, which were carried on with a spirit becoming a better monarch. He overthrew the Germans in several battles, wasted all their country with fire and sword for 400 miles together, and set a resolution of subduing all the northern nations as far as the ocean. In these expeditions, in order to attach the soldiers more firmly to him, he increased their pay; and in every duty of the camp, he himself took as much pains as the meanest centinel in his army, showing incredible courage and assiduity. In every engagement, where the conflict was hottest, Maximinus was always seen fighting there in person, and destroying all before him: for, being bred a barbarian, he considered it as his duty to combat as a common soldier, while he commanded as a general.

394
His success
in war.

In the mean time, his cruelties had so alienated the minds of his subjects, that several conspiracies were secretly aimed against him. Magnus, a consular person, and some others, had plotted to break down a wooden bridge, as soon as the emperor had passed it, and thus to abandon him to the enemy. But this being discovered, gave Maximinus an opportunity of indulging his natural severity, upon this pretext alone causing above 4000 to be slain. Shortly after, some of Alexander's old soldiers withdrawing themselves from the camp, proclaimed one Quarcianus as emperor, who had been lately disgusted at Maximinus for being dismissed from employment. The soldiers, in fact, constrained him to accept of the dangerous superiority to which he was exposed: and shortly after, in the spirit of the times, the person who had been the promoter of his advancement, murdered him in his bed, and carried his head to Maximinus; who received him kindly at first, but soon put him to a cruel death, for his complicated guilt of treason and treachery.

395
Conspiracies
formed a-
gainst him.

These partial insurrections were soon after followed by a spirit of general discontent throughout all the empire. The provinces of Africa were the first that showed their detestation of the tyrant, whose extortions and cruelties among them were become insupportable. They first slew his procurator; and afterwards considering how dangerous a crime they had committed, they resolved to throw off all expectations of pardon, and create a new emperor. Gordian was then proconsul of Africa, a person of great fame for his virtues, and highly revered for a blameless life of near 80. Him, therefore, they determined to elect; and accordingly

396
Gordian
proclaimed
emperor.

Rome. accordingly the soldiers and natives assembling together, tumultuously entered his house, resolved to put their design in execution. Gordian, who at first supposed they were come to kill him, being made sensible of their intentions, utterly refused their offer, alleging his extreme age, and Maximinus's power. But all his opposition was vain: they constrained him to accept of the proffered dignity; and he, with his son Gordian, who was 46 years of age, were declared emperors. Being thus raised contrary to his inclination, the old man immediately wrote to the senate, declaring that he had unwillingly accepted of the empire, and would only keep his authority till he had freed it from the tyranny of its present oppressor. The senate very joyfully confirmed his election, adjudging Maximinus as an enemy and traitor to the state. The citizens also showed an equal zeal in the cause: they flew upon such as were the reputed friends of Maximinus, and tore them in pieces; even some who were innocent falling a sacrifice to the blind rage of the multitude. So great an alteration being made in the city against the interests of Maximinus, the senate were resolved to drive the opposition to the extreme; and accordingly made all necessary preparations for their security, ordering Maximinus's governors to be displaced, and commanding all the provinces to acknowledge Gordian for emperor. This order was differently received in different parts, as people were affected to one or the other party: in some provinces the governors were slain; in others, the messengers of the senate; so that all parts of the empire felt the consequences of the civil war.

397
Rage of
Maximinus
on hearing
the news.

In the mean time, when Maximinus was informed of these charges against him, his rage appeared ungovernable. He roared like a savage beast, and violently struck his head against the wall, showing every instance of ungovernable distraction. At length his fury being somewhat subsided, he called his whole army together; and, in a set speech, exhorted them to revenge his cause, giving them the strongest assurances that they should possess the estates of all such as had offended. The soldiers unanimously promised to be faithful; they received his harangue with their usual acclamations; and, thus encouraged, he led them towards Rome, breathing nothing but slaughter and revenge. However, he found many obstacles to his impetuosity; and, though he desired nothing so much as dispatch, his marches were incommodious and slow. The tumultuous and disobedient armies of the empire were at present very different from the legions that were led on by Sylla or Cæsar; they were loaded with baggage, and followed by slaves and women, rather resembling an eastern caravan, than a military battalion. To these inconveniences also was added the hatred of the cities through which he passed, the inhabitants all abandoning their houses upon his approach, and securing their provisions in proper hiding-places. However, in this complication of inconveniences and misfortunes, his affairs began to wear a favourable appearance in Africa: for Capelianus, the governor of Numidia, raised a body of troops in his favour, and marched against Gordian, towards Carthage; where he fought the younger Gordian, slew him, and destroyed his army. The father, hearing of the death of his son, together with the loss of the battle, strangled himself in his own girdle. Capelianus pur-

398
Gordian
defeated
and killed.

ing his victory, entered Carthage; where he gave a loose to pillage and slaughter, under a pretence of revenging the cause of Maximinus. The news of these successes was soon brought to the emperor, who now increased his diligence, and flattered himself with a speedy opportunity of revenge. He led on his large army by hasty journeys into Italy, threatening destruction to all his opposers, and ardently wishing for fresh opportunities of slaughter.

Nothing could exceed the consternation of the senate upon the news of this defeat. They now saw themselves not only deprived of the assistance of Gordian and his son, on whom they greatly relied; but also opposed by two formidable tyrants, each commanding a victorious army, directly marching towards Rome, and meditating nothing but vengeance. In this afflicting exigence, they, with great solemnity, met at the temple of Jupiter, and after the most mature deliberations, chose Papienus and Balbinus emperors conjointly. These were men who had acquired the esteem of the public both in war and peace, having commanded armies, and governed provinces, with great reputation; and being now appointed to oppose Maximinus, they made what levies they could, both in Rome and the country. With these, Papienus marched to stop the progress of the invaders, leaving the city to a fresh and unlooked for calamity. This was occasioned by two of Maximinus's soldiers, who, entering the senate-house, were slain by two senators. This quickly gave offence to the body of the prætorian soldiers, who instantly resolved to take revenge, but were opposed by the citizens; so that nothing was seen throughout Rome, but tumult, slaughter, and cruelty. In this universal confusion, the calamity was increased by the soldiers setting the city on fire, while the wretched inhabitants were combating each other in the midst of the flames.

399
Papienus
and Balbi-
nus pro-
claimed
emperors.

Nevertheless, Maximinus himself, in whose favour these seditions were promoted, did not seem to be more fortunate. Upon being informed of the new election of emperors, his fury was again renewed, and he passed the Alps, expecting, upon entering Italy, to refresh his fatigued and famished army in that fertile part of the country. But in this he was entirely disappointed; the senate had taken such care to remove all kinds of sustenance to fortified places, that he still found himself reduced to his former necessities, while his army began to murmur for want. To this another disappointment was added shortly after: for approaching the city of Aquileia, which he expected to enter without any difficulty, he was astonished to find it prepared for the most obstinate resistance, and resolved to hold out a regular siege. This city was well fortified and populous, and the inhabitants greatly averse to Maximinus's government; but what added still more to its strength, it was commanded by two excellent generals, Crispinus and Menophilis, who had so well furnished it with men and ammunition, that Maximinus found no small resistance, even in investing the place. His first attempt was, to take the city by storm; but the besieged threw down such quantities of scalding pitch and sulphur upon his soldiers, that they were unable to continue the assault. He then determined upon a blockade; but the inhabitants were so resolute, that even the old men and children were seen combating upon the walls, while the women cut off their hair to furnish the soldiers with bows-

400
Aquileia
besieged by
Maximi-
nus.

Rome.

strings. Maximinus's rage at this unexpected opposition was now ungovernable: having no enemy to wreck his resentment upon, he turned it against his own commanders. He put many of his generals to death, as if the city had held out through their neglect or incapacity, while famine made great depredations upon the rest of his army. Nothing now appeared on either side to terminate the contest, except the total destruction of either. But a mutiny in Maximinus's own army a while rescued the declining empire from destruction, and saved the lives of thousands. The soldiers being long harassed by famine and fatigue, and hearing of revolts on every side, resolved to terminate their calamities by the tyrant's death. His great strength, and his being always armed, were, at first, the principal motives to deter any from assassinating him; but at length having made his guards accomplices in their design, they set upon him, while he slept at noon in his tent, and slew both him and his son, whom he had made his partner in the empire, without any opposition, after an usurpation of about three years, and in the 65th year of his age.

401
Is assassinated.

The tyrant being dead, and his body thrown to the dogs and birds of prey, Papienus and Balbinus continued for some time emperors without opposition. But the prætorian soldiers, who had long been notorious for mutiny and treason, soon resolved on further change. Nor did the dissensions between the new made emperors themselves a little contribute to their downfall: for though both were remarkable for wisdom and age, yet they could not restrain the mutual jealousy of each other's power. Papienus claimed the superiority from his great experience; while Balbinus was equally aspiring upon account of his family and fortune.

In this ill-judged contest, the prætorian soldiers, who were enemies to both, set upon them in their palace, at a time their guards were amused with seeing the Capitoline games. Papienus perceiving their tumultuous approach, sent with the utmost speed for assistance from his colleague; but he, out of a culpable suspicion that something was designed only against himself, refused to send such of the German guards as were next his person. Thus the seditious soldiers found an easy access to both the emperors apartments; and dragging them from the palace towards the camp, slew them both, leaving their dead bodies in the streets, as a dreadful instance of their sedition.

402
And likewise Papienus and Balbinus.

In the midst of this sedition, as the mutineers were proceeding along, they by accident met Gordian, the grandson of him who was slain in Africa, and declared him emperor on the spot. The senate and people had been long reduced to the necessity of suffering their emperors to be nominated by the army; so that all they could do in the present instance was to confirm their choice. This prince was but 16 years old when he began his reign, but his virtues seemed to compensate for the want of experience. His principal aims were, to unite the opposing members of the government, and to reconcile the soldiers and citizens to each other. His learning is said to have been equal to his virtues; and we are assured that he had 62,000 books in his library. His respect for Mithridates, his governor and instructor, was such, that he married his daughter, and profited by his counsels in all the critical circumstances of his reign.

403
Young Gordian proclaimed emperor.

The first four years of this emperor's reign were

attended with the utmost prosperity; but in the fifth he was alarmed with accounts from the east, that Sapor, king of Persia, had furiously invaded the confines of the Roman empire, and having taken Antioch, had pillaged Syria and all the adjacent provinces. Besides the Persians, the Goths also invaded the empire on their side, pouring down like an inundation from the north, and attempting to fix their residence in the kingdom of Thrace. To oppose both these invasions, Gordian prepared an army; and having gained some victories over the Goths, whom he obliged to retire, he turned his arms against the Persians, whom he defeated upon several occasions, and forced to return home with disgrace. In gaining these advantages, Mithridates, whom he had made prætorian præfect, had the principal share; but he dying soon after (as it is supposed being poisoned by Philip an Arabian, who was appointed his successor), the fortunes of Gordian seemed to die with him. The army began to be no longer supplied with provisions as usual; murmurs were heard to prevail, and these were artfully fomented by Philip. Things thus proceeding from bad to worse, Philip was at first made his equal in the command of the empire; shortly after, invested with the sole power; and, at length, finding himself capable of perpetrating his long meditated cruelty, Gordian was, by his order, slain, in the 22d year of his age, after a successful reign of near six years.

Rome.
404
His success against the barbarians.

Philip having thus murdered his benefactor, was so fortunate as to be immediately acknowledged emperor by the army. The senate also, though they seemed at first to oppose his power, confirmed his election, and gave him, as usual, the title of *Augustus*. Philip was about 40 years old when he came to the throne; being the son of an obscure Arabian, who had been captain of a band of robbers. Upon his exaltation, he associated his son, a boy of six years of age, as his partner in the empire; and, in order to secure his power at home, made peace with the Persians, and marched his army towards Rome. On his way, having conceived a desire to visit his native country of Arabia, he built there a city called *Philippopolis*; and from thence returning to Rome, he was received as emperor, and treated with all the marks of submission, though not of joy. To put the people in good humour, he caused the secular games to be celebrated, with a magnificence superior to any of his predecessors, it being just 1000 years after the building of the city. Upon occasion of these games, we are told that both Philip and his son were converted to Christianity. However this be, a murderer and an ungrateful usurper does no great honour to whatever opinion he may happen to embrace. We have little account of the latter part of his reign in the wretched and mutilated histories of the times; we only learn, that the Goths having invaded the empire, Marinus, Philip's lieutenant, who was sent against them, revolted, and caused himself to be declared emperor. This revolt, however, was but of short duration; for the army which had raised him repented of their rashness, deposed him with equal levity, and put him to death. Decius was the person whom Philip appointed to command in the room of the revolting general. The chief merit of Decius with the emperor was, that when Marinus had rebelled, he averred in the senate, That the traitor's presumption would be very

405
Is murdered by Philip, who succeeds.

406
The thousandth year of Rome.

shortly

Rome. shortly his ruin; which, when it happened accordingly, Philip appointed him to succeed in the command of the rebellious army. Decius, who was a man of great subtilty, being entrusted with so much power, upon arriving at the army found that the soldiers were resolved on investing him with the supreme authority. He therefore seemed to suffer their importunities, as if through constraint; and, in the mean time, sent Philip word, that he had unwillingly assumed the title of emperor, the better to secure it for the rightful possessor; adding, that he only looked for a convenient opportunity of giving up his pretensions and title together. Philip knew mankind too well, to rely upon such professions: he therefore got together what forces he could from the several provinces, and led them forward towards the confines of Italy. However, the army was scarce arrived at Verona, when it revolted in favour of Decius, and setting violently upon Philip, a centinel, with one blow, cut off his head, or rather cleaved it asunder, separating the under jaw from the upper. Such was the deserved death of Philip, in the 45th year of his age, after a reign of about five years; Decius being univerally acknowledged as his successor, A. D. 248.

407
Philip murdered, and is succeeded by Decius.

The activity and wisdom of Decius in some measure stopped the hastening decline of the Roman empire. The senate seemed to think so highly of his merits, that they voted him not inferior to Trajan; and indeed he seemed in every instance to consult their dignity in particular, and the welfare of all inferior ranks of people. He permitted them to choose a censor, as was the custom in the flourishing times of Rome; and Valerian, his general, a man of such strict morals, that his life was said to be a continual censorship, was chosen to that dignity.—But no virtues could now prevent the approaching downfall of the state: the obstinate disputes between the Pagans and the Christians within the empire, and the unceasing irruptions of barbarous nations from without, enfeebled it beyond the power of a remedy. To stop these, a persecution of the Christians, who were now grown the most numerous body of the people, was impolitically, not to say unjustly, begun; in which thousands were put to death, and all the arts of cruelty tried in vain to lessen their growing number. This persecution was succeeded by dreadful devastations from the Goths, particularly in Thrace and Mœsia, where they had been most successful. These irruptions Decius went to oppose in person; and coming to an engagement with them, slew 30,000 of the barbarians in one battle. However, being resolved to pursue his victory, he was, by the treachery of Gallus his own general, led into a defile, where the king of the Goths had secret information to attack him. In this disadvantageous situation, Decius first saw his son killed with an arrow, and soon after his whole army put to the rout. Wherefore, resolving not to survive his loss, he put spurs to his horse, and instantly plunging into a quagmire, was swallowed up, and his body could never be found after. He died in the 50th year of his age, after a short reign of two years and six months; leaving the character of an excellent prince, and one capable of averting the destruction of the empire, if human means could have effected it.

408
Is overcome, and killed by the Goths.

409
Succeeded by Gallus.

Gallus, who had thus betrayed the Roman army, had address enough to get himself declared emperor by that part of it which survived the defeat; he was 45

years old when he began to reign, and was descended from an honourable family in Rome. He bought a dishonourable peace from the enemies of the state, agreeing to pay a considerable annual tribute to the Goths, whom it was his duty to repress. Having thus purchased a short remission from war, by the disgrace of his country, he returned to Rome, to give a loose to his pleasures, regardless of the wretched situation of the empire.

Rome.

Nothing can be more deplorable than the state of the Roman provinces at this time. The Goths and other barbarous nations, not satisfied with their late bribes to continue in peace, broke in upon the eastern parts of Europe. On the other side, the Persians and Scythians committed unheard of ravages in Mesopotamia and Syria. The emperor, regardless of every national calamity, was lost in debauch and sensuality at home; and the Pagans were allowed a power of persecuting the Christians through all parts of the state; these calamities were succeeded by a pestilence, that seemed to have in general spread over every part of the earth, and which continued raging for several years in an unheard of manner; and all these by a civil war, which followed shortly after, between Gallus and his general Æmilianus, who having gained a victory over the Goths, was proclaimed emperor by his conquering army. Gallus hearing this, was soon roused from the intoxications of pleasure, and prepared to oppose his dangerous rival. Both armies met in Mœsia, and a battle ensued, in which Æmilianus was victorious, and Gallus, with his son, were slain. His death was merited, and his vices were such as to deserve the detestation of posterity. He died in the 47th year of his age, after an unhappy reign of two years and four months, in which the empire suffered inexpressible calamities. Æmilianus, after his victory over Gallus, expected to be acknowledged emperor; but he soon found himself miserably disappointed. The senate refused to acknowledge his claims; and an army that was stationed near the Alps chose Valerian, their own commander, to succeed to the throne. In consequence of this, Æmilianus's soldiers began to consider their general as an obstacle to the universal tranquillity, and slew him in order to avoid the mischiefs of a civil war.

410
Miserable state of the empire.

Valerian being thus univerally acknowledged as emperor, although arrived at the age of 70, set about reforming the state with a spirit that seemed to mark a good mind and unabated vigour. But reformation was then grown almost impracticable. The disputes between the Pagans and Christians divided the empire as before; and a dreadful persecution of the latter ensued. The northern nations overran the Roman dominions in a more formidable manner than ever; and the empire began to be usurped by a multitude of petty leaders, each of whom, neglecting the general state, set up for himself. To add to these calamities, the Persians, under their king Sapor, invaded Syria; and coming into Mesopotamia, took the unfortunate Valerian prisoner, as he was making preparations to oppose them. Nothing can exceed the indignities, as well as the cruelties, which were practised upon this unhappy monarch, thus fallen into the hands of his enemies. Sapor, we are told, always used him as a footstool for mounting his horse; he added the bitterness of ridicule to his insults,

411
Valerian taken prisoner, and cruelly insulted by the Persians.

Rome. and usually observed, That an attitude like that to which Valerian was reduced, was the best statue that could be erected in honour of his victory. This horrid life of insult and sufferance continued for seven years, and was at length terminated by the cruel Persian's commanding his prisoner's eyes to be plucked out, and afterwards causing him to be flayed alive.

412
The empire
invaded on
all sides by
the barba-
rians.

The news of the defeat of the Roman army by the Persians, and the captivity of Valerian, no sooner reached the barbarous nations at war with Rome, than they poured on all sides into the Roman territories in incredible multitudes, threatening the empire, and Rome itself, with utter destruction. The Goths and Scythians ravaged Pontus and Asia, committing everywhere dreadful devastations; the Alemanni and Franks having overrun Rhætia, advanced as far as Ravenna; putting all to fire and sword; the Quadi and Sarmatians seized on great part of Dacia and Pannonia; while other barbarous nations, invading Spain, made themselves masters of Tarraco and other important places in that province. In the mean time Gallienus, the son of Valerian, having promised to revenge his father's captivity, and repress the barbarians, was chosen emperor without any opposition. He was at that time in Gaul; but hastened into Italy, from whence he drove out the barbarians, either by the terror of his approach, or by overcoming them in battle.— In Dacia and Pannonia, also, the barbarians were driven back by Regillianus, who commanded there, and who is said to have gained several victories in one day.

But in the mean time, one Ingenuus, a man of great reputation in war, and universally beloved both by the people and soldiery, caused himself to be proclaimed emperor in Pannonia, where he was generally acknowledged as well as in Mœsia. Gallienus no sooner heard of his revolt, than he marched from the neighbourhood of Ravenna, where he then was, into Illyricum, engaged Ingenuus, and put him to flight. Some authors tell us, that Ingenuus was killed after the battle by his own soldiers; while others affirm, that he put an end to his own life to avoid falling into the hands of Gallienus, who used his victory with a cruelty hardly to be paralleled. The following letter to Verianus Celer, one of his officers, will show the disposition of this emperor: "I shall not be satisfied (says he) with your putting to death only such as have borne arms against me, and might have fallen in the field: you must in every city destroy all the males, old and young; spare none who have wished ill to me; none who have spoken ill of me the son of Valerian, the father and brother of princes. Ingenuus emperor! Tear, kill, cut in pieces without mercy: you understand me; do then as you know I would do, who have written to you with my own hand." In consequence of these cruel orders, a most dreadful havock was made among that unhappy people; and, in several cities, not one male child was left alive. The troops who had formerly served under Ingenuus, and the inhabitants of Mœsia who had escaped the general slaughter, provoked by these cruelties, proclaimed Regillianus emperor. He was a Dacian by birth, descended, as was said, from the celebrated king Decebalus whom Trajan had conquered; and had, by several gallant actions, gained reputation in the Roman armies. After he was proclaimed emperor, he gained

413
Monstrous
cruelty of
the new
emperor
Gallienus.

great advantages over the Sarmatians; but was soon after murdered by his own soldiers. These revolts were quickly followed by many others. Indeed it is not surprising, at a time when the reins of government were held with so loose a hand, that a crowd of usurpers should start up in every province of the empire. The great number of usurpers who pretended to the empire about this time have been distinguished by the name of the *thirty tyrants*. However, there were only 29; viz. Cyriades, Macrianus, Balista, Udenatus, and Zenobia in the east: in Gaul, and the western provinces, Posthumus, Lollianus, Victorinus and his mother Victoria, Marius, and Tetricus; in Illyricum, and on the confines of the Danube, Ingenuus, Regillianus, and Aureolus; in Pontus, Saturninus; in Isauria, Trebellianus; in Thessaly, Piso; in Achaia, Valens; in Egypt, Æmilianus; and in Africa, Celsus. Several of these pretenders to the empire, however, though branded with the opprobrious appellation of tyrants, were eminent examples of virtue, and almost all of them were possessed of a considerable share of vigour and ability. The principal reason assigned for their revolt was, the infamous character of Gallienus, whom neither officers nor soldiers could bear to serve. Many of them, however, were forced by the soldiers to assume the imperial dignity much against their will. "You have lost," said Saturninus to his soldiers when they invested him with the purple, "a very useful commander, and have made a very wretched emperor." The apprehensions of Saturninus were justified by the event. Of the 19 usurpers already mentioned, not one died a natural death; and in Italy and Rome Gallienus alone continued to be acknowledged emperor. That prince indeed honoured Odenatus prince of Palmyra with the title of *Augustus*, who continued to possess an independent sovereignty in the east all his lifetime, and on his death transmitted it to his wife Zenobia. See PALMYRA.

The consequences of these numerous usurpations were the most fatal that can be conceived. The elections of these precarious emperors, their life and death, were equally destructive to their subjects and adherents. The price of their elevation was instantly paid to the troops by an immense donative drawn from the exhausted people. However virtuous their character, and however pure their intentions might be, they found themselves reduced to the necessity of supporting their usurpation by frequent acts of rapine and cruelty. When they fell, they involved armies and provinces in their fall, as appears from the letter of Gallienus already quoted. Whilst the forces of the state were dispersed in private quarrels, the defenceless provinces lay exposed to every invader. The bravest usurpers were compelled, by the perplexity of their situation, to conclude dishonourable treaties with the barbarians, and even to submit to shameful tributes, and introduce such numbers of barbarians into the Roman service as seemed sufficient at once to overthrow the empire.

But when the empire seemed thus ready to sink at once, it suddenly revived on the death of Gallienus, who was murdered by Martian, one of his own generals, while he besieged Aureolus, one of the tyrants, in Milan. His death gave general satisfaction to all, except his soldiers, who hoped to reap the reward of their treachery by the plunder of Milan. But being frustrated in these expectations, and in some measure kept within bounds

Rome.

414
The thirty
tyrants.

415
Fatal conse-
quences of
these usur-
pations.

416
Gallienus
murdered,
and is suc-
ceeded by
Claudius.

Rome. bounds by the largeness of Martian, Flavius Claudius was nominated to succeed, and joyfully accepted by all orders of the state, and his title confirmed by the senate and the people.

We are not sufficiently assured of this emperor's lineage and country. Some affirm that he was born in Dalmatia, and descended from an ancient family there; others assert that he was a Trojan; and others, that he was son the emperor Gordian. But, whatever might have been his descent, his merits were by no means doubtful. He was a man of great valour and conduct, having performed the most eminent services against the Goths, who had long continued to make irruptions into the empire. He was now about 55 years old, equally remarkable for the strength of his body and the vigour of his mind; he was chaste and temperate, a rewarder of the good, and a severe punisher of such as transgressed the laws. Thus endowed, therefore, he in some measure put a stop to the precipitate decline of the empire, and once more seemed to restore the glory of Rome.

417
Who defeats the Goths, and retrieves the affairs of the empire.

His first success, upon being made emperor, was against Aureolus, whom he defeated near Milan. His next expedition was to oppose the Goths, against whom he led a very numerous army. These barbarians had made their principal and most successful irruptions into Thrace and Macedonia, swarmed over all Greece, and had pillaged the famous city of Athens, which had long been the school of all the polite arts to the Romans. The Goths, however, had no veneration for those embellishments that tend to soften and humanize the mind, but destroyed all monuments of taste and learning with the most savage alacrity. It was upon one of these occasions, that, having heaped together a large pile of books in order to burn them, one of the commanders dissuaded them from the design, alleging, that the time which the Grecians should waste on books would only render them more unqualified for war. But the empire seemed to tremble, not only on that side, but almost on every quarter. At the same time, above 300,000 of these barbarians (the Heruli, the Trutangi, the Virturgi, and many nameless and uncivilized nations) came down the river Danube, with 2000 ships, fraught with men and ammunition, spreading terror and devastation on every side.

In this state of universal dismay, Claudius alone seemed to continue unshaken. He marched his disproportioned army against the savage invaders; and though but ill prepared for such an engagement, as the forces of the empire were then employed in different parts of the world, he came off victorious, and made an incredible slaughter of the enemy. The whole of their great army was either cut to pieces or taken prisoners: houses were filled with their arms; and scarce a province of the empire, that was not furnished with slaves from those that survived the defeat. The successes were followed by many others in different parts of the empire; so that the Goths, for a considerable time after, made but a feeble opposition. He some time after marched against the revolted Germans, and overthrew them with considerable slaughter. His last expedition was to oppose Tetricus and Zenobia, his two puissant rivals in the empire. But on his march, as he approached near Sirmium, in Pannonia, he was seized with a pestilential fever, of which he died in a few days, to the great regret

418
Claudius dies, and is succeeded by Aurelian

of his subjects, and the irreparable loss of the Roman empire. His reign, which was not of quite two years continuance, was active and successful; and such is the character given of him by historians, that he is said to have united in himself the moderation of Augustus, the valour of Trajan, and the piety of Antoninus.

Rome.

Immediately after the death of Claudius, the army made unanimous choice of Aurelian, who was at that time master of the horse, and esteemed the most valiant commander of his time. However, his promotion was not without opposition on the part of the senate, as Quintillus, the brother of the deceased emperor, put in his claim, and was for a while acknowledged at Rome. But his authority was of very short duration; for finding himself abandoned by those who at first instigated him to declare for the throne, he chose to prevent the severity of his rival by a voluntary death, and causing his veins to be opened, expired, after having reigned but 17 days.

Aurelian being thus universally acknowledged by all the states of the empire, assumed the command, with a greater show of power than his predecessors had enjoyed for some time before. This active monarch was born of mean and obscure parentage in Dacia, and was about 55 years old at the time of his coming to the throne. He had spent the early part of his life in the army, and had risen through all the gradations of military duty. He was of unshaken courage and amazing strength; he in one engagement killed 40 of the enemy with his own hand, and above 900 at several different times. In short, his valour and expedition were such, that he was compared to Julius Cæsar; and, in fact, only wanted mildness and clemency to be every way his equal.

The whole of this monarch's reign was spent in repressing the irruptions of the northern nations, in humbling every other pretender to the empire, and punishing the monstrous irregularities of his own subjects. He defeated the Marcomanni, who had invaded Italy, in three several engagements, and at length totally destroyed their army. He was not less successful against Zenobia, the queen of the East, a woman of the most heroic qualifications, who had long disclaimed the Roman power, and established an empire of her own, as is related under the article PALMYRA.

419
His great success against the barbarians.

Aurelian having thus brought back peace to the empire, endeavoured, by the rigours of justice, to bring back virtue also. He was very strict in punishing the crimes of the soldiery: in his orders to his lieutenants, he insisted that the peasants should not be plundered upon any pretences; that not even a grape, a grain of salt, or a drop of oil, should be exacted unjustly. He caused a soldier, who had committed adultery with his hostess, to have his feet tied to the tops of two trees, forcibly bent at top to meet each other; which being let loose, and suddenly recoiling, tore the criminal in two. This was a severity that might take the name of cruelty; but the vices of the age, in some measure, required it. In these punishments inflicted on the guilty, the Christians, who had all along been growing more numerous, were sharers. Against these he drew up several letters and edicts, which showed that he intended a very severe persecution; but if we may believe the credulous historians of the times, he was diverted just as

he

Rome. he was going to sign them by a thunderbolt, which fell so near his person, that all the people judged him to be destroyed.

But, however Heaven might have interposed on this occasion, it is certain that his severities at last were the cause of his destruction. Menesthus, his principal secretary, having been threatened by him for some fault which he had committed, began to consider how he might prevent the meditated blow. For this purpose, he forged a roll of the names of several persons, whom he pretended the emperor had marked out for death, adding his own to strengthen him in the confidence of the party. The scroll thus contrived was shown with an air of the utmost secrecy to some of the persons concerned; and they, to procure their safety, immediately agreed with him to destroy the emperor. This resolution was soon put in execution; for, as the emperor passed with a small guard from Uraclea, in Thrace, towards Byzantium, the conspirators set upon him at once, and slew him with very small resistance. He was slain in the 60th, or, as some say, in the 63d year of his age, after a very active reign of almost five years.

420 -
He is murdered.

421
Tacitus chosen emperor.

The number of pretenders to the throne, which had formerly infested the empire, were, by the last monarch's activity, so entirely removed, that there now seemed to be none that would venture to declare himself a candidate. The army referred the choice to the senate; and, on the other side, the senate declined it: so that a space of near eight months elapsed in these negotiations. At length, however, the senate made choice of Tacitus, a man of great merit, and noway ambitious of the honours that were offered him. Upon being solicited to accept the empire, he at first refused, and retired to his country house in Campania, to avoid their importunities; but being at length prevailed upon, he accepted the reins of government, being at that time 75 years old.

One of the first acts of his government was the punishment of those who had conspired against the late emperor. Menesthus was impaled alive, his body being thrown to be devoured by wild beasts; his estate also was confiscated to the exchequer; and his ready money, which was very considerable, applied towards paying the army. During this short reign, the senate seemed to have a large share of authority, and the historians of the times are liberal of their praises to such emperors as were thus willing to divide their power.— Upon endeavouring to obtain the consulship for his brother Probus, he was refused it by the senate; at which he seemed no way moved, but calmly remarked that the senate best knew whom to choose. This moderation prevailed in all the rest of his conduct: he was extremely temperate; his table was plain, and furnished with nothing expensive; he even prohibited his empress from wearing jewels, and forbade the use of gold and embroidery. He was fond of learning, and the memory of such men as had deserved well of their country. He particularly esteemed the works of his namesake Tacitus the historian; commanding that they should be placed in every public library throughout the empire, and that many copies of them should be transcribed at the public charge. A reign begun with such moderation and justice, only wanted continuance to have made the empire happy; but after enjoying the empire about six months, he died of a fever in his march to op-

pose the Persians and Scythians, who had invaded the eastern parts of the empire. Rome.

Upon the death of Tacitus the army seemed divided in the choice of an emperor; one part of it chose Florianus, brother to the deceased; but the majority were for some time undetermined. They alleged amongst each other the necessity of choosing one eminent for valour, honour, piety, clemency, and probity; but the last virtue being that chiefly insisted upon, the whole army, as if by common consent, cried out that Probus should be emperor. He was accordingly confirmed in this dignity with the usual solemnities: and Florianus finding himself deserted, even by those legions who had promised to stand up in his support, opened his arteries and bled himself to death. 422 His death.

Probus was 44 years old, when he ascended the throne, being born of noble parentage at Sirmium in Pannonia, and bred up a soldier from his youth. He began early to distinguish himself for his discipline and valour; being frequently the first man who in besieging towns scaled the walls, or that burst into the enemy's camp. He was no less remarkable for single combats, and saving the lives of many eminent citizens. Nor was his activity and courage, when elected to the empire, less apparent, than in his private station. He first repressed the Germans in Gaul, of whom he slew 400,000. He then marched into Dalmatia, to oppose and subdue the Sarmatians. From thence he led his forces into Thrace, and forced the Goths to sue for peace. He after that turned his arms towards Asia; subdued the province of Isauria; and marching onward, conquered a people called the *Blemyes*; who, leaving their native forests of Ethiopia, had possessed themselves of Arabia and Judea, and had continued in a state of rebellion since the reign of Gallienus. Narses also, the king of Persia, submitted at his approach: and upon his return into Europe, he divided the depopulated parts of Thrace among its barbarous invaders: a circumstance that afterwards produced great calamities to the empire. 423 Probus raised to the empire.

His diligence was not less conspicuous in suppressing intestine commotions. Saturninus, being compelled by the Egyptians to declare himself emperor, was defeated and slain. Proculus also (a person remarkable only for his great attachment to women, and who boasted in a letter, that, having taken 100 Sarmatian virgins prisoners, he deprived ten of that name in one night, and all the rest within a fortnight) set up against the emperor; but was compelled to fly, and at length delivered up by the Germans. At the same time Bonosus (who was a remarkable votary to Bacchus, being able to drink as much wine as ten could do, without being disordered) rebelled, and being overcome hanged himself in despair. Probus, when he saw him immediately after his death, could not avoid pointing to him, and saying, "There hangs not a man but a cask." Still, however, notwithstanding every effort to give quiet to the empire, the barbarians who surrounded it kept it in continual alarms. They were frequently repulsed into their native wilds, but they as certainly returned with fresh rage and increased ferocity. The Goths and Vandals, finding the emperor engaged in quelling domestic disputes, renewed their accustomed inroads, and once more felt the punishment of their presumptions. They were conquered in several engagements; and Probus returned in triumph to Rome. His active temper, however, would not

424
His conquests.

Rome. not suffer him to continue at rest whilst a single enemy was left to conquer. In his last expedition he led his soldiers against the Persians; and going through Sirmium, the place of his nativity, he there employed several thousands of his soldiers in draining a fen that was incommodious to the inhabitants. The fatigues of this undertaking, and the great restraint that was laid upon the soldiers licentious manners, produced a conspiracy, which ended in his ruin: for taking the opportunity as he was marching into Greece, they set upon and slew him after he had reigned six years and four months with general approbation.

425
Is murdered.

426
Reigns of Carus, Carinus, and Numerianus.

Carus, who was prætorian prefect to the deceased emperor, was chosen by the army to succeed him; and he, to strengthen his authority, named his two sons Carinus and Numerianus with him in command; the former of whom was as much sullied by his vices, as the youngest was virtuous, modest, and courageous. The new emperor had scarce time to punish the murderers of the late monarch, when he was alarmed by a fresh irruption of the Sarmatians; over whom he gained a signal victory. The Persian monarch also made some attempts upon the empire; but Carus assured his ambassadors, that if their master persisted in his obstinacy, all his fields should shortly be as bare as his own bald head, which he showed them. In consequence of this threat, he marched to the very walls of Ctesiphon, and a dreadful battle ensuing, he once more gained a complete victory. What the result of this success might have been, is not known; for he was shortly after struck by lightning in his tent, with many others that were round him. Numerianus, the youngest son, who accompanied his father in this expedition, was inconsolable for his death; and brought such a disorder upon his eyes with weeping, that he was obliged to be carried along with the army, shut up in a close litter. The peculiarity of his situation, after some time, excited the ambition of Aper, his father-in-law, who supposed that he could now, without any great danger, aim at the empire himself. He therefore hired a mercenary villain to murder the emperor in his litter; and the better to conceal the fact, gave out that he was still alive, but unable to endure the light. In this manner was the dead body carried about for some days, Aper continuing to attend it with the utmost appearance of respect, and to take orders as usual. The offensiveness, however, of its smell at length discovered the treachery, and excited an universal uproar throughout the army. In the midst of this tumult, Dioclesian, one of the most noted commanders of his time, was chosen emperor, and with his own hand slew Aper; having thus, as it is said, fulfilled a prophecy, which had said, that Dioclesian should be emperor after he had slain a boar; alluding to the name of his rival, which signifies a boar. Carinus, the remaining son, did not long survive his father and brother; for giving himself up to his vices, and yet at the same time opposing the new-made emperor, the competitors led their forces into Mœsia; where Dioclesian being victorious, Carinus was slain by a tribune of his own army, whose wife he had formerly abused.

427
Dioclesian raised to the empire.

Dioclesian was a person of mean birth; being accounted, according to some, the son of a scrivener; and of a slave, according to others. He received his name from Dioclea, the town in which he was born; and was

about 40 years old when he was elected to the empire. He pardoned all who had joined Carinus, without injuring either their fortunes or honours. Conscious also that the weight of empire was too heavy for one alone to sustain, he took in Maximian, his general, as a partner in the fatigues of duty, making him his equal and companion on the throne. Thus mutually assisting each other, these two continued to live in strict friendship; and though somewhat differing in temper (as Maximian was rather a man of vicious inclinations), yet they concurred in promoting the general good, and humbling their enemies. And it must be observed, that there never was a period in which there were more numerous or formidable enemies to oppose.

Rome. 428
Takes Maximian for his partner.

The peasants and labourers in Gaul made a dangerous insurrection, under the conduct of Amandus and Helianus, but were subdued by Maximian. Achilles, who commanded in Egypt, proclaimed himself emperor; and it was not without many bloody engagements that he was overcome, and condemned by Dioclesian to be devoured by lions. In Africa, the Roman legions, in like manner, joined with many of the natives, seized upon the public revenues, and plundered those who continued in their duty. These were also subdued by Maximian; and, after a long dubious war, constrained to sue for peace. About the same time, a principal commander in Britain named *Carausius*, proclaimed himself emperor, and possessed himself of the island. To oppose this general's claims, Maximian made choice of Constantius Chlorus, whom he created Cæsar, and married to Theodora his daughter-in-law. He, upon his arrival in Britain, finding Carausius very strong, and continually reinforced from Germany, thought proper to come to an accommodation; so that this usurper continued for seven years in quiet possession of the whole island, till he was slain by Aleetus, his friend and intimate. About this time also, Narses, king of Persia, began a dangerous war upon the empire, and invaded Mesopotamia. To stop the progress of the enemy upon this quarter, Dioclesian made choice of Galerius (surnamed *Armentarius*, from the report of his being born of a cow-herd in Dacia); and he likewise was created Cæsar. His success also, though very doubtful in the beginning, was in the end terminated according to his wishes. The Persians were overcome in a decisive engagement, their camp plundered and taken, and their king's wives and children made prisoners of war. There only remained, of all the enemies of the Roman empire, those who lay to the northward unsubdued. These were utterly unconquerable, as well upon account of their savage fierceness, as the inhospitable severity of the climate and soil from whence they issued. Ever at war with the Romans, they issued forth, when the armies that were to repress their invasions were called away; and upon their return, they as suddenly withdrew into cold, barren, and inaccessible places, which only themselves could endure. In this manner the Goths, Sarmatians, Alani, Quadi, &c. poured down in incredible numbers; while every defeat seemed but to increase their strength and perseverance. Of these, multitudes were taken prisoners, and sent to people the more southern parts of the empire; still greater numbers were destroyed; and though the rest were driven back to their native forests, yet they continued ever mindful of their inveterate

429
Insurrections, and other calamities.

inveterate

Rome.

inveterate enmity, and, like a savage beast, only continued inactive, till they had licked their wounds for a new encounter.

430
The Christians cruelly persecuted.

431
Dioclesian and Maximian resign.

During this interval, as if the external miseries of the empire were not sufficient, the tenth and last great persecution was renewed against the Christians. This is said to have exceeded all the former in severity: and such was the zeal with which it was pursued, that, in an ancient inscription, we are informed that they had effaced the name and superstition of the Christians, and had restored and propagated the worship of the gods. Their attempts, however, were but the malicious efforts of an expiring party; for Christianity shortly after was established by law, and triumphed over the malice of all its enemies. In the midst of the troubles raised by this persecution, and of the contests that struck at the internal parts of the state, Dioclesian and Maximian surprised the world by resigning their dignities on the same day, and both retiring into private stations. Historians are much divided concerning the motives that thus induced them to give up those honours which they had purchased with so much danger. Some ascribe it to the philosophical turn of Dioclesian; and others, to his being disgusted with the obstinacy of his Christian subjects: but Lactantius asserts, that he was compelled to it, together with his partner, by Galerius, who coming to Nicomedia, upon the emperor's recovery from a great sickness, threatened him with a civil war in case he refused to resign. However, of this we are well assured, that he still preserved a dignity of sentiment in his retirement, that might induce us to believe he had no other motive for resignation than the love of quiet, and the consciousness of his inability to discharge on a sick-bed the duties of a sovereign. Having retired to his birth-place, he spent his time in cultivating his garden, assuring his visitors that then only he began to enjoy the world, when he was thought by the rest of mankind to forsake it. When also some attempted to persuade him to resume the empire he replied, That if they knew his present happiness, they would rather endeavour to imitate than disturb it. In this contented manner he lived some time, and at last died either by poison or madness, it is uncertain which. His reign, which continued 20 years, was active and useful; and his authority, tinged with severity, was well adapted to the depraved state of morals at that time.

Maximian, his partner in the empire and in resignation, was by no means so contented with his situation. He longed once more for power, and disturbed the two succeeding reigns with various efforts to resume it; attempting to engage Dioclesian in the same design. Being obliged to leave Rome, where he had bred great confusion, he went over into Gaul, where he was kindly received by Constantine, the then acknowledged emperor of the west. But here also continuing his intrigues, and endeavouring to force his own daughter and destroy her husband, he was detected, and condemned to die by whatever death he should think proper; and Lactantius tells us that he chose hanging.

432
Constantius Chlorus, and Galerius.

Upon the resignation of the two emperors, the two Cæsars whom they had formerly chosen were universally acknowledged as their successors. Constantius Chlorus, who was so called from the plainness of his complexion, was virtuous, valiant, and merciful. Galerius, on the other hand, was brave, but brutal, incontinent,

and cruel. As there was such a disparity in their tempers, they readily agreed, upon coming into full power, to divide the empire; Constantius being appointed to govern the western parts; namely, Italy, Sicily, the greatest part of Africa, together with Spain, Gaul, Britain, and Germany; Galerius had the eastern parts allotted to his share; to wit, Illyricum, Pannonia, Thrace, Macedonia, all the provinces of Greece, and the Lesser Asia, together with Egypt, Syria, Judea, and all the countries eastward. The greatness of the division, however, soon induced the emperors to take in two partners more, Severus and Maximin, who were made Cæsars, and assisted in the conducting of affairs; so that the empire now was under the guidance of four persons, all invested with supreme authority.

We are informed but of few particulars of the reign of Constantius, except a detail of his character, which appears in every light most amiable. He was frugal, chaste, and temperate. His mercy and justice were equally conspicuous in his treatment of the Christians, whom he would not suffer to be injured; and when at length persuaded to displace all the Christian officers of his household that would not change their religion, when some of them complied he sent them away in disgrace; alleging, that those who were not true to their God, would never be faithful to their prince.

In the second year of his reign he went over into Britain; and leaving his son Constantine as a kind of hostage in the court of his partner in the empire, took up his residence at York. He there continued in the practice of his usual virtues; till falling sick, he began to think of appointing his son for his successor. He accordingly sent for him with all speed; but he was past recovery before his arrival: notwithstanding, he received him with marks of the utmost affection, and raising himself in his bed, gave him several useful instructions, particularly recommending the Christians to his protection. He then bequeathed the empire to his care; and crying out, that none but the pious Constantine should succeed him, he expired in his arms.

In the mean time, Galerius, his partner in the empire, being informed of Constantine's advancement, testified the most ungovernable rage, and was even going to condemn the messenger who brought him the account: but being dissuaded, he seemed to acquiesce in what he could not prevent, and sent him the marks of royalty; but at the same time declared Severus emperor, in opposition to his interests. Just about this time also, another pretender to the empire started up. This was ⁴³³Maxentius, a person of mean extraction; but very much ^{usurps the} favoured by the soldiers, whom he permitted to pillage ^{throne.} at discretion. In order to oppose Maxentius, Severus led a numerous army towards the gates of Rome; but his soldiers considering against whom they were to fight, immediately abandoned him; and shortly after he put an end to his own life, by opening his veins. To revenge his death, Galerius marched into Italy, resolving to ruin the inhabitants, and to destroy the whole senate. His soldiers, however, upon approaching the capital began to waver in their resolutions: wherefore he was obliged to have recourse to intreaties, imploring them not to abandon him; and, retiring by the same route by which he had advanced, made Licinius, who was originally the son of a poor labourer in Dacia, Cæsar, in the room of Severus who was slain. This seem-

Rome.

Rome.
434
Dreadful
death of
Galerius.

ed to be the last act of his power; for shortly after he was seized with a very extraordinary disorder in his privities, which baffled all the skill of his physicians, and carried him off, after he had languished in torments for near the space of a year. His cruelty to the Christians was one of the many crimes alleged against him; and their historians have not failed to aggravate the circumstances of his death as a judgment from Heaven for his former impiety. However this be, he abated much of his severities against them on his deathbed; and revoked those edicts which he had formerly published, tending to their persecution, a little before his death.

Constantine being thus delivered from his greatest opponent, might now be considered as possessing more power than any of his rivals who were yet remaining. The empire was at that time divided between him and three others: Maxentius, who governed in Rome, a person of a cruel disposition, and a steadfast supporter of paganism; Licinius, who was adopted by Galerius, and commanded in the east; and likewise Maximin, who had formerly been declared Cæsar with Severus, and who also governed some of the eastern provinces.

For some time all things seemed to wear a peaceful appearance; till at length, either ambition, or the tyrannical conduct of Maxentius, induced Constantine to engage in an expedition to expel that commander from Rome, and to make the proper preparations for marching into Italy. It was upon this occasion that he formed a resolution which produced a mighty change in the politics as well as the morals of mankind, and gave a new turn to the councils of the wise, and the pursuits of ambition. One evening, as we are told by Eusebius, the army being upon its march toward Rome, Constantine was taken up with various considerations upon the fate of sublunary things, and the dangers of his approaching expedition: sensible of his own incapacity to succeed without divine assistance, he employed his meditations upon the opinions that then were chiefly agitated among mankind, and sent up his ejaculations to Heaven to inspire him with wisdom to choose the path he ought to pursue. It was then, as the sun was declining, that there suddenly appeared a pillar of light in the heavens, in the form of a cross, with this inscription, ΤΟΥΤΩ ΝΙΚΗ, "In this overcome." So extraordinary an appearance did not fail to create astonishment both in the emperor and his whole army, who considered it as their dispositions led them to believe. Those who were attached to paganism, prompted by their auspices, pronounced it a most inauspicious omen, portending the most unfortunate events. But it made a different impression on the emperor's mind; who, as the account goes, was farther encouraged by visions the same night. He therefore, the day following, caused a royal standard to be made, like that which he had seen in the heavens; and commanded it to be carried before him in his wars, as an ensign of victory and celestial protection. After this, he consulted with several of the principal teachers of Christianity, and made a public avowal of that sacred persuasion.

Constantine having thus attached to his interest his soldiers, who were mostly of the Christian persuasion, lost no time in entering Italy with 90,000 foot and 3000 horse; and soon advanced to the very gates of Rome. The unfortunate Maxentius, who had long gi-

ven himself up to ease and debauchery, now began to make preparations when it was too late. He first put in practice all the superstitious rites which paganism taught to be necessary; and then consulted the Sibylline books; from whence he was informed, that on that great day the enemy of Rome should perish. This prediction, which was equivocal, he applied to Constantine; so that, leaving all things in the best posture, he advanced from the city with an army of 100,000 foot and 18,000 horse. The engagement was for some time fierce and bloody, till his cavalry being routed, victory declared upon the side of his opponent, and he himself was drowned in his flight by the breaking down of a bridge as he attempted to cross the river Tiber.

Constantine, in consequence of this victory, entering the city, disclaimed all praises which the senate and people were ready to offer; ascribing his success to a superior power. He even caused the cross, which it is said he saw in the heavens, to be placed at the right of all his statues, with this inscription: "That under the influence of that victorious cross, Constantine had delivered the city from the yoke of tyrannical power, and had restored the senate and people of Rome to their ancient authority." He afterwards ordained, that no criminal should for the future suffer death by the cross; which had formerly been the most usual way of punishing slaves convicted of capital offences. Edicts were soon after issued, declaring that the Christians should be eased from all their grievances, and received into places of trust and authority. Thus the new religion was seen at once to prevail over the whole Roman empire; and as that enormous fabric had been built and guided upon pagan principles, it lost a great deal of its strength and coherence when those principles were thus at once subverted.

Things continued in this state for some time, Constantine all the while contributing what was in his power to the interest of religion, and the revival of learning, which had long been upon the decline, and was almost wholly extinct in the empire. But in the midst of these assiduities, the peace of the empire was again disturbed by the preparations of Maximin, who governed in the east, and who, desirous of a full participation of power, marched against Licinius with a very numerous army. In consequence of this step, after many conflicts, a general engagement ensued, in which Maximin suffered a total defeat; many of his troops were cut in pieces, and those that survived submitted to the conqueror. Maximin, however, having escaped the general carnage, once more put himself at the head of another army, resolving to try the fortune of the field; but death prevented his design. As he died by a very extraordinary kind of madness, the Christians, of whom he was the declared enemy, did not fail to ascribe his end to a judgment from heaven; but this was the age in which false judgments and false miracles made up the bulk of their unstructive history.

Constantine and Licinius thus remaining undisputed possessors and partners in the empire, all things promised a peaceable continuance of friendship and power. However, it was soon found, that the same ambition that aimed after a part, would be content with nothing less than the whole. Pagan writers ascribe the rupture between these two potentates to Constantine; while the Christians, on the other hand, impute it wholly to

H h

Licinius.

435
Constantine's
vision and
conversion
to Christi-
anity.

Rome.
436
Maxentius
drowned
and kill-
ed.

437
Maximin's
defeat and
death.

438
War be-
tween Con-
stantine
and Lici-
nius.

Rome.

Licinius. Both, perhaps, might have concurred: for Licinius is convicted of having persecuted Christianity, which was so highly favoured by his rival; and Constantine is known to have been the first to begin the preparations for an open rupture. Both sides exerted all their power to make opposition; and at the head of very formidable armies, came to an engagement near Cybalis, in Pannonia. Constantine, previous to the battle, in the midst of his Christian bishops, begged the assistance of Heaven; while Licinius, with equal zeal, called upon the pagan priests to intercede with the gods in his favour. Constantine, after an obstinate resistance from the enemy, became victorious; took their camp; and, after some time, compelled Licinius to sue for a truce, which was agreed upon. But this was of no long continuance; for soon after, the war breaking out afresh, and the rivals coming once more to a general engagement, it proved decisive. Licinius was entirely defeated, and pursued by Constantine into Nicomedia, where he surrendered himself up to the victor; having first obtained an oath that his life should be spared, and that he should be permitted to pass the remainder of his days in retirement. This, however, Constantine shortly after broke; for either fearing his designs, or finding him actually engaged in fresh conspiracies, he commanded him to be put to death, together with Martian his general, who some time before had been created Cæsar.

439
Licinius
overcome
and put to
death.

Constantine being now sole monarch of the empire, without a rival to divide his power, or any person from whose claims he could have the least apprehensions, resolved to establish Christianity on so sure a basis, that no new regulations should shake it. He commanded that in all the provinces of the empire the orders of the bishops should be exactly obeyed; a privilege of which, in succeeding times, these fathers made but a very indifferent use. He called also a general council of these, to meet at Nicea, in order to repress the heresies that had already crept into the church, particularly that of Arius. To this place repaired about 318 bishops, besides a multitude of presbyters and deacons, together with the emperor himself; who also, to about 17, concurred in condemning the tenets of Arius; who, with his associates, was banished into a remote part of the empire.

Having thus restored universal tranquillity to the empire, he was not able to ward off calamities of a more domestic nature. As the histories of that period are entirely at variance with each other, it is not easy to discover the motives which induced him to put his wife Fausta and his son Crispus to death. The most plausible account is this: Fausta the empress, who was a woman of great beauty, but of extravagant desires, had long, though secretly, loved Crispus, Constantine's son by a former wife. She had tried every art to inspire this youth with a mutual passion; but, finding her more distant efforts ineffectual, had even the confidence to make him an open confession of her desires. This produced an explanation, which was fatal to both. Crispus received her addresses with detestation; and she, to be revenged, accused him to the emperor. Constantine, fired at once with jealousy and rage, ordered him to die without a hearing; nor did his innocence appear till it was too late for redress. The only reparation, therefore that remained, was the putting Fausta, the wicked instrument of his former cruelty, to death; which was

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Constantine puts
his wife
and son to
death.

accordingly executed upon her, together with some others who had been accomplices in her falsehood and treachery.

Rome.

But the private misfortunes of a few were not to be weighed against evils of a more general nature, which the Roman empire shortly after experienced. These arose from a measure which this emperor conceived and executed, of transferring the seat of the empire from Rome to Byzantium, or *Constantinople*, as it was afterwards called. Whatever might have been the reasons which induced him to this undertaking; whether it was because he was offended at some affronts he received at Rome, or that he supposed Constantinople more in the centre of the empire, or that he thought the eastern parts more required his presence, experience has shown that they were weak and groundless. The empire had long before been in the most declining state; but this in a great measure gave precipitation to its downfall. After this it never resumed its former splendor, but languished.

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Transfers
the seat of
empire to
Constanti-
nople.

His first design was to build a city which he might make the capital of the world; and for this purpose, he made choice of a situation at Chalcedon in Asia Minor; but we are told, that in laying out the ground-plan, an eagle caught up the line and flew with it over to Byzantium, a city which lay upon the opposite side of the Bosphorus. Here, therefore, it was thought expedient to fix the seat of the empire; and indeed nature seems to have formed it with all the conveniences and all the beauties which might induce power to make it the seat of residence. It was situated on a plain that rose gently from the water; it commanded that strait which unites the Mediterranean with the Euxine sea, and was furnished with all the advantages which the most indulgent climate could bestow. This city, therefore, he beautified with the most magnificent edifices; he divided it into 14 regions; built a capitol, an amphitheatre, many churches, and other public works; and having thus rendered it equal to the magnificence of his idea, he dedicated it in a very solemn manner to the God of martyrs; in about two years after, repairing thither with his whole court.

The removal produced no immediate alteration in the government of the empire; the inhabitants of Rome, though with reluctance, submitted to the change; nor was there for two or three years any disturbance in the state, until at length the Goths, finding that the Romans had withdrawn all their garrisons along the Danube, renewed their inroads; and ravaged the country with unheard-of cruelty. Constantine, however, soon repressed their incursions, and so straitened them, that near 100,000 of their number perished by cold and hunger. These and some other insurrections being happily suppressed, the government of the empire was divided as follows. Constantine, the emperor's eldest son, commanded in Gaul and the western provinces; Constantius governed Africa and Illyricum; and Constans ruled in Italy. Dalmatius, the emperor's brother, was sent to defend those parts that bordered upon the Goths; and Annibalianus, his nephew, had the charge of Cappadocia and Armenia Minor. This division of the empire still farther contributed to its downfall: for the united strength of the state being no longer brought to repress invasions, the barbarians fought with superior numbers; and conquered at last, though often defeated.

Constantine,

Rome.

Rome.

442
Death of
Constantine.

444
Invasion
of the
Goths under
Alaric.

445
Goths defeated at
Pollentia.

Constantine, however, did not live to feel these calamities. The latter part of his reign was peaceful and splendid; ambassadors from the remotest Indies came to acknowledge his authority; the Persians, who were ready for fresh inroads, upon finding him prepared to oppose, sent humbly to desire his friendship and forgiveness. He was above 60 years old, and had reigned above 30 years, when he found his health began to decline. To obviate the effects of his disorder, which was an intermitting fever, he made use of the warm baths of the city; but receiving no benefit from thence, he removed for change of air to Helenopolis, a city which he had built to the memory of his mother. His disorder increasing, he changed again to Nicomedia; where finding himself without hopes of recovery, he caused himself to be baptized; and having soon after received the sacrament, he expired, after a memorable and active reign of 32 years. This monarch's character is represented to us in very different lights: the Christian writers of that time adorning it with every strain of panegyric; the heathens, on the contrary, loading it with all the virulence of invective. He established a religion that continues the blessing of mankind; but pursued a scheme of politics that destroyed the empire.

From the time of Constantine to the division of the empire between Valentinian and his brother Valens, the history of Rome is related under the article CONSTANTINOPLE, where also that of the eastern part is carried down to the final destruction of that city by the Turks. In the beginning of the reign of Valentinian, the province of Libya Tripolitana was grievously oppressed by the barbarians of the desert, and almost equally so by Romanus its own governor. His conduct was so exceedingly oppressive, that the inhabitants sent a deputation to Valentinian, complaining of their unhappy situation, and desiring redress. Palladius was accordingly sent to inquire into the state of the province; but being gained over by Romanus, he made a false report to the emperor; and thus the unhappy province was left a prey to the merciless invaders and rapacious governor. During the rest of this reign the barbarians continued their inroads into the empire; and among others, we find the Saxons now putting in for a share of the spoils of the ruined empire: however, their army was at this time entirely cut off. At last Valentinian himself took the field against these northern barbarians; and entering the country of the Quadi, destroyed all with fire and sword. The barbarians on this were fain to sue for peace in a very humble manner; but Valentinian, falling into a great passion while speaking to them, threatened to extirpate the whole nation at once. His fury on this occasion produced an apoplexy, or some other mortal disorder; for he suddenly fell down, and being conveyed by his attendants into his chamber, he was seized with violent convulsive fits and contortions of all his limbs, in the agonies of which he expired, in the year 375, the 55th of his age, and 12th of his reign.

After the death of Valentinian, his son Gratian took upon him the imperial dignity: soon after becoming master of the whole empire by the death of Valens. The transactions of his reign, and those of his partner Theodosius, are related under the article CONSTANTINOPLE, N^o 77—89. The death of Theodosius gave the finishing stroke to the Roman affairs; his son Honorius, to whom he left the western empire, being pos-

essed of no abilities whatever, and indeed seeming to have been but very little removed from an idiot. The barbarians appear to have been abundantly sensible of the advantages offered them by the death of Theodosius. He expired in the month of January; and before the accession of spring, the Goths were in arms. The barbarian auxiliaries also now declared their independency; and along with their countrymen, furiously assailed the declining empire. The Goths were now headed by an experienced commander, their celebrated king Alaric; who would have proved formidable even in better times of the empire. He first overran Greece, which he accomplished without opposition, through the treachery of the governor, who commanded the troops that defended the pass at Thermopylæ to retire at the approach of the enemy. Athens, Corinth, Argos, Sparta, yielded without resistance; and the whole country was ravaged and destroyed by the blood-thirsty barbarians. At last, in the year 397, he was opposed by Stilicho, the general of Honorius, a man of great valour and experience in war. The Goths were defeated with great loss, and afterwards besieged in their camp; but through mistake or negligence in the Roman commander, they were suffered to escape, and make themselves masters of the province of Epirus. Alaric then, having found means to conclude a treaty with the ministers of Constantinople, Stilicho was obliged to retire.

Not long after this, Alaric invaded Italy itself. The emperor, struck with terror, would have abandoned the country and fled into Gaul: but this disgraceful and pernicious measure was opposed by Stilicho; who proposed to the court of Honorius, at that time at Milan, that if they would maintain their ground during his absence he would soon return with an army capable of opposing the barbarians. This being agreed to, Stilicho immediately set out for Rhætia, where the most considerable body of the Roman forces at that time was, and collected his troops with the utmost diligence. But in the mean time Honorius was in the greatest danger; having been obliged to take refuge in the town of Asta in Piedmont. To this place the Goths instantly laid siege, and a capitulation had been proposed, when the drooping spirits of Honorius were at once revived by the arrival of Stilicho, whom he had so long expected. The Goths were now besieged in their turn, and obliged to come to a decisive battle at Pollentia. The engagement lasted the whole day; but at last the Goths were compelled to retreat. Their camp was instantly invested; their entrenchments forced with great slaughter; the wife of Alaric was taken, with all the wealth which had been amassed in plundering Greece; while many thousands of Roman prisoners were released from the most deplorable slavery. The victory, however, was not so decisive but that Alaric continued still extremely formidable; and Stilicho chose rather to conclude a treaty with him, and allow him an annual pension, than to continue the war with vigour. Alaric, who was not very scrupulous in his observance of this treaty, in his retreat attempted to make himself master of the city of Verona: but Stilicho coming up with him near that place, gave him a terrible defeat, in which the loss was little less than it had been at Pollentia; after which he effected a retreat out of Italy, but not without the greatest difficulty and danger.

Rome.

446
Honorius
retires to
Ravenna.447
Mr Gib-
bon's ac-
count of
the revo-
lutions in
China.

Italy being thus happily delivered, Honorius entered Rome in triumph, having Stilicho along with him in the triumphal chariot. On his entry into the city, he abolished the shows of gladiators; which, though forbidden by Constantine, had been tolerated by his successors, and even by Theodosius himself, out of complaisance to the people, who were beyond measure fond of that inhuman diversion. However, soon after, the emperor was obliged to leave the metropolis and retire to Ravenna, in order to secure himself from the barbarians, who now broke in upon the empire on all sides. Such multitudes now made their appearance, that it is not a little difficult to account for their sudden emigration. Mr Gibbon accounts for it from a supposed revolution in the north-eastern parts of China. "The Chinese annals (says he), as they have been interpreted by the learned industry of the present age, may be usefully applied to reveal the secret and remote causes of the fall of the Roman empire. The extensive territory to the north of the great wall was possessed, after the flight of the Huns, by the victorious Siempi; who were sometimes broken into independent tribes, and sometimes re-united under a supreme chief; till at length styling themselves *Topa*, or "masters of the earth," they acquired a more solid confidence, and a more formidable power. The *Topa* soon compelled the pastoral nations of the eastern desert to acknowledge the superiority of their arms; they invaded China in a period of weakness and intestine discord; and these fortunate Tartars, adopting the laws and manners of the vanquished people, founded an imperial dynasty, which reigned near 160 years over the northern provinces of the monarchy. Some generations before they ascended the throne of China, one of the *Topa* princes had enlisted in his cavalry a slave of the name of *Moko*, renowned for his valour; but who was tempted, by the fear of punishment, to desert his standard, and to range the desert at the head of 100 followers. This gang of robbers and outlaws swelled into a camp, a tribe, a numerous people, distinguished by the appellation of *Geougen*; and their hereditary chieftains, the posterity of *Moko* the slave, assumed their rank among the Scythian monarchs. The youth *Toulun*, the greatest of his descendants, was exercised by those misfortunes which are the school of heroes. He bravely struggled with adversity, broke the imperious yoke of the *Topa*, and became the legislator of his nation, and the conqueror of Tartary. His troops were distributed into regular bands of 100 and of 1000 men; cowards were stoned to death; the most splendid honours were proposed as the reward of valour; and *Toulun*, who had knowledge enough to despise the learning of China, adopted only such arts and institutions as were favourable to the military spirit of his government. His tents, which he removed in the winter season to a more southern latitude, were pitched during the summer on the fruitful banks of the *Selinga*. His conquests stretched from the *Corea* far beyond the river *Irtish*. He vanquished, in the country to the north of the *Caspian* sea, the nation of the Huns; and the new title of *Khan*, on *Cagan*, expressed the fame and power which he derived from this memorable victory.

"The chain of events is interrupted, or rather is concealed, as it passes from the *Volga* to the *Vistula*, through the dark interval which separates the extreme

limits of the Chinese and of the Roman geography. Yet the temper of the barbarians, and the experience of successive emigrations, sufficiently declare, that the Huns, who were oppressed by the arms of the *Geougen*, soon withdrew from the presence of an insulting victor. The countries towards the *Euxine* were already occupied by their kindred tribes; and their hasty flight, which they soon converted into a bold attack, would more naturally be directed towards the rich and level plains through which the *Vistula* gently flows into the *Baltic* sea. The north must again have been alarmed and agitated by the invasion of the Huns; and the nations who retreated before them must have pressed with incumbent weight on the confines of Germany. The inhabitants of those regions which the ancients have assigned to the *Suevi*, the *Vandals*, and the *Burgundians*, might embrace the resolution of abandoning to the fugitives of *Sarmatia* their woods and morasses; or at least of discharging their superfluous numbers on the provinces of the Roman empire. About four years after the victorious *Toulun* had assumed the title of *khan of the Geougen*, another barbarian, the haughty *Rhodogast*, or *Radagaisus*, marched from the northern extremities of Germany almost to the gates of Rome, and left the remains of his army to achieve the destruction of the west. The *Vandals*, the *Suevi*, and the *Burgundians*, formed the strength of this mighty host: but the *Alani*, who had found an hospitable reception in their new seats, added their active cavalry to the heavy infantry of the Germans; and the Gothic adventurers crowded so eagerly to the standard of *Radagaisus*, that by some historians he has been styled the *king of the Goths*. Twelve thousand warriors, distinguished above the vulgar by their noble birth or their valiant deeds, glittered in the van; and the whole multitude, which was not less than 200,000 fighting men, might be increased by the accession of women, of children, and of slaves, to the amount of 400,000 persons. This formidable emigration issued from the same coast of the *Baltic* which had poured forth the myriads of the *Cimbri* and *Teutones* to assault Rome and Italy in the vigour of the republic. After the departure of those barbarians, their native country, which was marked by the vestiges of their greatness, long ramparts, and gigantic moles, remained during some ages a vast and dreary solitude; till the human species was renewed by the powers of generation, and the vacancy was filled up by the influx of new inhabitants. The nations who now usurp an extent of land which they are unable to cultivate, would soon be assisted by the industrious poverty of their neighbours, if the government of Europe did not protect the claims of dominion and property.

"The correspondence of nations was in that age so imperfect and precarious, that the revolutions of the north might escape the knowledge of the court of Ravenna; till the dark cloud which was collected along the coast of the *Baltic* burst in thunder upon the banks of the *Upper Danube*. The emperor of the west, if his ministers disturbed his amusements by the news of the impending danger, was satisfied with being the occasion and the spectator of the war. The safety of Rome was intrusted to the counsels and the sword of *Stilicho*; but such was the feeble and exhausted state of the empire, that it was impossible to restore the fortifications,

Rome.

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Radagaisus
invades
Italy with
a prodigious
army.

Rome.

tifications of the Danube, or to prevent, by a vigorous effort, the invasion of the Germans. The hopes of the vigilant minister of Honorius were confined to the defence of Italy. He once more abandoned the provinces; recalled the troops; pressed the new levies, which were rigorously exacted, and pusillanimously eluded; employed the most efficacious means to arrest or allure the deserters; and offered the gift of freedom, and of two pieces of gold, to all the slaves who would enlist. By these efforts he painfully collected from the subjects of a great empire an army of 30,000 or 40,000 men; which, in the days of Scipio or Camillus, would have been instantly furnished by the free citizens of the territory of Rome. The 30 legions of Stilicho were reinforced by a large body of barbarian auxiliaries; the faithful Alani were personally attached to his service; and the troops of Huns and of Goths, who marched under the banners of their native princes Hulden and Sarus, were animated by interest and resentment to oppose the ambition of Radagaisus. The king of the confederate Germans passed, without resistance, the Alps, the Po, and the Appenine: leaving on one hand the inaccessible palace of Honorius, securely buried among the marshes of Ravenna; and on the other, the camp of Stilicho, who had fixed his head quarters at Ticinum, or Pavia, but who seems to have avoided a decisive battle till he had assembled his distant forces. Many cities of Italy were pillaged, or destroyed; and the siege of Florence by Radagaisus is one of the earliest events in the history of that celebrated republic, whose firmness checked and delayed the unskilful fury of the barbarians. The senate and people trembled at their approach within 180 miles of Rome; and anxiously compared the danger which they had escaped with the new perils to which they were exposed. Alaric was a Christian and a soldier, the leader of a disciplined army; who understood the laws of war, who respected the sanctity of treaties, and who had familiarly conversed with the subjects of the empire in the same camps and the same churches. The savage Radagaisus was a stranger to the manners, the religion, and even the language, of the civilized nations of the south. The fierceness of his temper was exasperated by cruel superstition; and it was universally believed, that he had bound himself by a solemn vow to reduce the city into a heap of stones and ashes, and to sacrifice the most illustrious of the Roman senators on the altars of those gods who were appeased by human blood. The public danger, which should have reconciled all domestic animosities, displayed the incurable madness of religious faction. The oppressed votaries of Jupiter and Mercury respected, in the implacable enemy of Rome, the character of a devout pagan; loudly declared, that they were more apprehensive of the sacrifices than of the arms of Radagaisus; and secretly rejoiced in the calamities of their country, which condemned the faith of their Christian adversaries.

" Florence was reduced to the last extremity; and the fainting courage of the citizens was supported only by the authority of St Ambrose, who had communicated in a dream the promise of a speedy deliverance. On a sudden they beheld from their walls the banners of Stilicho, who advanced with his united force to the relief of the faithful city; and who soon marked that fatal

spot for the grave of the barbarian host. The apparent contradictions of those writers who variously relate the defeat of Radagaisus, may be reconciled without offering much violence to their respective testimonies. Orosius and Augustin, who were intimately connected by friendship and religion, ascribe this miraculous victory to the providence of God rather than to the valour of man. They strictly exclude every idea of chance, or even of bloodshed; and positively affirm, that the Romans, whose camp was the scene of plenty and idleness, enjoyed the distress of the barbarians, slowly expiring on the sharp and barren ridge of the hills of Fæsulæ, which rise above the city of Florence. Their extravagant assertion, that not a single soldier of the Christian army was killed, or even wounded, may be dismissed with silent contempt; but the rest of the narrative of Augustin and Orosius is consistent with the state of the war and the character of Stilicho. Conscious that he commanded the last army of the republic, his prudence would not expose it in the open field to the headstrong fury of the Germans. The method of surrounding the enemy with strong lines of circumvallation, which he had twice employed against the Gothic king, was repeated on a larger scale, and with more considerable effect. The examples of Cæsar must have been familiar to the most illiterate of the Roman warriors; and the fortifications of Dyrrhachium, which connected 24 castles by a perpetual ditch and rampart of 15 miles, afforded the model of an intrenchment which might confine and starve the most numerous host of barbarians. The Roman troops had less degenerated from the industry than from the valour of their ancestors; and if the servile and laborious work offended the pride of the soldiers, Tuscany could supply many thousand peasants, who would labour, though perhaps they would not fight, for the salvation of their native country.— The imprisoned multitude of horses and men was gradually destroyed by famine, rather than by the sword; but the Romans were exposed, during the progress of such an extensive work, to the frequent attacks of an impatient enemy. The despair of the hungry barbarians would precipitate them against the fortifications of Stilicho; the general might sometimes indulge the ardour of his brave auxiliaries, who eagerly pressed to assault the camp of the Germans; and these various incidents might produce the sharp and bloody conflicts which dignify the narrative of Zosimus, and the Chronicles of Prosper and Marcellinus. A seasonable supply of men and provisions had been introduced into the walls of Florence; and the famished host of Radagaisus was in its turn besieged. The proud monarch of so many warlike nations, after the loss of his bravest warriors, was reduced to confide either in the faith of a capitulation, or in the clemency of Stilicho. But the death of the royal captive, who was ignominiously beheaded, disgraced the triumph of Rome and of Christianity; and the short delay of his execution was sufficient to brand the conqueror with the guilt of cool and deliberate cruelty. The famished Germans who escaped the fury of the auxiliaries were sold as slaves, at the contemptible price of as many single pieces of gold: but the difference of food and climate swept away great numbers of those unhappy strangers; and it was observed, that the inhuman purchasers, instead of reaping the fruit of their labour, were soon obliged to add to it the expence of interring them.

Rome.

Rome.

them. Stilicho informed the emperor and the senate of his success; and deserved a second time the glorious title of *Deliverer of Italy*.

"The fame of the victory, and more especially of the miracle, has encouraged a vain persuasion, that the whole army, or rather nation, of Germans, who migrated from the shores of the Baltic, miserably perished under the walls of Florence. Such indeed was the fate of Radagaisus himself, of his brave and faithful companions, and of more than one-third of the various multitude of Sueves and Vandals, of Alani and Burgundians, who adhered to the standard of their general. The union of such an army might excite our surprise, but the causes of separation are obvious and forcible; they were the pride of birth, the insolence of valour, the jealousy of command, the impatience of subordination, and the obstinate conflict of opinions, of interests, and of passions, among so many kings and warriors, who were untaught to yield or to obey. After the defeat of Radagaisus, two parts of the German host, which must have exceeded the number of 100,000 men, still remained in arms between the Apennine and the Alps, or between the Alps and the Danube. It is uncertain whether they attempted to revenge the death of their general: but their irregular fury was soon diverted by the prudence and firmness of Stilicho, who opposed their march, and facilitated their retreat; who considered the safety of Rome and Italy as the great object of his care, and who sacrificed with too much indifference the wealth and tranquillity of the distant provinces. The barbarians acquired, from the junction of some Pannonian deserters, the knowledge of the country and of the roads; and the invasion of Gaul, which Alaric had designed, was executed by the remains of the great army of Radagaisus.

"Yet if they expected to derive any assistance from the tribes of Germany who inhabited the banks of the Rhine, their hopes were disappointed. The Alemanni preserved a state of inactive neutrality; and the Franks distinguished their zeal and courage in the defence of the empire. In the rapid progress down the Rhine, which was the first act of the administration of Stilicho, he had applied himself with peculiar attention to secure the alliance of the warlike Franks, and to remove the irreconcilable enemies of peace and of the republic. Marcomir, one of their kings, was publicly convicted before the tribunal of the Roman magistrate of violating the faith of treaties. He was sentenced to a mild, but distant exile, in the province of Tuscany; and this degradation of the regal dignity was so far from exciting the resentment of his subjects, that they punished with death the turbulent Sunno, who attempted to revenge his brother, and maintained a dutiful allegiance to the princes who were established on the throne by the choice of Stilicho. When the limits of Gaul and Germany were shaken by the northern migration, the Franks bravely encountered the single force of the Vandals; who, regardless of the lessons of adversity, had again separated their troops from the standard of their barbarian allies. They paid the penalty of their rashness; and 20,000 Vandals, with their king Godigisclus, were slain in the field of battle. The whole people must have been extirpated, if the squadrons of the Alani, advancing to their relief, had not trampled down the infantry of the Franks; who, after an honourable resistance,

were compelled to relinquish the unequal contest. The victorious confederates pursued their march; and on the last day of the year, in a season when the waters of the Rhine were most probably frozen, they entered without opposition the defenceless provinces of Gaul. This memorable passage of the Suevi, the Vandals, the Alani, and the Burgundians, who never afterwards retreated, may be considered as the fall of the Roman empire in the countries beyond the Alps; and the barriers, which had so long separated the savage and the civilized nations of the earth, were from that fatal moment levelled with the ground.

"While the peace of Germany was secured by the attachment of the Franks and the neutrality of the Alemanni, the subjects of Rome, unconscious of their approaching calamities, enjoyed a state of quiet and prosperity, which had seldom blessed the frontiers of Gaul. Their flocks and herds were permitted to graze in the pastures of the barbarians; their huntsmen penetrated, without fear or danger, into the darkest recesses of the Hercynian wood. The banks of the Rhine were crowned, like those of the Tiber, with elegant houses and well cultivated farms; and if a poet descended the river, he might express his doubt on which side was situated the territory of the Romans. This scene of peace and plenty was suddenly changed into a desert, and the prospect of the smoking ruins could alone distinguish the solitude of nature from the desolation of man. The flourishing city of Mentz was surprised and destroyed; and many thousand Christians were inhumanly massacred in the church. Worms perished after a long and obstinate siege: Strasburg, Spire, Rheims, Tournay, Aras, Amiens, experienced the cruel oppression of the German yoke; and the consuming flames of war spread from the banks of the Rhine over the greatest part of the 17 provinces of Gaul. That rich and extensive country, as far as the ocean, the Alps, and the Pyrenees, was delivered to the barbarians, who drove before them, in a promiscuous crowd, the bishop, the senator, and the virgin, laden with the spoils of their houses and altars."

In the midst of these calamities a revolt happened in Britain, where one Constantine, a common soldier, was raised to the imperial throne, merely for the sake of his name. However, he seems to have been a man of considerable abilities, and by no means unfit for the high dignity to which he was raised. He governed Britain with great prosperity; passed over into Gaul and Spain, the inhabitants of which submitted without opposition, being glad of any protector whatever from the barbarians. Honorius, incapable of defending the empire, or repressing the revolt, was obliged to acknowledge him for his partner in the empire. In the mean time, Alaric, with his Goths, threatened a new invasion unless he was paid a certain sum of money. Stilicho is said to have occasioned this demand, and to have insisted upon sending him the money he demanded; and this was the cause of his disgrace and death, which happened soon after, with the extirpation of his family and friends. Nay, such was the general hatred of this unfortunate minister, that the soldiers quartered in the cities of Italy no sooner heard of his death, than they murdered the wives and children of the barbarians whom Stilicho had taken into the service of Honorius. The enraged husbands went over to Alaric, who made a new

Rome.

450
Account of
the remain-
der of the
army of
Radagaisus.

452
Gaul rava-
ged by the
barbarians.

453
Revolt of
Constantine, whom
Honorius
acknow-
ledges as
his partner
in the em-
pire.

451
The Van-
dals defeat-
ed by the
Franks.

454
Stilicho dis-
graced and
put to
death.

Rome. new demand of money; which not being readily sent, he laid siege to Rome, and would have taken it, had not the emperor complied with his demand. The ransom of the city was 5000 pounds of gold, 30,000 of silver, 4000 silk garments, 3000 skins dyed purple, and 3000 pounds of pepper. On this occasion the heathen temples were stripped of their remaining ornaments, and among others of the statue of Valour; which the pagans did not fail to interpret as a presage of the speedy ruin of the state.

455
Rome taken and plundered by Alaric.

Alaric having received this treasure, departed for a short time: but soon after he again blocked up the city with a numerous army; and again an accommodation with Honorius was set on foot. However, for some reasons which do not clearly appear, the treaty was broken off, Rome was a third time besieged, and at last taken and plundered. Alaric, when upon the point of breaking into the city, addressing his soldiers, told them, that all the wealth in it was theirs, and therefore he gave them full liberty to seize it; but at the same time he strictly enjoined them to shed the blood of none but such as they should find in arms; and above all, to spare those who should take sanctuary in the holy places, especially in the churches of the apostles St Peter and St Paul; which he named, because they were most spacious, and consequently capable of affording an asylum to great numbers of people. Having given these orders, he abandoned the city to his Goths, who treated it no better, according to St Jerome, than the Greeks are said to have treated ancient Troy; for after having plundered it for the space of three, or, as others will have it, of six days, they set fire to it in several places; so that the stately palace of Sallust, and many other magnificent buildings, were reduced to ashes; nay, Procopius writes, that there was not in the whole city one house left entire; and both St Jerome and Philostorgius assert, that the great metropolis of the empire was reduced to an heap of ashes and ruins. Though many of the Goths, pursuant to the orders of their general, refrained from shedding the blood of such as made no resistance; yet others, more cruel and blood-thirsty, massacred all they met: so that the streets in some quarters of the city were seen covered with dead bodies, and swimming in blood. However, not the least injury was offered to those who fled to the churches; nay, the Goths themselves conveyed thither, as to places of safety, such as they were desirous should be spared. Many of the statues of the gods that had been left entire by the emperors as excellent pieces of art, were on this occasion destroyed, either by the Goths, who, though mostly Arians, were zealous Christians, or by a dreadful storm of thunder and lightning which fell at the same time upon the city, as if it had been sent on purpose to complete with them the destruction of idolatry, and abolish the small remains of pagan superstition. Notwithstanding these accounts, some affirm that the city suffered very little at this time, and even not so much as when it was taken by Charles V.

456
Death of that conqueror.

Alaric did not long survive the taking of Rome, being cut off by a violent fit of sickness in the neighbourhood of Rhegium. After his death the affairs of Honorius seemed a little to revive by the defeat and death of Constantine and some other usurpers; but the provinces of Gaul, Britain, and Spain, were now almost entirely occupied by barbarians; in which state they

continued till the death of Honorius, which happened in the year 423, after an unfortunate reign of 28 years.

Rome.

After some usurpations which took place on the death of Honorius, his nephew Valentinian III. was declared emperor of the west, and his mother Placidia regent during his minority. He was scarce seated on the throne, when the empire was attacked by the Huns under the celebrated Attila. The Romans, however, wretched and degenerate as they were, had they been unanimous, would even yet have been superior to their enemies. The empress then had two celebrated generals, Bonifacius and Aetius; who by their union might have saved the empire: but unhappily, through the treachery of Aetius, Bonifacius was obliged to revolt; and a civil war ensued, in which he lost his life. Aetius, however, notwithstanding his treachery, was pardoned, and put at the head of the forces of the empire. He defended it against Attila with great spirit and success, notwithstanding the deplorable situation of affairs, till he was murdered by Valentinian with his own hand, on a suspicion that he aspired to the empire. But in the mean time the provinces, except Italy itself, were totally overrun by the barbarians. Genferic king of the Vandals ravaged Africa and Sicily; the Goths, Suevians, Burgundians, &c. had taken possession of Gaul and Spain; and the Britons were oppressed by the Scots and Picts, so that they were obliged to call in the Saxons to their assistance, as is related under the article ENGLAND. In the year 455, Valentinian was murdered by one Maximus, whose wife he had ravished. Maximus immediately assumed the empire; but felt such violent anxieties, that he designed to resign it and fly out of Italy, in order to enjoy the quiet of a private life. However, being dissuaded from this by his friends, and his own wife dying soon after, he forced the empress Eudoxia to marry him. Eudoxia, who had tenderly loved Valentinian, provoked beyond measure at being married to his murderer, invited Genferic king of the Vandals into Italy. This proved a most fatal scheme: for Genferic immediately appeared before Rome; a violent tumult ensued, in which Maximus lost his life; and the city was taken and plundered by Genferic, who carried off what had been left by the Goths. A vessel was loaded with costly statues; half the covering of the capitol, which was of brass plated over with gold; sacred vessels enriched with precious stones; and those which had been taken by Titus out of the temple of Jerusalem; all of which were lost with the vessel in its passage to Africa.

457
Rome taken and plundered by Genferic.

Nothing could now be more deplorable than the state of the Roman affairs: nevertheless, the empire continued to exist for some years longer; and even seemed to revive for a little under Marjorianus, who was declared emperor in 458. He was a man of great courage, and possessed of many other excellent qualities. He defeated the Vandals, and drove them out of Italy. With great labour he fitted out a fleet, of which the Romans had been long destitute. With this he designed to pass over into Africa; but, it being surprised and burnt by the enemy, he himself was soon after murdered by one Ricimer a Goth, who had long governed every thing with an absolute sway. After the death of Marjorianus, one Anthemius was raised to the empire: but beginning to counteract Ricimer, the latter

458
and by Ricimer.

openly.

Rome.

openly revolted, besieged and took Rome; where he committed innumerable cruelties, among the rest putting to death the unhappy emperor Anthemius, and raising one Olybius to the empire. The transactions of his reign were very few, as he died soon after his accession. On his death, one Glycerius usurped the empire. He was deposed in 474, and one Julius Nepos had the name of *emperor*. He was driven out the next year by his general Orestes, who caused his son Augustus or Augustulus to be proclaimed emperor. But the following year, 476, the barbarians who served in the Roman armies, and were distinguished with the title of allies, demanded, as a reward for their services, the third part of the lands in Italy; pretending, that the whole country, which they had so often defended, belonged of right to them. As Orestes refused to comply with this insolent demand, they resolved to do themselves justice, as they called it; and openly revolting, chose one Odoacer for their leader. Odoacer was, according to Ennodius, meanly born, and only a private man in the guards of the emperor Augustulus, when the barbarians revolting, chose him for their leader. He is said to have been a man of uncommon parts, equally capable of commanding an army and governing a state. Having left his own country when he was yet very young, to serve in Italy, as he was of a stature remarkably tall, he was admitted among the emperor's guards, and continued in that station till the present year; when, putting himself at the head of the barbarians in the Roman pay, who, though of different nations, had, with one consent, chosen him for their leader, he marched against Orestes and his son Augustulus, who still refused to give them any share of the lands in Italy.

459
Total failure of the empire.

As the Roman troops were inferior, both in number and valour, to the barbarians, Orestes took refuge in Pavia, at that time one of the best fortified cities in Italy: but Odoacer, investing the place without loss of time, took it soon after by assault, gave it up to be plundered by the soldiers, and then set fire to it; which reduced most of the houses, and two churches, to ashes. Orestes was taken prisoner, and brought to Odoacer, who carried him to Placentia, and there caused him to be put to death, on the 28th of August, the day on which he had driven Nepos out of Ravenna, and obliged him to abandon the empire. From Placentia, Odoacer marched straight to Ravenna, where he found Paul, the brother of Orestes, and the young emperor Augustulus. The former he immediately put to death; but sparing Augustulus, in consideration of his youth, he stripped him of the ensigns of the imperial dignity, and confined him to Lucullanum, a castle in Campania; where he was, by Odoacer's orders, treated with great humanity, and allowed an handsome maintenance to support himself and his relations. Rome readily submitted to the conqueror, who immediately caused himself to be proclaimed king of Italy, but would not assume the purple, or any other mark of the imperial dignity. Thus failed the very name of an empire in the West. Britain had been long since abandoned by the Romans; Spain was held by the Goths and Suevans; Africa, by the Vandals; the Burgundians, Goths, Franks, and Alans, had erected several tetrarchies in Gaul; at length Italy itself, with its proud metropolis, which for so many ages had given law to

the rest of the world, was enslaved by a contemptible barbarian, whose family, country, and nation, are not well known to this day.

Rome.

From this time, Rome has ceased to be the capital of an empire; the territories of the pope, to whom the city is now subject, being inconsiderable. The origin of the pope's temporal power, and the revolutions of Italy, are related under the article ITALY; and a sketch of the spiritual usurpations of the popes may be seen under the articles HISTORY, sect. ii. and REFORMATION; and likewise under the various historical articles as they occur in the course of this work.

It is thought that the walls of modern Rome take in nearly the same extent of ground as the ancient; but the difference between the number of buildings on this spot is very great, one half of modern Rome lying waste, or occupied with gardens, fields, meadows, and vineyards. One may walk quite round the city in three or four hours at most, the circumference being reckoned about 13 Italian miles. With regard to the number of the inhabitants, modern Rome is also greatly inferior to the ancient: for, in 1709, the whole of these amounted only to 138,568; among which were 40 bishops, 2686 priests, 3559 monks, 1814 nuns, 393 courtisans, about 8000 or 9000 Jews, and 14 Moors. In 1714, the number was increased to 143,000. In external splendour, and the beauty of its temples and palaces, modern Rome is thought by the most judicious travellers to excel the ancient. There was nothing in ancient Rome to be compared with St Peter's church in the modern city. That Rome was able to recover itself after so many calamities and devastations, will not be matter of surprize, if we consider the prodigious sums that it has so long annually drawn from all countries of the Popish persuasion. These sums, though still considerable, have been continually decreasing since the Reformation. The surface of the ground on which Rome was originally founded is surprizingly altered. At present it is difficult to distinguish the seven hills on which it was first built, the low grounds being almost filled up with the ruins of the ancient streets and houses, and the great quantities of earth washed down from the hills by the violence of the rains. Anciently the suburbs extended a vast way on all sides, and made the city appear almost boundless; but it is quite otherwise now, the country about Rome being almost a desert. To this and other causes it is owing, that the air is not very wholesome, especially during the summer heats, when few go abroad in the day-time. No city at present in the world surpasses, or indeed equals, Rome, for the multiplicity of fine fountains, noble edifices, antiquities, curiosities, paintings, statues, and sculptures. The city stands on the Tiber, 10 miles from the Tuscan sea, 380 from Vienna, 560 from Paris, 740 from Amsterdam, 810 from London, and 900 from Madrid. The Tiber is subject to frequent inundations, by which it often does great damage. A small part of the city is separated from the other by the river, and is therefore called *Travestere*, or beyond the Tiber. There are several bridges over the river, a great number of towers on the walls, and 20 gates. The remains of Rome's ancient grandeur consist of statues, colossuses, temples, palaces, theatres, naumachias, triumphal arches, circuses, columns, obelisks, fountains, aqueducts, mausoleums, ther-

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Description of modern Rome.

Rome.

mæ or hot-baths, and other structures. Of modern buildings, the splendid churches and palaces are the most remarkable. Mr Addison says, it is almost impossible for a man to form in his imagination such beautiful and glorious scenes as are to be met with in several of the Roman churches and chapels. This gentleman tells us also, that no part of the antiquities of Rome pleased him so much as the ancient statues, of which there is still an incredible variety. Next to the statues, he says, there is nothing more surprising than the amazing variety of ancient pillars of so many kinds of marble. Rome is said to be well paved; but not well lighted, nor kept very clean. Two-thirds of the houses are the property of the churches, convents, and alms houses. Protestants are not obliged to kneel at the elevation of the host, or at meeting the eucharist in the streets; and they may have flesh-meat always at the inns, even during Lent. Here are many academies for promoting arts and sciences, besides the university. The carnival here is only during the eight days before Lent, and there are no such scenes of riot as at Venice: prostitutes, however, are publicly tolerated. To maintain good order, there is a body of 300 Sbirri, or Halberdeers, under their barigella, or colonel. There is little or no trade carried on in Rome, but a vast deal of money is spent by travellers and other strangers. The principal modern structures are the church of St Peter, and the other churches; the aqueducts and fountains; the Vatican, and the other palaces; the Campidolio, where the Roman senate resides, &c. The principal remains of antiquity are the pila miliaria of fine marble; the equestrian brass statue of Marcus Aurelius Antoninus; the marble monument of the emperor Alexander Severus; marble busts of the emperors and their consorts; three brick arches of the temple of Peace, built by the emperor Vespasian; the triumphal arch of Septimus Severus and of Gallienus; the circus of Antoninus Caracalla; some parts of the cloaca maxima; the columna Antonina, representing the principal actions of Marcus Aurelius; the columna Trajani, or Trajan's pillar; some fragments of the curia, or palace of Antoninus Pius, and of Nerva's forum; the mausoleum of Augustus, in the Strada Pontifici; the remains of the emperor Severus's tomb without St John's gate; the pyramid of Caius Cestius near St Paul's gate; the porphyry coffin of St Helen, and the original statue of Constantine the Great, in the church of St John of Lateran: a font of oriental granite, in the chapel of St Giovanni in fonte, said to have been erected by Constantine the Great; an Egyptian obelisk near the church of St Maria Maggiore; the stately remains of Dioclesian's baths; the celebrated Pantheon; the obelisks of Sesostris and Augustus by the Clementine college; the church of St Paul fuori della Mura, said to have been built by Constantine the Great; the Farnese Hercules, in white marble, of a colossal size and exquisite workmanship, in a court of the Farnese palace, and an admirable group cut out of one block of marble, in another court of the same palace. Besides these there are a great many more, which our bounds will not allow us to take any further notice of. Here is a great number of rich and well-regulated hospitals. Near the church of St Sebastiano alle Catacombe, are the most spacious of the catacombs, where the Chri-

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stians, who never burned their dead, and such of the Pagan Romans as could not afford the expence of burning, were buried. Along the Via Appia, without St Sebastian's gate, were the tombs of the principal families of Rome, which at present are used for cellars and store-houses by the gardeners and vine-dressers.

Rome was entered, in February 1798, by the French, and in consequence of a tumult which ensued, when their general Duphot was killed, they deposed the pope, abolished the papal government, and erected in its stead a republic, to which they gave the designation of the Roman republic. They sent the pope himself to France, where he died on his various removals; they likewise sent away great numbers of the most valuable statues and paintings of antiquity, and compelled the inhabitants to pay heavy contributions. In the month of September 1799, the allies retook this city, and the new French government was overthrown. It was afterwards obliged to yield to the insatiable ambition of Bonaparte, as well as the whole of Italy, which now forms a constituent part of his unwieldy dominions. See FRANCE and ITALY.

ROMNEY, a town of Kent in England. It is one of the cinque-port towns, and is seated on a marsh of the same name, famous for feeding cattle; but the air is very unhealthy. It was once a large and populous place, but the retiring of the sea has reduced it very much; it sends two members to parliament.

ROMORENTIN, is a small town situated on the river Sautre, in the territory of Blaisois in France, famous for its woollen manufacture. It is said to be a very ancient place; and the inhabitants pretend that Cæsar built a tower here, of which there are still some considerable remains. They have a manufacture of serge and cloth, which is used for the clothing of the troops.

ROMPEE, or ROMPU, in *Heraldry*, is applied to ordinaries that are represented as broken; and to chevrons, bends, or the like, whose upper points are cut off.

ROMULUS, the founder and first king of Rome. See ROME, N^o 14.

RONCIGLIONE, is a town of Italy, in the Ecclesiastic State, and Patrimony of St Peter, in E. Long. 13. N. Lat. 42. 12. It is a small place, but had a pretty good trade, and was one of the richest in the province, while it belonged to the dukes of Parma, which was till 1649, when Pope Innocent X. became master of it, and it has ever since continued in the possession of his successors.

RONDELETIA, a genus of plants belonging to the pentandria class, and in the natural method ranking with those of which the order is doubtful. See BOTANY *Index*.

RONA, one of the Hebrides islands, is reckoned about 20 leagues distant from the north-east point of Nefs in Lewis—and is about a mile long, and half a mile broad. It has a hill in the west part, and is only visible from Lewis in a fair summer's day. There is a chapel in the island dedicated to St Ronan, fenced with a stone wall round it. This church the natives take care to keep very neat and clean, and sweep it every day. There is an altar in it, in which there lies a big plank of wood about 10 feet long. Every foot has a

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hole

Rome

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Rona.

Ronsard. hole in it, and in every hole is a stone, to which the natives ascribe several virtues; one of them is singular (as they say) for promoting speedy delivery to a woman in travel. The inhabitants are extremely ignorant, and very superstitious. See *Martin's Description*.

RONsARD, PETER DE, a French poet, was born at the castle of Poissoniere in Vendomois in 1524. He was descended of a noble family, and was educated at Paris in the college of Navarre. Academical pursuits not suiting his genius, he left college, and became page to the duke of Orleans, who resigned him to James Stuart, king of Scots, married to Magdalene of France. Ronsard continued in Scotland with King James upwards of two years, and afterwards went to France, where he was employed by the duke of Orleans in several negotiations. He accompanied Lazarus de Baif to the diet of Spire. Having from the conversation of this learned man imbibed a passion for the belles-lettres, he studied the Greek language with Baif's son under Dorat. It is reported of Ronsard, that his practice was to study till two o'clock in the morning; and when he went to bed, to awaken Baif, who resumed his place. The muses possessed in his eyes an infinity of charms; and he cultivated them with such success, that he acquired the appellation of the *Prince of the Poets* of his time. Henry II. Francis II. Charles IX. and Henry III. loaded him with favours. Having gained the first prize of the *Jeux Floraux*, they thought the reward promised below the merit of the work, and the reputation of the poet. The city of Toulouse caused a Minerva of massy silver of considerable value to be made and sent to him. This present was accompanied with a decree, declaring him *The French Poet*, by way of distinction. Ronsard afterwards made a present of his Minerva to Henry II. and this monarch appeared as much elated with this mark of the poet's esteem for him, as the poet himself could have been had he received the present from his sovereign. Mary, the beautiful and unfortunate queen of Scots, who was equally sensible of his merit with the Toulonese, gave him a very rich set of table-plate, among which was a vessel in the form of a rose-bush, representing Mount Parnassus, on the top of which was a Pegasus with this inscription:

A Ronsard, l'Apollon de la source des muses.

From the above two anecdotes of him may easily be inferred the reputation in which he was held, and which he continued to keep till Malherbe appeared. His works possess both invention and genius; but his affectation of everywhere thrusting in his learning, and of forming words from the Greek, the Latin, and the different provincialisms of France, has rendered his versification disagreeable and often unintelligible.

*Ronsard, dit Despreaux, par une autre methode,
Reglant tout, brouilla tout, fit un art à sa mode;
Et toutefois long temps eut un heureux destin;
Mais sa muse, en François parlant Grec et Latin,
Vit dans l'âge suivant, par un retour grotesque,
Tomber de ses grands mots le faste pédantesque.*

He wrote hymns, odes, a poem called the *Franciad*, eclogues, epigrams, sonnets, &c. In his odes he takes bombast for poetical raptures. He wishes to imitate Pindar; and by labouring too much for lofty expressions, he loses himself in a cloud of words. He is ob-

scure and harsh to the last degree: faults which he might easily have avoided by studying the works of Marot, who had before he wrote brought French poetry very near to perfection. "Marot's turn and style of composition are such (says Bruyere), that he seems to have written after Ronsard: there is hardly any difference, except in a few words, between Marot and us. Ronsard, and the authors his contemporaries, did more disservice than good to style: they checked its course in the advances it was making towards perfection, and had like to have prevented its ever attaining it. It is surprising that Marot, whose works are so natural and easy, did not make Ronsard, who was fired with the strong enthusiasm of poetry, a greater poet than either Ronsard or Marot." But what could be expected from a man who had so little taste, that he called Marot's works 'a dunghill, from which rich grains of gold by industrious working might be drawn?' As a specimen of our author's intolerable and ridiculous affectation of learning, which we have already censured, Boileau cites the following verse of Ronsard to his mistress: *Etes-vous pas ma seule entelechie?* 'are not you my only entelechia?' Now *entelechia* is a word peculiar to the peripatetic philosophy, the sense of which does not appear to have ever been fixed. Hermolaus Barbarus is said to have had recourse to the devil, in order to know the meaning of this new term used by Aristotle; but he did not gain the information he wanted, the devil, probably to conceal his ignorance, speaking in a faint and whispering sort of voice. What could Ronsard's mistress therefore, or even Ronsard himself, know of it; and, what can excuse in a man of real genius the low affectation of using a learned term, because in truth nobody could understand it. He has, however, some pieces not destitute of real merit; and there are perhaps few effusions of the French muse more truly poetical than his *Four Seasons of the Year*, where a most fertile imagination displays all its riches.

Ronsard, though it is doubtful whether he ever was in orders, held several benefices in commendam; and he died at Saint-Cosme-les-Tours, one of these, December 27. 1585, being then 61 years of age. He appeared more ridiculous as a man than as a poet: he was particularly vain. He talked of nothing but his family and his alliances with crowned heads. In his panegyrics, which he addresses to himself without any ceremony, he has the vanity to pretend, that from Ronsard is derived the word *Rosignol*, to denote both a musician and a poet together. He was born the year after the defeat of Francis I. before Pavia: "Just as heaven (said he) wished to indemnify France for the losses it had sustained at that place." He blushed not to tell of his intrigues. All the ladies sought after him; but he never said that any of them gave him a denial of their favours. His immoderate indulgence in pleasure, joined to his literary labours, served to hasten his old age. In his 50th year he was weak and valetudinary, and subject to attacks of the gout. He retained his wit, his vivacity, and his readiness at poetic composition, to his last moments. Like all those who aspire after public esteem, he had a great number of admirers and some enemies. Though Melin de Saint-Gelais railed at him continually, Rabelais was the person whom he most dreaded. He took always care to inform himself where that jovial rector of Meudon went, that he might not be found in

Rood, Roof.
* See Pe-
ron.

the same place with him. It is reported that Voltaire acted a similar part with regard to Peron*, of whose extemporary fallies and *bon mots* he was much afraid. Ronfard's poems appeared in 1567 at Paris in 6 vols 4to, and in 1604 in 10 vols 12mo.

ROOD, a quantity of land equal to 40 square perches, or the fourth part of an acre.

1
Definition.

ROOF, expresses the covering of a house or building, by which its inhabitants or contents are protected from the injuries of the weather. It is perhaps the essential part of a house, and is frequently used to express the whole. To come under a person's roof, is to enjoy his protection and society, to dwell with him. *Tectum* was used in the same sense by the Romans. To be within our walls rather expresses the being in our possession: a roof therefore is not only an essential part of a house, but it even seems to be its characteristic feature. The Greeks, who have perhaps excelled all nations in taste, and who have given the most perfect model of architectural ordonnance within a certain limit, never erected a building which did not exhibit this part in the distinctest manner; and though they borrowed much of their model from the orientals, as will be evident to any who compares their architecture with the ruins of Persepolis, and of the tombs in the mountains of Schiras, they added that form of roof which their own climate taught them was necessary for sheltering them from the rains. The roofs in Persia and Arabia are flat, but those of Greece are without exception sloping. It seems therefore a gross violation of the true principles of taste in architecture (at least in the regions of Europe), to take away or to hide the roof of a house; and it must be ascribed to that rage for novelty which is so powerful in the minds of the rich. Our ancestors seemed to be of a very different opinion, and turned their attention to the ornamenting of their roofs as much as any other part of a building. They showed them in the most conspicuous manner, running them up to a great height, broke them into a thousand fanciful shapes, and stuck them full of highly dressed windows. We laugh at this, and call it Gothic and clumsy; and our great architects, not to offend any more in this way, conceal the roof altogether by parapets, balustrades, and other contrivances. Our forefathers certainly did offend against the maxims of true taste, when they enriched a part of a house with marks of elegant habitation, which every spectator must know to be a cumbersome garret: but their successors no less offend, who take off the cover of the house altogether, and make it impossible to know whether it is not a mere screen or colonnade we are looking at.

2
Strictures on various kinds of roofs.

3
Error of Sir Christopher Wren in the roof of St Paul's London.

We cannot help thinking that Sir Christopher Wren erred when he so industriously concealed the roof of St Paul's church in London. The whole of the upper order is a mere screen. Such a quantity of wall would have been intolerably offensive, had he not given it some appearance of habitation by the mock windows or niches. Even in this state it is gloomy, and it is odd, and is a puzzle to every spectator—There should be no puzzle in the design of a building any more than in a discourse. It has been said that the double roof of our great churches which have aisles is an incongruity, looking like a house standing on the top of another house. But there is not the least occasion for such a thought. We know that the aisle is a shed, a cloister. Suppose only that the lower roof or shed is hidden by

Roof.

a balustrade, it then becomes a portico, against which the connoisseur has no objection: yet there is no difference; for the portico must have a cover, otherwise it is neither a shed, cloister, nor portico, any more than a building without a roof is a house. A house without a visible roof is like a man abroad without his hat; and we may add, that the whim of concealing the chimneys, now so fashionable, changes a house to a barn or storehouse. A house should not be a copy of any thing. It has a title to be an original; and a screen-like house and a pillar-like candlestick are similar solecisms in taste.

4
Little attention paid by architects to this part of a building.

The architect is anxious to present a fine object, and a very simple outline discusses all his concerns with the roof. He leaves it to the carpenter, whom he frequently puzzles (by his arrangements) with coverings almost impossible to execute. Indeed it is seldom that the idea of a roof is admitted by him into his great compositions; or if he does introduce it, it is from mere affectation, and we may say pedantry. A pediment is frequently stuck up in the middle of a grand front, in a situation where a roof cannot perform its office; for the rain that is supposed to flow down its sides must be received on the top of the level buildings which flank it. This is a manifest incongruity. The tops of dressed windows, trifling porches, and sometimes a projecting portico, are the only situations in which we see the figure of a roof correspond with its office. Having thus lost sight of the principle, it is not surprising that the draughtsman (for he should not be called architect) runs into every whim: and we see pediment within pediment, a round pediment, a hollow pediment, and the greatest of all absurdities, a broken pediment. Nothing could ever reconcile us to the sight of a man with a hat without its crown, because we cannot overlook the use of a hat.

5
Advantages of a high-pitched roof.

But when one builds a house, ornament alone will not do. We must have a cover; and the enormous expence and other great inconveniences which attend the concealment of this cover by parapets, balustrades, and screens, have obliged architects to consider the pent roof as admissible, and to regulate its form. Any man of sense, not under the influence of prejudice, would be determined in this by its fitness for answering its purpose. A high-pitched roof will undoubtedly shoot off the rains and snows better than one of a lower pitch. The wind will not so easily blow the dropping rain in between the slates, nor will it have so much power to strip them off. A high-pitched roof will exert a smaller thrust on the walls, both because its strain is less horizontal, and because it will admit of lighter covering. But it is more expensive, because there is more of it. It requires a greater size of timbers to make it equally strong, and it exposes a greater surface to the wind.

6
Remarks on the changes in the pitch of roofs.

There have been great changes in the pitch of roofs; our forefathers made them very high, and we make them very low. It does not, however, appear, that this change has been altogether the effect of principle. In the simple unadorned habitations of private persons, every thing comes to be adjusted by an experience of inconveniences which have resulted from too low pitched roofs; and their pitch will always be nearly such as suits the climate and covering. Our architects, however, go to work on different principles. Their pro-

Roof.

fed aim is to make a beautiful object. The sources of the pleasures arising from what we call *taste* are so various, so complicated, and even so whimsical, that it is almost in vain to look for principle in the rules adopted by our professed architects. We cannot help thinking, that much of their practice results from a *pedantic* veneration for the beautiful productions of Grecian architecture. Such architects as have written on the principles of the art in respect of proportions, or what they call the *ORDONNANCE*, are very much puzzled to make a chain of reasoning; and the most that they have made of the Greek architecture is, that it exhibits a nice adjustment of strength and strain. But when we consider the extent of this adjustment, we find that it is wonderfully limited. The whole of it consists of a basement, a column, and an entablature; and the entablature, it is true, exhibits something of a connection with the framework and roof of a wooden building; and we believe that it really originated from this in the hands of the orientals, from whom the Greeks certainly borrowed their forms and their combinations. We could easily show in the ruins of Persepolis, and among the tombs in the mountains (which were long prior to the Greek architecture), the fluted column, the base, the Ionic and Corinthian capital, and the Doric arrangement of lintels, beams, and rafters, all derived from unquestionable principle. The only addition made by the Greeks was the pent roof; and the changes made by them in the subordinate forms of things are such as we should expect from their exquisite judgement of beauty.

But the whole of this is very limited; and the Greeks, after making the roof a chief feature of a house, went no farther, and contented themselves with giving it a slope suited to their climate. This we have followed, because in the milder parts of Europe we have no cogent reason for deviating from it; and if any architect should deviate greatly in a building where the outline is exhibited as beautiful, we should be disgusted; but the disgust, though felt by almost every spectator, has its origin in nothing but habit. In the professed architect or man of education, the disgust arises from pedantry: for there is not such a close connection between the form and uses of a roof as shall give precise determinations; and the mere form is a matter of indifference.

We should not therefore reprobate the high-pitched roofs of our ancestors, particularly on the continent. It is there where we see them in all the extremity of the fashion, and the taste is by no means exploded as it is with us. A baronial castle in Germany and France is seldom rebuilt in the pure Greek style, or even like the modern houses in Britain; the high-pitched roofs are retained. We should not call them Gothic, and ugly because Gothic, till we show their principle to be false or tasteless. Now we apprehend that it will be found quite the reverse; and that though we cannot bring ourselves to think them beautiful, we ought to think them so. The construction of the Greek architecture is a transference of the practices that are necessary in a wooden building to a building of stone. To this the Greeks have adhered, in spite of innumerable difficulties. Their marble quarries, however, put it in their power to retain the proportions which habit had rendered agreeable. But it is next to impossible to adhere to these proportions with freestone or brick, when the or-

der is of magnificent dimensions. Sir Christopher Wren saw this; for his mechanical knowledge was equal to his taste. He composed the front of St Paul's church in London of two orders, and he coupled his columns; and still the lintels which form the architrave are of such length that they could carry no additional weight, and he was obliged to truss them behind. Had he made but one order, the architrave could not have carried its own weight. It is impossible to execute a Doric entablature of this size in brick. It is attempted in a very noble front, the Academy of Arts in St Petersburg. But the architect was obliged to make the mutules and other projecting members of the cornice of granite, and many of them broke down by their own weight.

Here is surely an error in principle. Since stone is the chief material of our buildings, ought not the members of ornamented architecture to be refinements on the essential and unaffected parts of a simple stone-building. There is almost as much propriety in the architecture of India, where a dome is made in imitation of a lily or other flower inverted, as in the Greek imitation of a wooden building. The principles of masonry, and not of carpentry, should be seen in our architecture, if we would have it according to the rules of just taste. Now we affirm that this is the characteristic feature of what is called the Gothic architecture. In this no dependence is had on the transverse strength of stone. No lintels are to be seen; no extravagant projections. Every stone is pressed to its neighbours, and none is exposed to a transverse strain. The Greeks were enabled to execute their colossal buildings only by using immense blocks of the hardest materials. The Norman mason could raise a building to the skies without using a stone which a labourer could not carry to the top on his back. Their architects studied the principles of equilibrium; and having attained a wonderful knowledge of it, they indulged themselves in exhibiting remarkable instances. We call this false taste, and say that the appearance of insecurity is the greatest fault. But this is owing to our habits: our thoughts may be said to run in a wooden train, and certain simple maxims of carpentry are familiar to our imagination; and in the careful adherence to these consists the beauty and symmetry of the Greek architecture. Had we been as much habituated to the equilibrium of pressure, this apparent insecurity would not have met our eye: we would have perceived the strength, and we should have relished the ingenuity.

The Gothic architecture is perhaps intitled to the name of rational architecture, and its beauty is founded on the characteristic distinction of our species. It deserves cultivation: not the pitiful, servile, and unskilled copying of the monuments; this will produce incongruities and absurdities equal to any that have crept into the Greek architecture: but let us examine with attention the nice disposition of the groins and spandrels; let us study the tracery and knots, not as ornaments, but as useful members; let us observe how they have made their walls like honey-combs, and admire their ingenuity as we pretend to admire the instinct infused by the great Architect into the bee. All this cannot be understood without mechanical knowledge; a thing which few of our professional architects have any share of. Thus would architectonic taste be a mark of skill; and the person who presents the design of a building

7
And of the
Greek archi-
tecture
of them.

8
Difference
between
the ancient
Greeks and
modern
roofs;

Roof.

9
and the ef-
fect of our
using stone.

10
Rational
nature of
the Gothic
architec-
ture.

Roof. ing would know how to execute it, without committing it entirely to the mason and carpenter.

These observations are not a digression from our subject. The same principles of mutual pressure and equilibrium have a place in roofs and many wooden edifices; and if they had been as much studied as the Normans and Saracens seem to have studied such of them as were applicable to their purposes, we might have produced wooden buildings as far superior to what we are familiarly acquainted with, as the bold and wonderful churches still remaining in Europe are superior to the timid productions of our stone architecture. The centres used in building the bridge of Orleans and the corn-market of Paris, are late instances of what may be done in this way. The last mentioned is a dome of 200 feet diameter, built of fir planks; and there is not a piece of timber in it more than nine feet long, a foot broad, and three inches thick.

11
The Norman architects often roofed with stone.

The Norman architects frequently roofed with stone. Their wooden roofs were in general very simple, and their professed aim was to dispense with them altogether. Fond of their own science, they copied nothing from a wooden building, and ran into a similar fault with the ancient Greeks. The parts of their buildings which were necessarily of timber were made to imitate stone-buildings; and Gothic ornament consists in cramming every thing full of arches and spandrels. Nothing else is to be seen in their timber works, nay even in their sculpture. Look at any of the maces or sceptres still to be found about the old cathedrals; they are silver steeples.

12
Effects of the rivalry between the masons and carpenters of ancient times.

But there appears to have been a rivalry in old times between the masons and the carpenters. Many of the baronial halls are of prodigious width, and are roofed with timber: and the carpenters appeared to have borrowed much knowledge from the masons of those times, and their wide roofs are frequently constructed with great ingenuity. Their aim, like the masons, was to throw a roof over a very wide building without employing great logs of timber. We have seen roofs 60 feet wide, without having a piece of timber in it above 10 feet long and 4 inches square. The Parliament House and Tron-Church of Edinburgh, and the great hall of Tarnaway castle near Forres, are specimens of those roofs. They are very numerous on the continent. Indeed Britain retains few monuments of private magnificence. Aristocratic state never was so great with us; and the rancour of our civil wars gave most of the performances of the carpenter to the flames. Westminster-hall exhibits a specimen of the false taste of the Norman roofs. It contains the essential parts indeed, very properly disposed; but they are hidden, or intentionally covered, with what is conceived to be ornamental; and this is an imitation of stone arches, crammed in between slender pillars which hang down from the principal frames, trusses, or rafters. In a pure Norman roof, such as Tarnaway hall, the essential parts are exhibited as things understood, and therefore relished. They are refined and ornamented; and it is here that the inferior kind of taste or the want of it may appear. And here we do not mean to defend all the whims of our ancestors; but we assert that it is no more necessary to consider the members of a roof as things to be concealed like a garret or privy, than the members of a ceiling, which form the most beautiful part of the

Roof. Greek architecture. Should it be said that a roof is only a thing to keep off the rain, it may be answered, that a ceiling is only to keep off the dust, or the floor to be trodden under foot, and that we should have neither compartments in the one nor inlaid work or carpets on the other. The structure of a roof may therefore be exhibited with propriety, and made an ornamental feature. This has been done even in Italy. The church of St Maria Maggiore in Rome and several others are specimens: but it must be acknowledged, that the forms of the principal frames of these roofs, which resemble those of our modern buildings, are very unfit for agreeable ornament. As we have already observed, our imaginations have not been made sufficiently familiar with the principles, and we are rather alarmed than pleased with the appearance of the immense logs of timber which form the couples of these roofs, and hang over our heads with every appearance of weight and danger. It is quite otherwise with the ingenious roofs of the German and Norman architects. Slender timbers, interlaced with great symmetry, and thrown by necessity into figures which are naturally pretty, form altogether an object which no carpenter can view without pleasure. And why should the gentleman refuse himself the same pleasure of beholding scientific ingenuity?

The roof is in fact the part of the building which requires the greatest degree of skill, and where science will be of more service than in any other part. The architect seldom knows much of the matter, and leaves the task to the carpenter. The carpenter considers the framing of a great roof as the touchstone of his art; and nothing indeed tends so much to show his judgement and his fertility of resource.

It must therefore be very acceptable to the artist to have a clear view of the principles by which this difficult problem may be solved in the best manner, so that the roof may have all the strength and security that can be wished for, without an extravagant expence of timber and iron. We have said that mechanical science can give great assistance in this matter. We may add that the framing of carpentry, whether for roofs, floors, or any other purpose, affords one of the most elegant and most satisfactory applications which can be made of mechanical science to the arts of common life. Unfortunately the practical artist is seldom possessed even of the small portion of science which would almost insure his practice from all risk of failure; and even our most experienced carpenters have seldom any more knowledge than what arises from their experience and natural sagacity. The most approved author in our language is Price in his British Carpenter. Mathurin Jouffe is in like manner the author most in repute in France; and the publications of both these authors are void of every appearance of principle. It is not uncommon to see the works of carpenters of the greatest reputation tumble down, in consequence of mistakes from which the most elementary knowledge would have saved them.

We shall attempt, in this article, to give an account of the leading principles of this art in a manner so familiar and palpable, that any person who knows the common properties of the lever, and the composition of motion, shall so far understand them as to be able, on every occasion, so to dispose his materials, with respect to the strains to which they are to be exposed, that he shall always

Roof.

13
Necessity of science in forming roofs;

14
Un- and the little attention hitherto paid to it.

15
Purpose of this article.

Roof. always know the effective strain on every piece, and shall, in most cases, be able to make the disposition such as to derive the greatest possible advantage from the materials which he employs.

16 Principles which regulate the strength of the materials.

It is evident that the whole must depend on the principles which regulate the strength of the materials, relative to the manner in which this strength is exerted, and the manner in which the strain is laid on the piece of matter. With respect to the first, this is not the proper place for considering it, and we must refer the reader to the article *STRENGTH of Materials in Mechanics*. We shall just borrow from that article two or three propositions suited to our purpose.

The force with which the materials of our edifices, roofs, floors, machines, and framings of every kind, resist being broken or crushed, or pulled asunder, is, immediately or ultimately, the cohesion of their particles. When a weight hangs by a rope, it tends either immediately to break all the fibres, overcoming the cohesion among the particles of each, or it tends to pull one parcel of them from among the rest, with which they are joined. This union of the fibres is brought about by some kind of gluten, or by twisting, which causes them to bind each other so hard that any one will break rather than come out, so much is it withheld by friction. The ultimate resistance is therefore the cohesion of the fibre; the force or strength of all fibrous materials, such as timber, is exerted in much the same manner. The fibres are either broken or pulled out from among the rest. Metals, stone, glass, and the like, resist being pulled asunder by the simple cohesion of their parts.

The force which is necessary for breaking a rope or wire is a proper measure of its strength. In like manner, the force necessary for tearing directly asunder any rod of wood or metal, breaking all its fibres, or tearing them from among each other, is a proper measure of the united strength of all these fibres. And it is the simplest strain to which they can be exposed, being just equal to the sum of the forces necessary for breaking or disengaging each fibre. And, if the body is not of a fibrous structure, which is the case with metals, stones, glass, and many other substances, this force is still equal to the simple sum of the cohesive forces of each particle which is separated by the fracture. Let us distinguish this mode of exertion of the cohesion of the body by the name of its **ABSOLUTE STRENGTH**.

When solid bodies are, on the contrary, exposed to great compression, they can resist only a certain degree. A piece of clay or lead will be squeezed out; a piece of freestone will be crushed to powder; a beam of wood will be crippled, swelling out in the middle, and its fibres lose their mutual cohesion, after which it is easily crushed by the load. A notion may be formed of the manner in which these strains are resisted by conceiving a cylindrical pipe filled with small shot, well shaken together, so that each sphericle is lying in the closest manner possible, that is, in contact with six others in the same vertical plane (this being the position in which the shot will take the least room). Thus each touches the rest in six points: Now suppose them all united, in these six points only, by some cement. This assemblage will stick together and form a cylindrical pillar, which may be taken out of its mould. Sup-

Roof. pose this pillar standing upright, and loaded above. The supports arising from the cement act obliquely, and the load tends either to force them asunder laterally, or to make them slide on each other: either of these things happening, the whole is crushed to pieces. The resistance of fibrous materials to such a strain is a little more intricate, but may be explained in a way very similar.

A piece of matter of any kind may also be destroyed by wrenching or twisting it. We can easily form a notion of its resistance to this kind of strain by considering what would happen to the cylinder of small shot if treated in this way.

And lastly, a beam, or a bar of metal, or piece of stone or other matter, may be broken transversely. This will happen to a rafter or joist supported at the ends when overloaded, or to a beam having one end stuck fast in a wall and a load laid on its projecting part. This is the strain to which materials are most commonly exposed in roofs; and, unfortunately, it is the strain which they are the least able to bear; or rather it is the manner of application which causes an external force to excite the greatest possible immediate strain on the particles. It is against this that the carpenter must chiefly guard, avoiding it when in his power, and in every case, diminishing it as much as possible. It is necessary to give the reader a clear notion of the great weakness of materials in relation to this transverse strain. But we shall do nothing more, referring him to the articles **STRAIN, STRESS,** and **STRENGTH**.

Let ABCD (fig. 1.) represent the side of a beam projecting horizontally from a wall in which it is firmly fixed, and let it be loaded with a weight W appended to its extremity. This tends to break it; and the least reflection will convince any person that if the beam is equally strong throughout, it will break in the line CD, even with the surface of the wall. It will open at D, while C will serve as a sort of joint, round which it will turn. The cross section through the line CD is, for this reason, called the *section of fracture*, and the horizontal line, drawn through C on its under surface, is called the *axis of fracture*. The fracture is made by tearing asunder the fibres, such as DE or FG. Let us suppose a real joint at C, and that the beam is really sawed through along CD, and that in place of its natural fibres threads are substituted all over the section of fracture. The weight now tends to break these threads; and it is our business to find the force necessary for this purpose.

It is evident that DCA may be considered as a bent lever, of which C is the fulcrum. If f be the force which will just balance the cohesion of a thread when hung on it so that the smallest addition will break it, we may find the weight which will be sufficient for this purpose when hung on at A, by saying, $AC : CD = f : \phi$, and ϕ will be the weight which will just break the thread, by hanging ϕ by the point A. This gives us $\phi = f \times \frac{CD}{CA}$. If the weight be hung on at a , the force just sufficient for breaking the same thread will be $= f \frac{CD}{Ca}$. In like manner the force ϕ , which must be hung on at A in order to break an equally strong or an equally

Roof.

equally resisting fibre at F , must be $= f \times \frac{CF}{CA}$. And so on of all the rest.

If we suppose all the fibres to exert equal resistances at the instant of fracture, we know, from the simplest elements of mechanics, that the resistance of all the particles in the line CD , each acting equally in its own place, is the same as if all the individual resistances were united in the middle point g . Now this total resistance is the resistance or strength f of each particle, multiplied by the number of particles. This number may be expressed by the line CD , because we have no reason to suppose that they are at unequal distances. Therefore, in comparing different sections together, the number of particles in each are as the sections themselves. Therefore DC may represent the number of particles in the line DC' . Let us call this line the depth of the beam, and express it by the symbol d . And since we are at present treating of roofs whose rafters and other parts are commonly of uniform breadth, let us call AH or BI the breadth of the beam, and express it by b , and let CA be called its length, l . We may now express the strength of the whole line CD by $f \times d$, and we may suppose it all concentrated in the middle point g . Its mechanical energy, therefore, by which it resists the energy of the weight w , applied at the distance l , is $f \cdot CD \cdot Cg$, while the momentum of w is $w \cdot CA$. We must therefore have $f \cdot CD \cdot Cg = w \cdot CA$, or $f d \cdot \frac{1}{2} d = w \cdot l$, and $f d : w = l : \frac{1}{2} d$, or $f d : w = 2l : d$. That is, twice the length of the beam is to its depth as the absolute strength of one of its vertical planes to its relative strength, or its power of resisting this transverse fracture.

It is evident, that what has been now demonstrated of the resistance exerted in the line CD , is equally true of every line parallel to CD in the thickness or breadth of the beam. The absolute strength of the whole section of fracture is properly represented by $f \cdot d \cdot b$, and we still have $2l : d = f d b : w$; or twice the length of the beam is to its depth as the absolute strength to the relative strength. Suppose the beam 12 feet long and one foot deep; then whatever be its absolute strength, the 24th part of this will break it if hung at its extremity.

But even this is too favourable a statement; all the fibres are supposed to act alike in the instant of fracture. But this is not true. At the instant that the fibre at D breaks, it is stretched to the utmost, and is exerting its whole force. But at this instant the fibre at g is not so much stretched, and it is not then exerting its utmost force. If we suppose the extension of the fibres to be as their distance from C , and the actual exertion of each to be as their extensions, it may easily be shown (see STRENGTH and STRAIN), that the whole resistance is the same as if the full force of all the fibres were united at a point r distant from C by one-third of CD . In this case we must say, that the absolute strength is to the relative strength as three times the length to the depth; so that the beam is weaker than by the former statement in the proportion of two to three.

Even this is more strength than experiment justifies; and we can see an evident reason for it. When the beam is strained, not only are the upper fibres stretched, but the lower fibres are compressed. This is very di-

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stinately seen, if we attempt to break a piece of cork cut into the shape of a beam: this being the case, C is not the centre of fracture. There is some point c which lies between the fibres which are stretched and those that are compressed. This fibre is neither stretched nor squeezed; and this point is the real centre of fracture: and the lever by which a fibre D resists, is not DC , but a shorter one Dc ; and the energy of the whole resistances must be less than by the second statement. Till we know the proportion between the dilatibility and compressibility of the parts, and the relation between the dilatations of the fibres and the resistances which they exert in this state of dilatation, we cannot positively say where the point c is situated, nor what is the sum of the actual resistances, or the point where their action may be supposed concentrated. The firmer woods, such as oak and chestnut, may be supposed to be but slightly compressible; we know that willow and other soft woods are very compressible. These last must therefore be weaker: for it is evident, that the fibres which are in a state of compression do not resist the fracture. It is well known, that a beam of willow may be cut through from C to g without weakening it in the least, if the cut be filled up by a wedge of hard wood stuck in.

We can only say, that very found oak and red fir have the centre of effort so situated, that the absolute strength is to the relative strength in a proportion not less than that of three and a half times the length of the beam to its depth. A square inch of found oak will carry about 8000 pounds. If this bar be firmly fixed in a wall, and project 12 inches, and be loaded at the extremity with 200 pounds, it will be broken. It will just bear 190, its relative strength being $\frac{1}{12}$ of its absolute strength; and this is the case only with the finest pieces, so placed that their annual plates or layers are in a vertical position. A larger log is not so strong transversely, because its plates lie in various directions round the heart.

These observations are enough to give us a distinct notion of the vast diminution of the strength of timber when the strain is across it; and we see the justice of the maxim which we inculcated, that the carpenter, in framing roofs, should avoid as much as possible the exposing his timbers to transverse strains. But this cannot be avoided in all cases. Nay, the ultimate strain, arising from the very nature of a roof, is transverse. The rafters must carry their own weight, and this tends to break them across: an oak beam a foot deep will not carry its own weight if it project more than 60 feet. Besides this, the rafters must carry the lead, tiling, or slates. We must therefore consider this transverse strain a little more particularly, so as to know what strain will be laid on any part by an unavoidable load, laid on either at that part or at any other.

We have hitherto supposed, that the beam had one of its ends fixed in a wall, and that it was loaded at the other end. This is not an usual arrangement, and was taken merely as affording a simple application of the mechanical principles. It is much more usual to have the beam supported at the ends, and loaded in the middle. Let the beam $FEGH$ (fig. 2.) rest on the props E and G , and be loaded at its middle point C with a weight W . It is required to determine the strain at the section CD ? It is plain that the beam will receive the same support, and suffer the same strain, if

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Practical Inference.

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Effect when beams are supported at the ends and loaded in the middle, &c.

instead.

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instead of the blocks E and G, we substitute the ropes Efe, Ghg, going over the pulleys f and g, and loaded with proper weights e and g. The weight e is equal to the support given by the block E; and g is equal to the support given by G. The sum of e and g is equal to W; and, on whatever point W is hung, the weights e and g are to W in the proportion of DG and DE to GE. Now, in this state of things, it appears that the strain on the section CD arises immediately from the upward action of the ropes Ff and Hh, or the upward pressures of the blocks E and G; and that the office of the weight W is to oblige the beam to oppose this strain. Things are in the same state in respect of strain as if a block were substituted at D for the weight W, and the weights e and g were hung on at E and G; only the directions will be opposite. The beam tends to break in the section CD, because the ropes pull it upwards at E and G, while a weight W holds it down at C. It tends to open at D, and C becomes the centre of fracture. The strain therefore is the same as if the half ED were fixed in the wall, and a weight equal to g, that is, to the half of W, were hung on at G.

Hence we conclude, that a beam supported at both ends, but not fixed there, and loaded in the middle, will carry twice as much weight as it can carry at its extremity, when the other extremity is fast in a wall.

The strain occasioned at any point L by a weight W, hung on at any other point D, is $= W \times \frac{DE}{EG} \times LG$. For EG is to ED as W to the pressure occasioned at G. This would be balanced by some weight g acting over the pulley h; and this tends to break the beam at L, by acting on the lever GL. The pressure at G is $W \cdot \frac{DE}{EG}$, and therefore the strain at L

is $W \cdot \frac{DE}{EG} \cdot LG$.

In like manner, the strain occasioned at the point D by the weight W hung on there, is $W \cdot \frac{DE}{EG} \times DG$; which is therefore equal to $\frac{1}{2} W$, when D is the middle point.

Hence we see, that the general strain on the beam arising from one weight, is proportionable to the rectangle of the parts of the beam, (for $\frac{W \cdot DE \cdot DG}{EG}$ is as DE.DG), and is greatest when the load is laid on the middle of the beam.

We also see, that the strain at L, by a load at D, is equal to the strain at D by the same load at L. And the strain at L, from a load at D, is to the strain by the same load at L as DE to LE. These are all very obvious corollaries; and they sufficiently inform us concerning the strains which are produced on any part of the timber by a load laid on any other part.

If we now suppose the beam to be fixed at the two ends, that is, firmly framed, or held down by blocks at I and K, placed beyond E and G, or framed into posts, it will carry twice as much as when its ends were free. For suppose it sawn through at CD; the weight W hung on there will be just sufficient to break it at E and G. Now restore the connection of the section CD, it

will require another weight W to break it there at the same time.

Therefore, when a rafter, or any piece of timber, is firmly connected with three fixed points G, E, I, it will bear a greater load between any two of them than if its connection with the remote point were removed; and if it be fastened in four points, G, E, I, K, it will be twice as strong in the middle part as without the two remote connections.

One is apt to expect from this that the joist of a floor will be much strengthened by being firmly built in the wall. It is a little strengthened; but the hold which can thus be given it is much too short to be of any sensible service; and it tends greatly to shatter the wall, because, when it is bent down by a load, it forces up the wall with the momentum of a long lever. Judicious builders therefore take care not to bind the joists tight in the wall. But when the joists of adjoining rooms lie in the same direction, it is a great advantage to make them of one piece. They are then twice as strong as when made in two lengths.

It is easy to deduce from these premises the strain on any point which arises from the weight of the beam itself, or from any load which is uniformly diffused over the whole or any part. We may always consider the whole of the weight which is thus uniformly diffused over any part as united in the middle point of that part; and if the load is not uniformly diffused, we may still suppose it united at its centre of gravity. Thus, to know the strain at L arising from the weight of the whole beam, we may suppose the whole weight accumulated in its middle point D. Also the strain at L, arising from the weight of the part ED, is the same as if this weight were accumulated in the middle point d of ED; and it is the same as if half the weight of ED were hung on at D. For the real strain at L is the upward pressure at G, acting by the lever GL. Now call the weight of the part DE e; this upward pressure will be $\frac{e \times dE}{EG}$, or $\frac{\frac{1}{2} e \times DE}{EG}$.

Therefore the strain on the middle of a beam, arising from its own weight, or from any uniform load, is the weight of the beam or its load $\times \frac{ED}{EG} \times DG$; that is, half the weight of the beam or load multiplied or acting by the lever DG; for $\frac{ED}{EG}$ is $\frac{1}{2}$.

Also the strain at L, arising from the weight of the beam, or the uniform load, is $\frac{1}{2}$ the weight of the beam or load acting by the lever LG. It is therefore proportional to LG, and is greatest of all at D. Therefore a beam of uniform strength throughout, uniformly loaded, will break in the middle.

It is of importance to know the relation between the strains arising from the weights of the beams, or from any uniformly diffused load, and the relative strength. We have already seen, that the relative strength is $\frac{f d b d}{m l}$, where m is a number to be discovered by experiment for every different species of materials. Leaving out every circumstance but what depends on the dimensions of the beam, viz. d, b, and l, we

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Relation between the weights or strains and the relative strength.

Roof. we see that the relative strength is in the proportion of $\frac{d^2 b}{l}$, that is, as the breadth and the square of the depth directly and the length inversely.

Now, to consider first the strain arising from the weight of the beam itself, it is evident that this weight increases in the same proportion with the depth, the breadth, and the length of the beam. Therefore its power of resisting this strain must be as its depth directly, and the square of its length inversely. To consider this in a more popular manner, it is plain that the increase of breadth makes no change in the power of resisting the actual strain, because the load and the absolute strength increase in the same proportion with the breadth. But by increasing the depth, we increase the resisting section in the same proportion, and therefore the number of resisting fibres and the absolute strength: but we also increase the weight in the same proportion. This makes a compensation, and the relative strength is yet the same. But by increasing the depth, we have not only increased the absolute strength, but also its mechanical energy: For the resistance to fracture is the same as if the full strength of each fibre was exerted at the point which we called the centre of effort; and we showed, that the distance of this from the underside of the beam was a certain portion (a half, a third, a fourth, &c.) of the whole depth of the beam. This distance is the arm of the lever by which the cohesion of the wood may be supposed to act. Therefore this arm of the lever, and consequently the energy of the resistance increases in the proportion of the depth of the beam, and this remains uncompensated by any increase of the strain. On the whole, therefore, the power of the beam to sustain its own weight increases in the proportion of its depth. But, on the other hand, the power of withstanding a given strain applied at its extremity, or to any aliquot part of its length, is diminished as the length increases, or is inversely as the length; and the strain arising from the weight of the beam also increases as the length. Therefore the power of resisting the strain actually exerted on it by the weight of the beam is inversely as the square of the length. On the whole, therefore, the power of a beam to carry its own weight, varies in the proportion of its depth directly and the square of its length inversely.

As this strain is frequently a considerable part of the whole, it is proper to consider it apart, and then to reckon only on what remains for the support of any extraneous load.

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Power of a beam to carry a load uniformly diffused over its length.

In the next place, the power of a beam to carry any load which is uniformly diffused over its length, must be inversely as the square of the length: for the power of withstanding any strain applied to an aliquot part of the length (which is the case here, because the load may be conceived as accumulated at its centre of gravity, the middle point of the beam) is inversely as the length; and the actual strain is as the length, and therefore its momentum is as the square of the length. Therefore the power of a beam to carry a weight uniformly diffused over it, is inversely as the square of the length. *N. B.* It is here understood, that the uniform load is of some determined quantity for every foot of the length, so that a beam of double length carries a double load.

We have hitherto supposed that the forces which

tend to break a beam transversely, are acting in a direction perpendicular to the beam. This is always the case in level floors loaded in any manner; but in roofs, the action of the load tending to break the rafters is oblique, because gravity always acts in vertical lines. It may also frequently happen, that a beam is strained by a force acting obliquely. This modification of the strain is easily discussed. Suppose that the external force, which is measured by the weight W in fig. 1. acts in the direction $A w$ instead of AW . Draw $C \acute{a}$ perpendicular to $A w$. Then the momentum of this external force is not to be measured by $W \times AC$, but by $W \times \acute{a}C$. The strain therefore by which the fibres in the section of fracture DC are torn asunder, is diminished in the proportion of CA to $C \acute{a}$, that is, in the proportion of radius to the sine of the angle $CA \acute{a}$, which the beam makes with the direction of the external force.

Roof. ²³ Effect when the action of the load is oblique.

To apply this to our purpose in the most familiar manner, let AB (fig. 3.) be an oblique rafter of a building, loaded with a weight W suspended to any point C , and thereby occasioning a strain in some part D . We have already seen, that the immediate cause of the strain on D is the reaction of the support which is given to the point B . The rafter may at present be considered as a lever, supported at A , and pulled down by the line CW . This occasions a pressure on B , and the support acts in the opposite direction to the action of the lever, that is, in the direction Bb , perpendicular to BA . This tends to break the beam in every part.

The pressure exerted at B is $\frac{W \times AE}{AB}$, AE being a horizontal line. Therefore the strain at D will be $\frac{W \times AE}{AB} \times BD$. Had the beam been lying horizontally, the strain at D , from the weight W suspended at C , would have been $\frac{W \cdot AC}{AB} \times BD$. It is therefore diminished in the proportion of AC to AE , that is, in the proportion of radius to the cosine of the elevation, or in the proportion of the secant of elevation to the radius.

It is evident, that this law of diminution of the strain is the same whether the strain arises from a load on any part of the rafter, or from the weight of the rafter itself, or from any load uniformly diffused over its length, provided only that these loads act in vertical lines.

We can now compare the strength of roofs which have different elevations. Supposing the width of the building to be given, and that the weight of a square yard of covering is also given. Then, because the load on the rafter will increase in the same proportion with its length, the load on the slant-side BA of the roof will be to the load of a similar covering on the half AF of the flat roof, of the same width, as AB to AF . But the transverse action of any load on AB , by which it tends to break it is to that of the same load on AF as AF to AB . The transverse strain therefore is the same on both, the increase of real load on AB being compensated by the obliquity of its action. But the strengths of beams to resist equal strains, applied to similar points, or uniformly diffused over them, are inversely as their lengths, because the momentum or energy of the strain is proportional to the length. There-

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Strength of roofs having different elevations compared.

Roof.

fore the power of AB to withstand the strain to which it is really exposed, is to the power of AF to resist its strain as AF to AB. If, therefore, a rafter AG of a certain scantling is just able to carry the roofing laid on it, a rafter AB of the same scantling, but more elevated, will be too weak in the proportion of AG to AB. Therefore steeper roofs require stouter rafters, in order that they may be equally able to carry a roofing of equal weight per square yard. To be equally strong, they must be made broader, or placed nearer to each other, in the proportion of their greater length, or they must be made deeper in the subduplicate proportion of their length. The following easy construction will enable the artist not familiar with computation to proportion the depth of the rafter to the slope of the roof.

Fig. 4.

Let the horizontal line af (fig. 4.) be the proper depth of a beam whose length is half the width of the building; that is, such as would make it fit for carrying the intended tiling laid on a flat roof. Draw the vertical line fb , and the line ab having the elevation of the rafter; make ag equal to af , and describe the semicircle bdg ; draw ad perpendicular to ab , ad is the required depth. The demonstration is evident.

We have now treated in sufficient detail, what relates to the chief strain on the component parts of a roof, namely, what tends to break them transversely; and we have enlarged more on the subject than what the present occasion indispensably required, because the propositions which we have demonstrated are equally applicable to all framings of carpentry, and are even of greater moment in many cases, particularly in the construction of machines. These consist of levers in various forms, which are strained transversely; and similar strains frequently occur in many of the supporting and connecting parts. We shall give in the article TIMBER an account of the experiments which have been made by different naturalists, in order to ascertain the absolute strength of some of the materials which are most generally framed together in buildings and engines. The house-carpenter will draw from them absolute numbers, which he can apply to his particular purposes by means of the propositions which we have now established.

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Effect of
other
strains,
pressures,
or thrusts.

We proceed, in the next place, to consider the other strains to which the parts of roofs are exposed, in consequence of the support which they mutually give each other, and the pressures (or *thrusts* as they are called in the language of the house-carpenter) which they exert on each other, and on the walls or piers of the building.

Fig. 5.

Let a beam or piece of timber AB (fig. 5.) be suspended by two lines AC, BD; or let it be supported by two props AE, BF, which are perfectly moveable round their remote extremities E, F, or let it rest on the two polished plains KAH, LBM. Moreover, let G be the centre of gravity of the beam, and let GN be a line through the centre of gravity perpendicular to the horizon. The beam will not be in equilibrio unless the vertical line GN either passes through P, the point in which the directions of the two lines AC, BD, or the directions of the two props EA, FB, or the perpendiculars to the two planes KAH, LBM intersect each other, or is parallel to these directions. For the supports given by the lines or props are unquestionably exerted in the direction of their lengths; and it is as well

known in mechanics that the supports given by planes are exerted in a direction perpendicular to those planes in the points of contact; and we know that the weight of the beam acts in the same manner as if it were all accumulated in its centre of gravity G, and that it acts in the direction GN perpendicular to the horizon. Moreover, when a body is in equilibrio between three forces, they are acting in one plane, and their directions are either parallel or they pass through one point.

The support given to the beam is therefore the same as if it were suspended by two lines which are attached to the single point P. We may also infer, that the points of suspension C, D, the points of support E, F, the points of contact A, B, and the centre of gravity G, are all in one vertical plane.

When this position of the beam is disturbed by any external force, there must either be a motion of the points A and B round the centres of suspension C and D, or of the props round these points of support E and F, or a sliding of the ends of the beam along the polished planes GH and IK; and in consequence of these motions the centre of gravity G will go out of its place, and the vertical line GN will no longer pass through the point where the directions of the supports intersect each other. If the centre of gravity rises by this motion, the body will have a tendency to recover its former position, and it will require force to keep it away from it. In this case the equilibrium may be said to be *stable*, or the body to have *stability*. But if the centre of gravity descends when the body is moved from the position of equilibrium, it will tend to move still farther; and so far will it be from recovering its former position, that it will now fall. This equilibrium may be called a *tottering equilibrium*. These accidents depend on the situations of the points A, B, C, D, E, F; and they may be determined by considering the subject geometrically. It does not much interest us at present; it is rarely that the equilibrium of suspension is tottering, or that of props is stable. It is evident, that if the beam were suspended by lines from the point P, it would have stability, for it would swing like a pendulum round P, and therefore would always tend towards the position of equilibrium. The intersection of the lines of support would still be at P, and the vertical line drawn through the centre of gravity, when in any other situation, would be on that side of P towards which this centre has been moved. Therefore, by the rules of pendulous bodies, it tends to come back. This would be more remarkably the case if the points of suspension C and D be on the same side of the point P with the points of attachment A and B; for in this case the new point of intersection of the lines of support would shift to the opposite side, and be still farther from the vertical line through the new position of the centre of gravity. But if the points of suspension and of attachment are on opposite sides of P, the new point of intersection may shift to the same side with the centre of gravity, and lie beyond the vertical line; in this case the equilibrium is tottering. It is easy to perceive, too, that if the equilibrium of suspension from the points C and D be stable, the equilibrium on the props AE and BF must be tottering. It is not necessary for our present purpose to engage more particularly in this discussion.

It is plain that, with respect to the mere momentary equilibrium, there is no difference in the support by threads,

Roof.

Roof. threads, or props, or planes, and we may substitute the one for the other. We shall find this substitution extremely useful, because we easily conceive distinct notions of the support of a body by strings.

Fig. 6. Observe farther, that if the whole figure be inverted, and strings be substituted for props, and props for strings, the equilibrium will still obtain: for by comparing fig. 5. with fig. 6. we see that the vertical line through the centre of gravity will pass through the intersection of the two strings or props; and this is all that is necessary for the equilibrium: only it must be observed in the substitution of props for threads, and of threads for props, that if it be done without inverting the whole figure, a stable equilibrium becomes a tottering one, and *vice versa*.

Examples. This is a most useful proposition, especially to the unlettered artisan, and enables him to make a practical use of problems which the greatest mechanical geniuses have found no easy task to solve. An instance will show the extent and utility of it. Suppose it were required to make a mansard or kirb roof whose width is AB (fig. 7.), and consisting of the four equal rafters AC, CD, DE, EB. There can be no doubt but that its best form is that which will put all the parts in equilibrium, so that no ties or stays may be necessary for opposing the unbalanced thrust of any part of it. Make a chain *acdeb* (fig. 8.) of four equal pieces, loosely connected by pin-joints, round which the parts are perfectly moveable. Suspend this from two pins *a, b*, fixed in a horizontal line. This chain or festoon will arrange itself in such a form that its parts are in equilibrium. Then we know that if the figure be inverted, it will compose the frame or truss of a kirb-roof *aydeb*, which is also in equilibrium, the thrusts of the pieces balancing each other in the same manner that the mutual pulls of the hanging festoon *acdeb* did. If the proportion of the height *df* to the width *ab* is not such as pleases, let the pins *a, b* be placed nearer or more distant, till a proportion between the width and height is obtained which pleases, and then make the figure ACDEB, fig. 7. similar to it. It is evident that this proposition will apply in the same manner to the determination of the form of an arch of a bridge; but this is not a proper place for a farther discussion.

Fig. 7. We are now able to compute all the thrusts and other pressures which are exerted by the parts of a roof on each other and on the walls. Let AB (fig. 9.) be a beam standing anyhow obliquely, and G its centre of gravity. Let us suppose that the ends of it are supported in any directions AC, BD, by strings, props, or planes. Let these directions meet in the point P of the vertical line PG passing through its centre of gravity. Through G draw lines *G a, G b* parallel to PB, PA. Then

Fig. 8. The weight of the beam }
The pressure or thrust at A } are proportional to { PG
The pressure at B } { P a
{ P b.

For when a body is in equilibrio between three forces, these forces are proportional to the sides of a triangle which have their directions.

In like manner, if *A g* be drawn parallel to *P b*, we shall have

Weight of the beam }
Thrust on A } proportional to { P g
Thrust on B } { P a
{ B g.

Or, drawing *E y* parallel to *P a*
Weight of beam }
Thrust at A } are proportional to { P y
Thrust at B } { B y
{ P B.

It cannot be disputed that, if strength alone be considered, the proper form of a roof is that which puts the whole in equilibrio, so that it would remain in that shape although all the joints were perfectly loose or flexible. If it has any other shape, additional ties or braces are necessary for preserving it, and the parts are unnecessarily strained. When this equilibrium is obtained, the rafters which compose the roof are all acting on each other in the direction of their lengths; and by this action, combined with their weights, they sustain no strain but that of compression, the strain of all others that they are the most able to resist. We may consider them as so many inflexible lines having their weights accumulated in their centres of gravity. But it will allow an easier investigation of the subject, if we suppose the weights to be at the joints, equal to the real vertical pressures which are exerted on these points. These are very easily computed: for it is plain, that the weight of the beam AB (fig. 9.) is to the part of this weight that is supported at B as AB to AG. Therefore, if W represent the weight of the beam, the vertical pressure at B will be $W \times \frac{AG}{AB}$, and the vertical pressure at A will be $W \times \frac{BG}{AB}$. In like manner, the prop BF being considered as another beam, and *f* as its centre of gravity and *w* as its weight, a part of this weight, equal to $w \times \frac{fF}{BF}$, is supported at B, and the whole vertical pressure at B is $W \times \frac{AG}{AB} + w \times \frac{fF}{BF}$. And thus we greatly simplify the consideration of the mutual thrusts of roof frames. We need hardly observe, that although these pressures by which the parts of a frame support each other in opposition to the vertical action of gravity, are always exerted in the direction of the pieces, they may be resolved into pressures acting in any other direction which may engage our attention.

27 The proper form of a roof is that which puts the whole in equilibrio.

All that we propose to deliver on this subject at present may be included in the following proposition.

Let ABCDE (fig. 10.) be an assemblage of rafters in a vertical plane, resting on two fixed points A and E in a horizontal line, and perfectly moveable round all the joints A, B, C, D, E; and let it be supposed to be in equilibrio, and let us investigate what adjustment of the different circumstances of weight and inclination of its different parts is necessary for producing this equilibrium.

Let F, G, H, I, be the centres of gravity of the different rafters, and let these letters express the weights of each. Then (by what has been said above) the weight which presses B directly downwards is $F \times \frac{AF}{AB} + G \times \frac{CG}{BC}$. The weight on C is in like manner $G \times \frac{BG}{BC} + H \times \frac{DH}{CD}$, and that on D is $H \times \frac{CH}{CD} + I \times \frac{EI}{DE}$.

Let *A b c d E* be the figure ABCDE inverted, in the manner already described. It may be conceived as a thread fastened at A and E, and loaded at *b, c*, and

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Fig. 10.

Roof. d with the weights which are really pressing on B, C, and D. It will arrange itself into such a form that all will be in equilibrio. We may discover this form by means of this single consideration, that any part bc of the thread is equally stretched throughout in the direction of its length. Let us therefore investigate the proportion between the weight β , which we suppose to be pulling the point b in the vertical direction $b\beta$, to the weight δ , which is pulling down the point d in a similar manner. It is evident, that since AE is a horizontal line, and the figures $AbcdE$ and $ABCDE$ equal and similar, the lines Bb, Cc, Dd , are vertical. Take bf to represent the weight hanging at b . By stretching the threads bA and bc it is set in opposition to the contractile powers of the threads, acting in the directions bA and bc , and it is in immediate equilibrio with the equivalent of these two contractile forces. Therefore make bg equal to bf , and make it the diagonal of a parallelogram $hbfg$. It is evident that bh, bi , are the forces exerted by the threads bA, bc . Then, seeing that the thread bc is equally stretched in both directions, make ck equal to bi ; ck is the contractile force which is excited at c by the weight which is hanging there. Draw kl parallel to cd , and lm parallel to bc . The force lc is the equivalent of the contractile forces ck, cm , and is therefore equal and opposite to the force of gravity acting at C. In like manner, make $dn=cm$, and complete the parallelogram $ndpo$, having the vertical line od for its diagonal. Then dn and dp are the contractile forces excited at d , and the weight hanging there must be equal to od .

Therefore, the load at b is to the load at d as bg to do . But we have seen that the compressing forces at B, C, D may be substituted for the extending forces at b, c, d . Therefore the weights at B, C, D which produce the compressions, are equal to the weights at b, c, d , which produce the extensions. Therefore $bg : do =$

$$F \times \frac{AF}{AB} + G \times \frac{CG}{BC} : H \times \frac{CH}{CD} + I \times \frac{EI}{DE}.$$

Let us enquire what relation there is between this proportion of the loads upon the joints at B and D, and the angles which the rafters make at these joints with each other, and with the horizon or the plumb lines. Produce AB till it cut the vertical Cc in Q; draw BR parallel to CD, and BS parallel to DE. The similarity of the figures $ABCDE$ and $AbcdE$, and the similarity of their position with respect to the horizontal and plumb lines, show, without any further demonstration, that the triangles QCB and gbi are similar, and that $QB : BC = gi : ib = hb : ib$. Therefore QB is to BC as the contractile force exerted by the thread Ab to that exerted by bc ; and therefore QB is to BC as the compression of BA to the compression on BC (A). Then, because bi is equal to ck , and the triangles CBR and ckl are similar, $CB : BR = ck : kl = ck : cm$, and CB is to BR as the compression on CB

to the compression on CD. And, in like manner, because $cm=dn$, we have BR to BS as the compression on DC to the compression on DE. Also $BR : RS = nd : do$, that is, as the compression on DC to the load on D. Finally, combining all these ratios

$$\begin{aligned} QC : CB &= gb : bi = gb : ke \\ CB : BR &= kc : kl = kc : dn \\ BR : BS &= nd : no = dn : no \\ BS : RS &= no : do = no : do, \text{ we have finally} \\ QC : RS &= gb : od = \text{Load at B} : \text{Load at D.} \end{aligned}$$

Now

$$\begin{aligned} QC : BC &= f, QBC : f, BQC = f, ABC : f, AB b \\ BC : BR &= f, BRC : f BCR = f CD d : f, b BC \\ BR : RS &= f, BSR : f, RBS = f, d DE : f, CDE \end{aligned}$$

Therefore

$$QC : RS = f, ABC : f, CD d : f, d DE : f, CDE : f, AB b : f, b BC.$$

Or

$$QC : RS = \frac{f, ABC}{f, AB b : f, CCB} : \frac{f, CDE}{f, d DC : f, d DE}.$$

That is, the loads on the different joints are as the sines of the angles at these joints directly, and as the products of the sines of the angles which the rafters make with the plumb-lines inversely.

Or, the loads are as the sines of the angles of the joints directly, and as the products of the cosines of the elevations of the rafters jointly.

Or, the loads at the joints are as the sines of the angles at the joints, and as the products of the secants of elevation of the rafters jointly: for the secants of angles are inversely as the cosines.

Draw the horizontal line BT. It is evident, that if this be considered as the radius of a circle, the lines BQ, BC, BR, BS are the secants of the angles which these lines make with the horizon. And they are also as the thrusts of those rafters to which they are parallel. Therefore, the thrust which any rafter makes in its own direction is as the secant of its elevation.

The horizontal thrust is the same at all the angles. For $ix = kx = m\mu = nv = p\pi$. Therefore both walls are equally pressed out by the weight of the roof. We can find its quantity by comparing it with the load on one of the joints:

$$\begin{aligned} \text{Thus, } QC : CB &= f, ABC : f, AB b \\ BC : BT &= \text{Rad.} : f, BCT = \text{Rad.} : f, CB b \\ \text{Therefore, } QC : BT &= \text{Rad.} \times f, ABC : f, b BA \times f, b BC \end{aligned}$$

It deserves remark, that the lengths of the beams do not affect either the proportion of the load at the different joints, nor the position of the rafters. This depends merely on the weights at the angles. If a change of length affects the weight, this indeed affects the form also: and this is generally the case. ²⁸ The length of the beams depends on the weights at the angles.

For

(A) This proportion might have been shown directly without any use of the inverted figure or consideration of contractile forces; but this substitution gives distinct notions of the mode of acting even to persons not much conversant in such disquisitions; and we wish to make it familiar to the mind, because it gives an easy solution of the most complicated problems, and furnishes the practical carpenter, who has little science, with solutions of the most difficult cases by experiment. A festoon, as we called it, may easily be made; and we are certain, that the forms into which it will arrange itself are models of perfect frames.

Roof. For it seldom happens, indeed it never should happen, that the weight on rafters of longer bearing are not greater. The covering alone increases nearly in the proportion of the length of the rafter.

Roof.

equal to NDP, and WK is parallel to ND, and CF is to CW as CP to CN; and CN is equal to CP. But it has been shown above, that CN and CP are as the loads upon D and C. These are therefore equal, and the frame ABCDE is in equilibrio.

If the proportion of the weights at B, C, and D are given, as also the position of any two of the lines, the position of all the rest is determined.

A comparison of this solution with that of Mr Couplet will show its great advantage in respect of simplicity and perspicuity. And the intelligent reader can easily adapt the construction to any proportion between the rafters AB and BC, which other circumstances, such as garret-rooms, &c. may render convenient. The construction must be such that NC may be to CP as $\frac{CD + DE}{2}$.

If the horizontal distances between the angles are all equal, the forces on the different angles are proportional to the verticals drawn on the lines through these angles from the adjoining angle, and the thrusts from the adjoining angles are as the lines which connect them.

Whatever proportion of AB to BC is assumed, the point D' will be found in the circumference of a semicircle H' D' H, whose centre is in the line CE, and having AB : BC = CH' : HE', = cH' : h' E'.—The rest of the construction is simple.

If the rafters themselves are of equal lengths, the weights at the different angles are as these verticals and as the secants of the elevation of the rafters jointly.

In buildings which are roofed with slate, tyle, or shingles, the circumstance which is most likely to limit the construction is the slope of the upper rafters CB, CD. This must be sufficient to prevent the penetration of rain, and the stripping by the winds. The only circumstance left in our choice in this case is the proportion of the rafters AB and BC. Nothing is easier than making NC to CP in any desired proportion when the angle BCD is given.

This proposition is very fruitful in its practical consequences. It is easy to perceive that it contains the whole theory of the construction of arches; for each stone of an arch may be considered as one of the rafters of this piece of carpentry, since all is kept up by its mere equilibrium. We may have an opportunity in some future article of exhibiting some very elegant and simple solutions of the most difficult cases of this important problem; and we now proceed to make use of the knowledge we have acquired for the construction of roofs.

We need not repeat that it is always a desirable thing to form a truss for a roof in such a manner that it shall be in equilibrio. When this is done, the whole force of the struts and braces which are added to it is employed in preserving this form, and no part is expended in unnecessary strains. For we must now observe, that the equilibrium of which we have been treating is always of that kind which we called the tottering, and the roof requires stays, braces, or hanging timbers, to give it stiffness, or keep it in shape. We have also said enough to enable any reader, acquainted with the most elementary geometry and mechanics, to compute the transverse strains and the thrusts to which the component parts of all roofs are exposed.

We mentioned by the bye a problem which is not unfrequent in practice, to determine the best form of a kirb-roof. Mr Couplet of the Royal Academy of Paris has given a solution of it in an elaborate memoir in 1726, occupying several lemmas and theorems.

It only remains now to show the general maxims by which all roofs must be constructed, and the circumstances which determine their excellence. In doing this we shall be exceedingly brief, and almost content ourselves with exhibiting the principal forms, of which the endless variety of roofs are only slight modifications.—We shall not trouble the reader with any account of such roofs as receive part of their support from the interior walls, but confine ourselves to the more difficult problem of throwing a roof over a wide building, without any intermediate support; because when such roofs are constructed in the best manner, that is, deriving the greatest possible strength from the materials employed, the best construction of the others is necessarily included.

Let AE (fig. 11.) be the width, and CF the height; it is required to construct a roof ABCDE whose rafters AB, BC, CD, DE, are all equal, and which shall be in equilibrio.

For all such roofs as rest on the middle walls are roofs of smaller bearing. The only exception deserving notice is the roofs of churches, which have aisles separated from the nave by columns. The roof must rise on these. But if it is of an arched form internally, the horizontal thrusts must be nicely balanced, that they may not push the columns aside.

Draw CE, and bisect it perpendicularly in H by the line DHG, cutting the horizontal line AE in G. About the centre G, with the distance GE, describe the circle EDC. It must pass through C, because CH is equal to HE and the angles at H are equal. Draw HK parallel to FE, cutting the circumference in K. Draw CK, cutting GH in D. Join CD, ED; these lines are the rafters of half of the roof required.

The simplest notion of a roof-frame is, that it consists of two rafters AB and BC (fig. 12.), meeting in the ridge B.

We prove this by showing, that the loads in the angles C and D are equal. For this is the proportion which results from the equality of the rafters, and the extent of surface of the uniform roofing which they are supposed to support. Therefore produce ED till it meet the vertical FC in N; and having made the side CBA similar to CDE, complete the parallelogram BCDP, and draw DB, which will bisect CP in R, as the horizontal line KH, bisects CF in Q. Draw KF, which is evidently parallel to DP. Make CS perpendicular to CF, and equal to FG; and about S, with the radius SF, describe the circle FKW. It must pass through K, because SF is equal to CG, and CQ = QF. Draw WK, WS, and produce BC, cutting ND in O.

The angle WKF at the circumference is one-half of the angle WSF at the centre, and is therefore equal to WSC, or CGF. It is therefore double of the angle CEF or ECS. But ECS is equal to ECD and DCS, and ECD is one-half of NDC, and DCS is one-half of DCO, or CDP. Therefore the angle WKF is

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Practical
inferences

30
To determine
the best form
of a kirb-
roof.

Fig. 11.

31
The truss
for a roof
should al-
ways be
in equili-
brio.

32
General
maxims by
which all
roofs must
be construc-
ted.

33
Simplest
notion of
a roof.
Even Fig. 12.

Roof.

34
Best form
of rafters.

Fig. 13.

Even this simple form is susceptible of better and worse. We have already seen, that when the weight of a square yard of covering is given, a steeper roof requires stronger rafters, and that when the scantling of the timbers is also given, the relative strength of a rafter is inversely as its length. But there is now another circumstance to be taken into the account, viz. the support which one rafter leg gives to the other. The best form of a rafter will therefore be that in which the relative strength of the legs, and their mutual support, give the greatest product. Mr Muller, in his *Military Engineer*, gives a determination of the best pitch of a roof, which has considerable ingenuity, and has been copied into many books of military education both in this island and on the continent. Describe on the width AC, fig. 13. the semicircle AFC, and bisect it by the radius FD. Produce the rafter AB to the circumference in E, join EC, and draw the perpendicular EG.— Now $AB : AD = AC : AE$, and $AE = \frac{AD \times AC}{AB}$, and AE is inversely as AB, and may therefore represent its strength in relation to the weight actually lying on it. Also the support which CB gives to AB is as CE, because CE is perpendicular to AB. Therefore the form which renders $AE \times EC$ a maximum seems to be that which has the greatest strength. But $AC : AE = EC : EG$, and $EG = \frac{AE \cdot EC}{AC}$, and is therefore proportional to $AE \cdot EC$. Now EG is a maximum when B is in F, and a square pitch is in this respect the strongest. But it is very doubtful whether this construction is deduced from just principles. There is another strain to which the leg AB is exposed, which is not taken into the account. This arises from the curvature which it unavoidably acquires by the transverse pressure of its load. In this state it is pressed in its own direction by the abutment and load of the other leg. The relation between this strain and the resistance of the piece is not very distinctly known. Euler has given a dissertation on this subject (which is of great importance, because it affects posts and pillars of all kinds; and it is very well known that a post of ten feet long and six inches square will bear with great safety a weight which would crush a post of the same scantling and 20 feet long in a minute); but his determination has not been acquiesced in by the first mathematicians. Now it is in relation to these two strains that the strength of the rafter should be adjusted. The firmness of the support given by the other leg is of no consequence, if its own strength is inferior to the strain. The force which tends to crush the leg AB, by compressing it in its curved state, is to its weight as AB to BD, as is easily seen by the composition of forces; and its incurvation by this force has a relation to it, which is of intricate determination. It is contained in the properties demonstrated by Bernoulli of the elastic curve. This determination also includes the relation between the curvature and the length of the piece. But the whole of this seemingly simple problem is of much more difficult investigation than Mr Muller was aware of; and his rules for the pitch of a roof, and for the fall of a dock gate, which depends on the same principles, are of no value. He is, however, the first author who attempted to solve either of these problems on mechanical princi-

ples susceptible of precise reasoning. Belidor's solutions, in his *Architecture Hydraulique*, are below notice.

Roof.

Reasons of economy have made carpenters prefer a low pitch; and although this does diminish the support given by the opposite leg faster than it increases the relative strength of the other, this is not of material consequence, because the strength remaining in the opposite leg is still very great; for the supporting leg is acting against compression, in which case it is vastly stronger than the supported leg acting against a transverse strain.

But a roof of this simplicity will not do in most cases. There is no notice taken in its construction of the thrust which it exerts on the walls. Now this is the strain which is the most hazardous of all. Our ordinary walls, instead of being able to resist any considerable strain pressing them outwards, require, in general, some ties to keep them on foot. When a person thinks of the thinness and height of the walls of even a strong house, he will be surprised that they are not blown down by any strong puff of wind. A wall of three feet thick, and 60 feet high, could not withstand a wind blowing at the rate of 30 feet per second (in which case it acts with a force considerably exceeding two pounds on every square foot), if it were not stiffened by cross walls, joists, and roof, which all help to tie the different parts of the building together.

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Thrust on
the walls,

A carpenter is therefore exceedingly careful to avoid every horizontal thrust, or to oppose them by other forces. And this introduces another essential part into the construction of a roof, namely the tie or beam AC, (fig. 14.), laid from wall to wall, binding the feet A and C of the rafters together. This is the sole office of the beam; and it should be considered in no other light than as a string to prevent the roof from pushing out the walls. It is indeed used for carrying the ceiling of the apartments under it; and it is even made to support a flooring. But, considered as making part of a roof, it is merely a string; and the strain which it withstands tends to tear its parts asunder. It therefore acts with its whole absolute force, and a very small scantling would suffice if we could contrive to fasten it firmly enough to the foot of the rafter. If it is of oak, we may safely subject it to a strain of three tons for every square inch of its section. And fir will safely bear a strain of two tons for every square inch. But we are obliged to give the tie-beam much larger dimensions, that we may be able to connect it with the foot of the rafter by a mortise and tenon. Iron straps are also frequently added. By attending to this office of the tie-beam, the judicious carpenter is directed to the proper form of the mortise and tenon and of the strap. We shall consider both of these in a proper place, after we become acquainted with the various strains at the joints of a roof.

36
avoid-

These large dimensions of the tie-beam allow us to load it with the ceilings without any risk, and even to lay floors on it with moderation and caution. But when it has a great bearing or span, it is very apt to bend downwards in the middle, or, as the workmen term it, to sway or swag; and it requires a support. The question is, where to find this support? What fixed points can we find with which to connect the middle of the tie-beam? Some ingenious carpenter thought of suspending it from the ridge by a piece of timber BD (fig. 15.), called by our carpenters the *king-post*. It

Fig. 15.
must

Roof. must be acknowledged that there was great ingenuity in this thought. It was also perfectly just. For the weight of the rafters BA, BC tends to make them fly out at the foot. This is prevented by the tie-beam, and this excites a pressure, by which they tend to compress each other. Suppose them without weight, and that a great weight is laid on the ridge B. This can be supported only by the butting of the rafters in their own directions AB and CB, and the weight tends to compress them in the opposite directions, and, through their intervention, to stretch the tie-beam. If neither the rafters can be compressed, nor the tie beam stretched, it is plain that the triangle ABC must retain its shape, and that B becomes a fixed point, very proper to be used as a point of suspension. To this point, therefore, is the tie-beam suspended by means of the king-post. A common spectator, unacquainted with carpentry, views it very differently, and the tie-beam appears to him to carry the roof. The king-post appears a pillar resting on the beam, whereas it is really a string; and an iron-rod of one-sixteenth of the size would have done just as well. The king post is sometimes mortised into the tie-beam, and pins put through the joint, which gives it more the look of a pillar with the roof resting on it. This does well enough in many cases. But the best method is to connect them by an iron strap, like a stirrup, which is bolted at its upper ends into the king-post, and passes round the tie-beam. In this way a space is commonly left between the end of the king-post and the upper side of the tie-beam. Here the beam plainly appears hanging in the stirrup; and this method allows us to restore the beam to an exact level, when it has sunk by the unavoidable compression or other yielding of the parts. The holes in the sides of the iron strap are made oblong instead of round; and the bolt which is drawn through all is made to taper on the under side; so that driving it farther draws the tie beam upwards. A notion of this may be formed by looking at fig. 16. which is a section of the post and beam.

Fig. 16.

It requires considerable attention, however, to make this suspension of the tie-beam sufficiently firm. The top of the king-post is cut into the form of the arch-stone of a bridge, and the heads of the rafters are firmly mortised into this projecting part. These projections are called joggles, and are formed by working the king-post out of a much larger piece of timber, and cutting off the unnecessary wood from the two sides; and, lest all this should not be sufficient, it is usual in great works to add an iron-plate or strap of three branches, which are bolted into the heads of the king-post and rafters.

The rafters, though not so long as the beam, seem to stand as much in need of something to prevent their bending, for they carry the weight of the covering.—This cannot be done by suspension, for we have no fixed points above them: But we have now got a very firm point of support at the foot of the king-post.—Braces, or struts, ED, FD, (fig. 17.), are put under the middle of the rafters, where they are slightly mortised, and their lower ends are firmly mortised into joggles formed on the foot of the king-post. As these braces are very powerful in their resistance to compression, and the king-post equally so to resist extension, the points E and F may be considered as fixed; and the rafters being thus

Fig. 17.

reduced to half their former length, have now four times their former relative strength.

Roofs do not always consist of two sloping sides meeting in a ridge. They have sometimes a flat on the top, with two sloping sides. They are sometimes formed with a double slope, and are called *kirk* or *mansarde roofs*. They sometimes have a valley in the middle, and are then called M roofs. Such roofs require another piece which may be called the *truss-beam*, because all such frames are called *trusses*; probably from the French word *trousse*, because such roofs are like portions of plain roofs, *troussés* or shortened.

Roof.
37
Construction of flat-topped roofs.

A flat-topped roof is thus constructed. Suppose the three rafters AB, BC, CD (fig. 18.) of which AB and CD are equal, and BC horizontal. It is plain that they will be in equilibrio, and the roof have no tendency to go to either side. The tie beam AD withstands the horizontal thrusts of the whole frame, and the two rafters AB and CD are each pressed in their own directions in consequence of their butting with the middle rafter or truss-beam BC. It lies between them like the key-stone of an arch. They lean towards it, and it rests on them. The pressure which the truss-beam and its load excites on the two rafters is the very same as if the rafters were produced till they meet in G, and a weight were laid on these equal to that of BC and its load. If therefore the truss-beam is of a scantling sufficient for carrying its own load, and withstanding the compression from the two rafters, the roof will be equally strong, (while it keeps its shape) as the plain roof AGD, furnished with king-post and braces. We may conceive this another way. Suppose a plain roof AGD, without braces to support the middle B and C of the rafters. Then let a beam BC be put in between the rafters, butting upon little notches cut in the rafters. It is evident that this must prevent the rafters from bending downwards, because the points B and C cannot descend, moving round the centres A and D, without shortening the distance BC between them. This cannot be without compressing the beam BC. It is plain that BC may be wedged in, or wedges driven in between its ends B and C and the notches in which it is lodged. These wedges may be driven in till they even force out the rafters GA and GD. Whenever this happens, all the mutual pressure of the heads of these rafters at G is taken away, and the parts GB and GC may be cut away, and the roof ABCD will be as strong as the roof AGD furnished with the king-post and braces, because the truss-beam gives a support of the same kind at B and C as the brace would have done.

But this roof ABCD would have no firmness of shape. Any addition of weight on one side would destroy the equilibrium at the angle, would depress that angle, and cause the opposite one to rise. To give it stiffness, it must either have ties or braces, or something partaking of the nature of both. The usual method of framing is to make the heads of the rafters butt on the joggles of two side-posts BE and CF, while the truss-beam, or strut as it is generally termed by the carpenters, is mortised square into the inside of the heads. The lower ends E and F of the side-posts are connected with the tie-beam either by mortises or straps.

This construction gives firmness to the frame; for the angle B cannot descend in consequence of any inequality

Roof. quality of pressure, without forcing the other angle C to rise. This it cannot do, being held down by the post CF. And the same construction fortifies the tie-beam, which is now suspended at the points E and F from the points B and C, whose firmness we have just now shown.

38
They are not so strong as the plain roofs.

But although this roof may be made abundantly strong, it is not quite so strong as the plain roof AGD of the same scantling. The compression which BC must sustain in order to give the same support to the rafters at B and C that was given by braces properly placed, is considerably greater than the compression of the braces. And this strain is an addition to the transverse strain which BC gets from its own load. Also this form necessarily exposes the tie-beam to cross strains. If BE is mortised into the tie-beam, then the strain which tends to depress the angle ABC presses on the tie-beam at E transversely, while a contrary strain acts on F, pulling it upwards. These strains however are small; and this construction is frequently used, being susceptible of sufficient strength, without much increase of the dimensions of the timbers; and it has the great advantage of giving free room in the garrets. Were it not for this, there is a much more perfect form represented in fig. 19. Here the two posts BE, CF are united below. All transverse action on the tie-beam is now entirely removed. We are almost disposed to say that this is the strongest roof of the same width and slope: for if the iron strap which connects the pieces BE, CF with the tie-beam have a large bolt G through it, confining it to one point of the beam, there are five points, A, B, C, D, G, which cannot change their places, and there is no transverse strain in any of the connections.

Fig. 19.

When the dimensions of the building are very great, so that the pieces AB, BC, CD, would be thought too weak for withstanding the cross strains, braces may be added as is expressed in fig. 18. by the dotted lines. The reader will observe, that it is not meant to leave the top flat externally: it must be raised a little in the middle to shoot off the rain. But this must not be done by incurvating the beam BC. This would soon be crushed, and spring upwards. The slopes must be given by pieces of timber added above the strutting beam.

39
Members of which the frame of a roof consists,

And thus we have completed a frame of a roof. It consists of these principal members: The rafters, which are immediately loaded with the covering; the tie-beam, which withstands the horizontal thrust by which the roof tends to fly out below and push out the walls; the king-posts, which hang from fixed points and serve to uphold the tie-beam, and also to afford other fixed points on which we may rest the braces which support the middle of the rafters; and lastly the truss or strutting-beam, which serves to give mutual abutment to the different parts which are at a distance from each other. The rafters, braces, and trusses are exposed to compression, and must therefore have not only cohesion but stiffness. For if they bend, the prodigious compressions to which they are subjected would quickly crush them in this bended state. The tie-beams and king-posts, if performing no other office but supporting the roof, do not require stiffness, and their places might be supplied by ropes, or by rods of iron of one-tenth part of the section that even the smallest

oak stretcher requires. These members require no greater dimensions than what is necessary for giving sufficient joints, and any more is a needless expence and load. All roofs, however complicated, consist of these essential parts, and if pieces of timber are to be seen which perform none of these offices, they must be pronounced useless, and they are frequently hurtful, by producing cross strains in some other piece. In a roof properly constructed there should be no such strains. All the timbers, except those which immediately carry the covering, should be either pushed or drawn in the direction of their length. And this is the rule by which a roof should always be examined.

These essential parts are susceptible of numberless combinations and varieties. But it is a prudent maxim to make the construction as simple, and consisting of as few parts, as possible. We are less exposed to the imperfections of workmanship, such as loose joints, &c. Another essential harm arises from many pieces, by the compression and the shrinking of the timber in the cross direction of the fibres. The effect of this is equivalent to the shortening of the piece which butts on the joint. This alters the proportions of the sides of the triangle on which the shape of the whole depends. Now in a roof such as fig. 18. there is twice as much of this as in the plain pent roof, because there are two posts. And when the direction of the butting pieces is very oblique to the action of the load, a small shrinking permits a great change of shape. Thus in a roof of what is called pediment pitch, where the rafters make an angle of 30 degrees with the horizon, half an inch compression of the king-post will produce a sagging of an inch, and occasion a great strain on the tie-beam if the posts are mortised into it. In fig. 2. of the roofs in the article ARCHITECTURE, Plate LII. half an inch shrinking of each of the two posts will allow the middle to sag above five inches. Fig. 1. of the same plate is faulty in this respect, by cutting the strutting-beam in the middle. The strutting-beam is thus shortened by three shrinkings, while there is but one to shorten the rafters. The consequence is, that the truss which is included within the rafters will sag away from them, and then they must bend in the middle till they again rest on this included truss. This roof is, however, constructed on the whole on good principles, and we adduce it only to show the advantages of simplicity. This cutting of the trussing beam is unavoidable, if we would preserve the king-post. But we are in doubt whether the service performed by it in this case will balance the inconvenience. It is employed only to support the middle of the upper half of each rafter, which it does but imperfectly, because the braces and strut must be cut half through at their crossing: if these joints are made tight, as a workman would wish to do, the settling of the roof will cause them to work on each other crosswise with insuperable force, and will undoubtedly strain them exceedingly.

This method of including a truss within the rafters of a pent roof is a very considerable addition to the art of carpentry. But to insure its full effect, it should always be executed in the manner represented in fig. 1. Plate LII. with butting rafters under the principal ones, butting on joggles in the heads of the posts. Without this the strut beam is hardly of any service. We would therefore recommend fig. 20. as a proper construction. Fig. 20.

Roof. a trussed roof, and the king-post which is placed in it may be employed to support the upper part of the rafters, and also for preventing the strut-beam from bending in their direction in consequence of its great compression. It will also give a suspension for the great burdens which are sometimes necessary in a theatre. The machinery has no other firm points to which it can be attached; and the portion of the single rafters which carry this king-post are but short, and therefore may be considerably loaded with safety.

Fig. 21.

41
Remarks
addressed to
practical
carpenters.

We observe in the drawings which we sometimes have of Chinese buildings, that the trussing of roofs is understood by them. Indeed they must be very experienced carpenters. We see wooden buildings run up to a great height, which can be supported only by such trussing. One of these is sketched in fig. 21. There are some very excellent specimens to be seen in the buildings at Deptford, belonging to the victualling-office, usually called the *Red House*, which were erected about the year 1788, and we believe are the performance of Mr James Arrow of the Board of Works, one of the most intelligent artists in this kingdom.

Thus have we given an elementary, but a rational or scientific, account of this important part of the art of carpentry. It is such, that any practitioner, with the trouble of a little reflection, may always proceed with confidence, and without resting any part of his practice on the vague notions which habit may have given him of the strength and supports of timbers, and of their manner of acting. That these frequently mislead, is proved by the mutual criticisms which are frequently published by the rivals in the profession. They have frequently sagacity enough (for it seldom can be called science) to point out glaring blunders; and any person who will look at some of the performances of Mr Price, Mr Wyatt, Mr Arrow, and others of acknowledged reputation, will readily see them distinguishable from the works of inferior artists by simplicity alone. A man without principles is apt to consider an intricate construction as ingenious and effectual; and such roofs sometimes fail merely by being ingeniously loaded with timber, but more frequently still by the wrong action of some useless piece, which produces strains that are transverse to other pieces, or which, by rendering some points too firm, cause them to be deserted by the rest in the general subsiding of the whole. Instances of this kind are pointed out by Price in his *British Carpenter*. Nothing shews the skill of a carpenter more than the distinctness with which he can foresee the changes of shape which must take place in a short time in every roof. A knowledge of this will often correct a construction which the mere mathematician thinks unexceptionable, because he does not reckon on the actual compression which must obtain, and imagines that his triangles, which sustain no cross strains, invariably retain their shape till the pieces break. The sagacity of the experienced carpenter is not, however, enough without science for perfecting the art. But when he knows how much a particular piece will yield to compression in one case, science will tell him, and nothing but science can do it, what will be the compression of the same piece in another very different case. Thus he learns how far it will now yield, and then he proportions the parts so to each other, that when all have yielded according to their strains, the whole is of the shape he wished to produce, and every joint is in

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a state of firmness. It is here that we observe the greatest number of improprieties. The iron straps are frequently in positions not suited to the actual strain on them, and they are in a state of violent twist, which both tends strongly to break the strap, and to cripple the pieces which they surround.

In like manner, we frequently see joints or mortises in a state of violent strain on the tenons, or on the heels and shoulders. The joints were perhaps properly shaped for the primitive form of the truss; but by its settling, the bearing of the push is changed: the brace, for example, in a very low pitched roof, comes to press with the upper part of the shoulder, and, acting as a powerful lever on the tenon, breaks it. In like manner, the lower end of the brace, which at first butted firmly and squarely on the joggle of the king-post, now presses with one corner in prodigious force, and seldom fails to splinter off on that side. We cannot help recommending a maxim of Mr Perronet the celebrated hydraulic architect of France, as a golden rule, viz. to make all the shoulders of butting pieces in the form of an arch of a circle, having the opposite end of the piece for its centre. Thus, in fig. 18. if the joggle-joint B be of this form, having A for its centre, the sagging of the roof will make no partial bearing at the joint; for in the sagging of the roof, the piece AB turns or bends round the centre A, and the counter-pressure of the joggle is still directed to A, as it ought to be. We have just now said *bends* round A. This is too frequently the case, and it is always very difficult to give the tenon and mortise in this place a true and invariable bearing. The rafter pushes in the direction BA, and the beam resists in the direction AD. The abutment should be perpendicular to neither of these but in an intermediate direction, and it ought also to be of a curved shape. But the carpenters perhaps think that this would weaken the beam too much to give it this shape in the shoulder; they do not even aim at it in the heel of the tenon. The shoulder is commonly even with the surface of the beam. When the bearing therefore is on this shoulder, it causes the foot of the rafter to slide along the beam till the heel of the tenon bears against the outer end of the mortise (See Price's *British Carpenter*, Plate C. fig. IK). This abutment is perpendicular to the beam in Price's book, but it is more generally pointed a little outwards below, to make it more secure against starting. The consequence of this construction is, that when the roof settles, the shoulder comes to bear at the inner end of the mortise, and it rises at the outer, and the tenon taking hold of the wood beyond it, either tears it out or is itself broken. This joint therefore is seldom trusted to the strength of the mortise and tenon, and is usually secured by an iron strap, which lies obliquely to the beam, to which it is bolted by a large bolt quite through, and then embraces the outside of the rafter foot. Very frequently this strap is not made sufficiently oblique, and we have seen some made almost square with the beam. When this is the case, it not only keeps the foot of the rafter from flying out, but it binds it down. In this case, the rafter acts as a powerful lever, whose fulcrum is in the inner angle of the shoulder, and then the strap never fails to cripple the rafter at the point. All this can be prevented only by making the strap very long and very oblique, and by making its outer end (the

L 1

stirrup

Roof.

stirrup part) square with its length, and making a notch in the rafter foot to receive it. It cannot now cripple the rafter, for it will rise along with it, turning round the bolt at its inner end. We have been thus particular on this joint, because it is here that the ultimate strain of the whole roof is exerted, and its situation will not allow the excavation necessary for making it a good mortise and tenon.

Similar attention must be paid to some other straps, such as those which embrace the middle of the rafter, and connect it with the post or truss below it. We must attend to the change of shape produced by the sagging of the roof, and place the strap in such a manner as to yield to it by turning round its bolt, but so as not to become loose, and far less to make a fulcrum for any thing acting as a lever. The strains arising from such actions, in framings of carpentry which change their shape by sagging, are enormous, and nothing can resist them.

42
Mode of
calculating
strains or
thrusts,

We shall close this part of the subject with a simple method, by which any carpenter, without mathematical science, may calculate with sufficient precision the strains or thrusts which are produced on any point of his work, whatever be the obliquity of the pieces.

Let it be required to find the horizontal thrust acting on the tie-beam AD of fig. 18. This will be the same as if the weight of the whole roof were laid at G on the two rafters GA and GD. Draw the vertical line GH. Then, having calculated the weight of the whole roof that is supported by this single frame ABCD, including the weight of the pieces AB, BC, CD, BE, CF themselves, take the number of pounds, tons, &c. which expresses it from any scale of equal parts, and set it from G to H. Draw HK, HL parallel to GD, GA, and draw the line KL, which will be horizontal when the two sides of the roof have the same slope. Then ML measured on the same scale will give the horizontal thrust, by which the strength of the tie-beam is to be regulated. GL will give the thrust which tends to crush the rafters, and LM will also give the force which tends to crush the strut-beam BC.

In like manner, to find the strain of the king-post BD of fig. 17. consider that each brace is pressed by half the weight of the roofing laid on BA or BC, and this pressure, or at least its hurtful effect, is diminished in the proportion of BA to DA, because the action of gravity is vertical, and the effect which we want to counteract by the braces is in a direction Ee perpendicular to BA or BC. But as this is to be resisted by the brace fE acting in the direction fE, we must draw fe perpendicular to Ee, and suppose the strain augmented in the proportion of Ee to Ef.

Having thus obtained in tons, pounds, or other measures, the strains which must be balanced at f by the cohesion of the king-post, take this measure from the scale of equal parts, and set it off in the directions of the braces to G and H, and complete the parallelogram GfHK; and fK measured on the same scale will be the strain on the king-post.

43
and the
strength of
the truss.

The artist may then examine the strength of his truss upon this principle, that every square inch of oak will bear at an average 7000 pounds compressing or stretching it, and may be safely loaded with 3500 for

any length of time; and that a square inch of fir will in like manner securely bear 2500. And, because straps are used to resist some of these strains, a square inch of well wrought tough iron may be safely strained by 50,000 pounds. But the artist will always recollect, that we cannot have the same confidence in iron as in timber. The faults of this last are much more easily perceived; and when timber is too weak, it gives us warning of its failure, by yielding sensibly before it breaks. This is not the case with iron; and much of its service depends on the honesty of the blacksmith.

In this way may any design of a roof be examined. We shall here give the reader a sketch of two or three trussed roofs, which have been executed in the chief varieties of circumstances which occur in common practice. 44
Sketch of
some trussed
roofs, &c.

Fig. 22. is the roof of St Paul's Church, Covent Garden, London, the work of Inigo Jones. Its construction is singular. The roof extends to a considerable distance beyond the building, and the ends of the tie-beams support the Tuscan cornice, appearing like the mutules of the Doric order. Such a roof could not rest on the tie-beam. Inigo Jones has therefore supported it by a truss below it; and the height has allowed him to make this extremely strong with very little timber. It is accounted the highest roof of its width in London. But this was not difficult, by reason of the great height which its extreme width allowed him to employ without hurting the beauty of it by too high a pitch. The supports, however, are disposed with judgment (A).

Fig. 23. is a kirk or mansard roof by Price, and supposed to be of large dimensions, having braces to carry the middle of the rafters. Fig. 23.

It will serve exceedingly well for a church having pillars. The middle part of the tie-beam being taken away, the strains are very well balanced, so that there is no risk of its pushing aside the pillar on which it rests.

Fig. 24. is the celebrated roof of the theatre of the university of Oxford, by Sir Christopher Wren. The span between the walls is 75 feet. This is accounted a very ingenious, and is a singular performance. The middle part of it is almost unchangeable in its form; but from this circumstance it does not distribute the horizontal thrust with the same regularity as the usual construction. The horizontal thrust on the tie-beam is about twice the weight of the roof, and is withstood by an iron strap below the beam, which stretches the whole width of the building in the form of a rope, making part of the ornament of the ceiling. Fig. 24.

In all the roofs which we have considered hitherto, the thrust is discharged entirely from the walls by the tie-beam. But this cannot always be done. We frequently want great elevation within, and arched ceilings. In such cases, it is a much more difficult matter to keep the walls free of all pressure outwards, and there are few buildings where it is completely done. Yet this is the greatest fault of a roof. We shall just point out the methods which may be most successfully adopted. 45
Cases in
which the
thrust can-
not be dis-
charged
from the
wall by the
tie-beam.

We have said that a tie-beam just performs the office of a string. We have said the same of the king-post.

Now

(A) This church was burnt down a few years ago.

Roof. Fig. 25. Now suppose two rafters AB, BC (fig. 25.) moveable about the point B, and resting on the top of the walls. If the line BD be suspended from B, and the two lines DA, DC be fastened to the feet of the rafters, and if these lines be incapable of extension, it is plain that all thrust is removed from the walls as effectually as by a common tie-beam. And by shortening BD to B*d*, we gain a greater inside height, and more room for an arched ceiling. Now if we substitute a king-post BD (fig. 26.) and two stretchers or hammer-beams DA, DC for the other strings, and connect them firmly by means of iron straps, we obtain our purpose.

Fig. 26. Let us compare this roof with a tie-beam roof in point of strain and strength. Recur to fig. 25. and complete the parallelogram ABCF, and draw the diagonals AC, BF crossing in E. Draw BG perpendicular to CD. We have seen that the weight of the roof (which we may call W) is to the horizontal thrust at C as BF to EC; and if we express this thrust by T, we have $T = \frac{W \times EC}{BF}$. We may at present con-

sider BC as a lever moveable round the joint B, and pulled at C in the direction EC by the horizontal thrust, and held back by the string pulling in the direction CD. Suppose that the forces in the directions EC and CD are in equilibrio, and let us find the force S by which the string CD is strained. These forces must (by the property of the lever) be inversely as the perpendiculars drawn from the centre of motion on the lines of their direction. Therefore $BG : BE = T : S$, and $S = T \times \frac{BE}{BG} = W \times \frac{BE \cdot EC}{BF \cdot BG}$.

Therefore the strain upon each of the ties DA and DC is always greater than the horizontal thrust or the strain on a simple tie-beam. This would be no great inconvenience, because the smallest dimensions that we could give to these ties, so as to procure sufficient fixtures to the adjoining pieces, are always sufficient to withstand this strain. But although the same may be said of the iron straps which make the ultimate connections, there is always some hazard of imperfect work, cracks, or flaws, which are not perceived. We can judge with tolerable certainty of the soundness of a piece of timber, but cannot say so much of a piece of iron. Moreover, there is a prodigious strain excited on the king-post, when BG is very short in comparison of BE, namely, the force compounded of the two strains S and S on the ties DA and DC.

But there is another defect from which the straight tie-beam is entirely free. All roofs settle a little.—When this roof settles, and the points B and D descend, the legs BA, BC must spread further out, and thus a pressure outwards is excited on the walls. It is seldom therefore that this kind of roof can be executed in this simple form, and other contrivances are necessary for counteracting this supervening action on the walls. Fig. 27. is one of the best which we have seen, and is executed with great success in the circus or equestrian theatre (now, 1809, a concert room) in Edinburgh, the width being 60 feet. The pieces EF and ED help to take off some of the weight, and by their greater uprightness they exert a smaller thrust on the walls. The beam D*d* is also a sort of truss-beam, having something of the same effect. Mr Price has given another very

judicious one of this kind, British Carpenter, Plate IK, fig. C, from which the tie-beam may be taken away, and there will remain very little thrust on the walls. Those which he has given in the following Plate K are, in our opinion, very faulty. The whole strain in these last roofs tends to break the rafters and ties transversely, and the fixtures of the ties are also not well calculated to resist the strain to which the pieces are exposed. We hardly think that these roofs could be executed.

It is scarcely necessary to remind the reader, that in all that we have delivered on this subject, we have attended only to the construction of the principal rafters or trusses. In small buildings all the rafters are of one kind; but in great buildings the whole weight of the covering is made to rest on a few principal rafters, which are connected by beams placed horizontally, and either mortised into them or scarfed on them. These are called *purlins*. Small rafters are laid from purlin to purlin; and on these the laths for tiles, or the skirting-boards for slates, are nailed. Thus the covering does not immediately rest on the principal frames. This allows some more liberty in their construction, because the garrets can be so divided that the principal rafters shall be in the partitions and the rest left unencumbered. This construction is so far analogous to that of floors which are constructed with girders, binding, and bridging joists.

It may appear presuming in us to question the propriety of this practice. There are situations in which it is unavoidable, as in the roofs of churches, which can be allowed to rest on some pillars. In other situations, where partition-walls intervene at a distance not too great for a stout purlin, no principal rafters are necessary, and the whole may be roofed with short rafters of very slender scantling. But in a great uniform roof, which has no intermediate supports, it requires at least some reasons for preferring this method of carcase-roofing to the simple method of making all the rafters alike. The method of carcase-roofing requires the selection of the greatest logs of timber, which are seldom of equal strength and soundness with thinner rafters. In these the outside planks can be taken off, and the best part alone worked up. It also exposes to all the defects of workmanship in the mortising of purlins, and the weakening of the rafters by this very mortising; and it brings an additional load of purlins and short rafters. A roof thus constructed may surely be compared with a floor of similar construction. Here there is not a shadow of doubt, that if the girders were sawed into planks, and these planks laid as joists sufficiently near for carrying the flooring boards, they will have the same strength as before, except so much as is taken out of the timber by the saw. This will not amount to one-tenth part of the timber in the binding, bridging, and ceiling joists, which are an additional load; and all the mortises and other joinings are so many diminutions of the strength of the girders; and as no part of a carpenter's work requires more skill and accuracy of execution, we are exposed to many chances of imperfection. But, not to rest on these considerations, however reasonable they may appear, we shall relate an experiment made by one on whose judgment and exactness we can depend.

Two models of floors were made 18 inches square of the finest uniform deal, which had been long seasoned.

Roof. ⁴⁶ General observations.

⁴⁷ Confirmed by experiment.

Roof.

The one consisted of simple joists, and the other was framed with girders, binding, bridging, and ceiling joists. The plain joists of the one contained the same quantity of timber with the girders alone of the other, and both were made by a most accurate workman. They were placed in wooden trunks 18 inches square within, and rested on a strong projection on the inside. Small shot was gradually poured in upon the floors, so as to spread uniformly over them. The plain joisted floor broke down with 487 pounds, and the carcase floor with 327. The first broke without giving any warning; the other gave a violent crack when 294 pounds had been poured in.

A trial had been made before, and the loads were 341 and 482. But the models having been made by a less accurate hand, it was not thought a fair specimen of the strength which might be given to a carcase floor.

The only argument of weight which we can recollect in favour of the compound construction of roofs is, that the plain method would prodigiously increase the quantity of work, would admit nothing but long timber, which would greatly add to the expence, and would make the garrets a mere thicket of planks. We admit this in its full force; but we continue to be of the opinion that plain roofs are greatly superior in point of strength, and therefore should be adopted in cases where the great difficulty is to insure this necessary circumstance.

48
Of the
roofs put
on round
buildings.

It would appear very neglectful to omit an account of the roofs put on round buildings, such as domes, cupolas, and the like. They appear to be the most difficult tasks in the carpenter art. But the difficulty lies entirely in the mode of framing, or what the French call the *trait de charpenterie*. The view which we are taking of the subject, as a part of mechanical science, has little connection with this. It is plain, that whatever form of a truss is excellent in a square building must be equally so as one of the frames of a round one; and the only difficulty is how to manage their mutual interfections at the top. Some of them must be discontinued before they reach that length, and common sense will teach us to cut them short alternately, and always leave as many, that they may stand equally thick as at their first springing from the base of the dome. Thus the length of the purlins which reach from truss to truss will never be too great.

The truth is, that a round building which gathers in at top, like a glass-house, a potter's kiln, or a spire steeple, instead of being the most difficult to erect with stability, is of all others the easiest. Nothing can show this more forcibly than daily practice, where they are run up without centres and without scaffoldings; and it requires gross blunders indeed in the choice of their outline to put them in much danger of falling from a want of equilibrium. In like manner, a dome of carpentry can hardly fall, give it what shape or what construction you will. It cannot fall unless some part of it flies out at the bottom: an iron hoop round it, or straps at the joinings of the trusses and purlins, which make an equivalent to a hoop, will effectually secure it. And as beauty requires that a dome shall spring almost perpendicularly from the wall, it is evident that there is hardly any thrust to force out the walls. The only part where this is to be guarded against is, where the tangent is inclined about 40 or 50 degrees to the horizon.

Roof.

Here it will be proper to make a course of firm horizontal joinings.

We doubt not but that domes of carpentry will now be raised of great extent. The Halle du Bled at Paris, of 200 feet in diameter, was the invention of an intelligent carpenter, the Sieur Moulineau. He was not by any means a man of science, but had much more mechanical knowledge than artificers usually have, and was convinced that a very thin shell of timber might not only be so shaped as to be nearly in equilibrio, but that if hooped or firmly connected horizontally, it would have all the stiffness that was necessary; and he presented his project to the magistracy of Paris. The grandeur of it pleased them, but they doubted of its possibility. Being a great public work, they prevailed on the Academy of Sciences to consider it. The members, who were competent judges, were instantly struck with the justness of Mr Moulineau's principles, and astonished that a thing so plain had not been long familiar to every house-carpenter. It quickly became an universal topic of conversation, dispute, and cabal, in the polite circles of Paris. But the Academy having given a very favourable report of their opinion, the project was immediately carried into execution, and soon completed; and now stands as one of the great exhibitions of Paris.

The construction of this dome is the simplest thing that can be imagined. The circular ribs which compose it consist of planks nine feet long, 13 inches broad, and three inches thick; and each rib consists of three of these planks bolted together in such a manner that two joints meet. A rib is begun, for instance, with a plank of three feet long standing between one of six feet and another of nine, and this is continued to the head of it. No machinery was necessary for carrying up such small pieces, and the whole went up like a piece of brick-layer's work. At various distances these ribs were connected horizontally by purlins and iron straps, which made so many hoops to the whole. When the work had reached such a height, that the distance of the ribs was two-thirds of the original distance, every third rib was discontinued, and the space was left open and glazed. When carried so much higher that the distance of the ribs is one-third of the original distance, every second rib (now consisting of two ribs very near each other) is in like manner discontinued, and the void is glazed. A little above this the heads of the ribs are framed into a circular ring of timber, which forms a wide opening in the middle; over which is a glazed canopy or umbrella, with an opening between it and the dome for allowing the heated air to get out. All who have seen this dome say, that it is the most beautiful and magnificent object they have ever beheld.

The only difficulty which occurs in the construction of wooden domes is, when they are unequally loaded, by carrying a heavy lantern or cupola in the middle. In such a case, if the dome were a mere shell, it would be crushed in at the top, or the action of the wind on the lantern might tear it out of its place. Such a dome must therefore consist of trussed frames. Mr Price has given a very good one in his plate OP, though much stronger in the trusses than there was any occasion for. This causes a great loss of room, and throws the lights of the lantern too far up. It is evidently copied from Sir Christopher Wren's dome of

S.

ROOFS.

Plate CCCCLXIII.

Fig. 1.

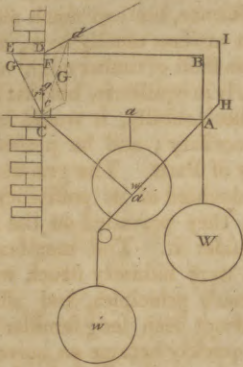


Fig. 2.

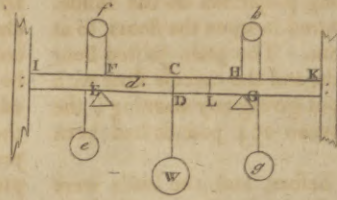


Fig. 3.

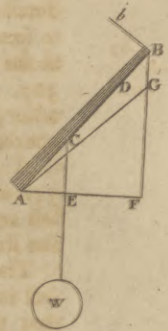


Fig. 4.

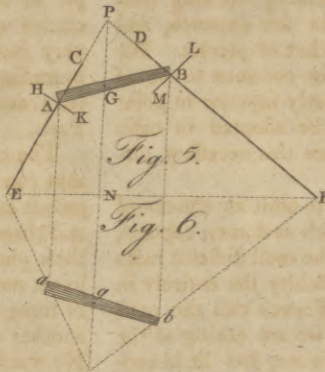
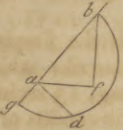


Fig. 7.

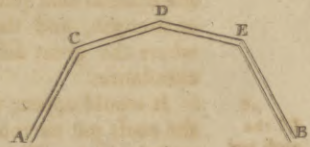


Fig. 8.

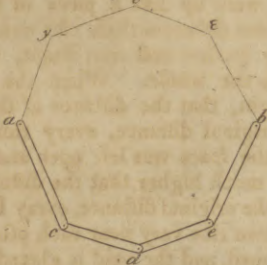


Fig. 9.



Fig. 10.

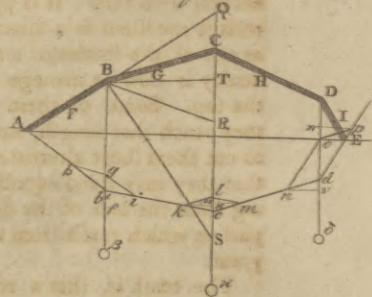


Fig. 11.

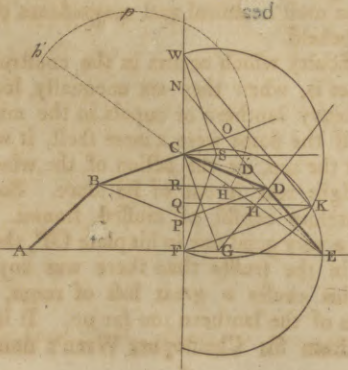


Fig. 13.

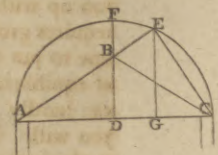


Fig. 12.

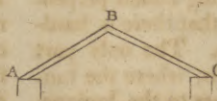


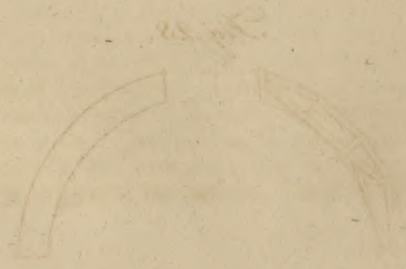
Fig. 14.



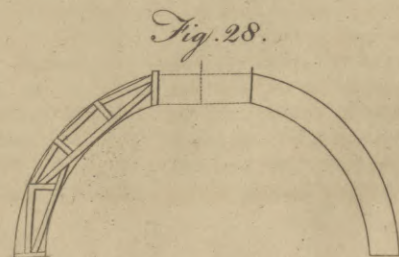
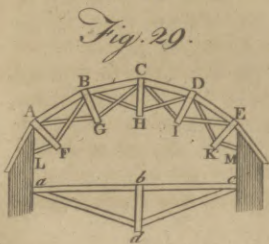
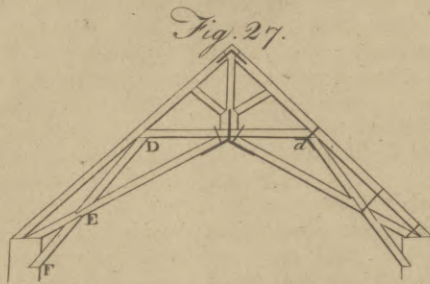
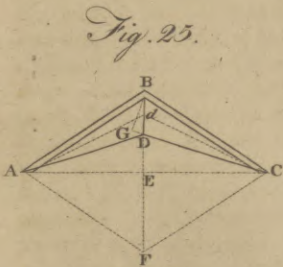
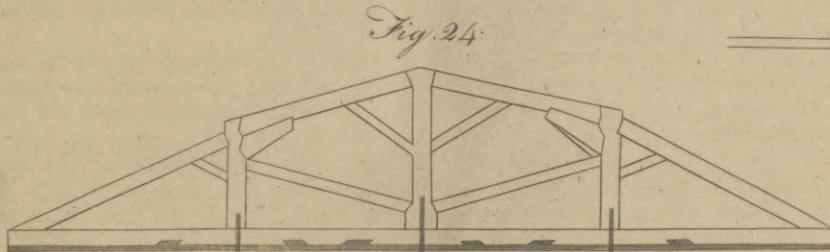
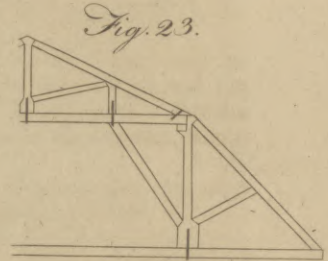
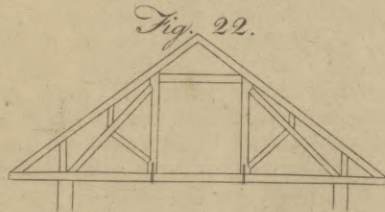
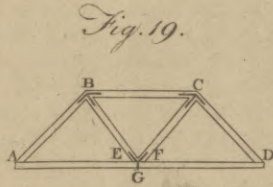
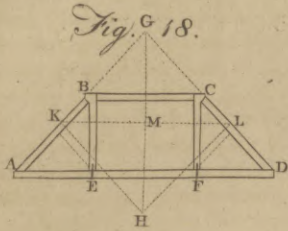
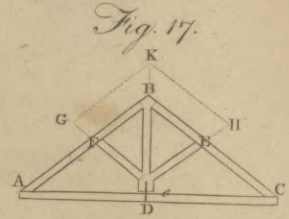
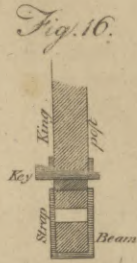
1870

1871

1872



ROOFS.



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Roof. St Paul's church in London; a model of propriety in its particular situation, but by no means a general model of a wooden dome. It rests on the brick cone within it; and Sir Christopher has very ingeniously made use of it for stiffening this cone, as any intelligent person will perceive by attending to its construction (See *Price*, Plate OP).

Fig. 28. Fig. 28. represents a dome executed in the Register Office in Edinburgh by James and Robert Adam, and is very agreeable to mechanical principles. The span is 50 feet clear, and the thickness is only 4 $\frac{1}{2}$.

49 Further remarks on No man roofs. WE cannot take leave of the subject without taking some notice of what we have already spoken of with commendation by the name of *Norman roofs*. We called them *Norman*, because they were frequently executed by that people soon after their establishment in Italy and other parts of the south of Europe, and became the prevailing taste in all the great baronial castles. Their architects were rivals to the Saracens and Moors, who about that time built many Christian churches; and the architecture which we now call Gothic seems to have arisen from their joint labours.

Fig. 29. The principle of a Norman roof is extremely simple. The rafters all butted on joggled king-posts AF, BG, CH, &c. (fig. 29.), and braces or ties were then disposed in the intervals. In the middle of the roof HB and HD are evidently ties in a state of extension, while the post CH is compressed by them. Towards the walls on each side, as between B and F, and between F and L, they are braces, and are compressed. The ends of the posts were generally ornamented with knots of flowers, embossed globes, and the like, and the whole texture of the truss was exhibited and dressed out.

Fig. 30. This construction admits of employing very short timbers; and this very circumstance gives greater strength to the truss, because the angle which the brace or tie makes with the rafter is more open. We may also perceive that all thrust may be taken off the walls. If the pieces AF, BF, LF, be removed, all the remaining diagonal pieces act as ties, and the pieces directed to the centre act as struts; and it may also be observed, that the principle will apply equally to a straight or flat roof or to a floor. A floor such as *abc*, having the joint in two pieces *ab*, *bc*, with a strut *bd*, and two ties, will require a much greater weight to break it than if it had a continued joist *ac* of the same scantling. And, lastly, a piece of timber acting as a tie is much stronger than the same piece acting as a strut: for in the latter situation it is exposed to bending, and when bent it is much less able to withstand a very great strain. It must be acknowledged, however, that this advantage is balanced by the great inferiority of the joints in point of strength. The joint of a tie depends wholly on the pins; for this reason ties are never used in heavy works without strapping the joints with iron. In the roofs we are now describing the diagonal pieces of the middle part only act purely as ties, while those towards the sides act as struts or braces. Indeed they are seldom of so very simple construction as we have described, and are more generally constructed like the sketch in fig. 30. having two sets of rafters AB, *ab*, and the angles are filled up with thin planks, which give great stiffness and strength. They have also a double

set of purlins, which connect the different trusses. The roof being thus divided into squares, other purlins run between the middle points E of the rafters. The rafter is supported at E by a check put between it and the under rafter. The middle point of each square of the roof is supported and stiffened by four braces, one of which springs from *e*, and its opposite from the similar part of the adjoining truss. The other two braces spring from the middle points of the lower purlins, which go horizontally from *a* and *b* to the next truss, and are supported by planks in the same manner as the rafters. By this contrivance the whole becomes very stiff and strong.

We hope that the reader will not be displeased with our having taken some notice of what was the pride of our ancestors, and constituted a great part of the finery of the grand hall, where the feudal lord assembled his vassals and displayed his magnificence. The intelligent mechanic will see much to commend; and all who look at these roofs admire their apparent flimsy lightness, and wonder at their duration. We have seen a hall of 57 feet wide, the roof which was in four divisions, like a kirb roof, and the trusses were about 16 feet asunder. They were single rafters, as in fig. 30. and their dimensions were only eight inches by six. The roof appeared perfectly sound, and had been standing ever since the year 1425.

Much of what has been said on this subject may be applied to the construction of wooden bridges and the centres for turning the arches of stone-bridges. But the farther discussion of this must be the employment of another article.

ROOFING, the materials of which the roof of a house is composed. See the foregoing article.

ROOK. See CORVUS, ORNITHOLOGY *Index*.

Rooks are very destructive of corn, especially of wheat. They search out the lands where it is sown, and watching them more carefully than the owners, they perceive when the seed first begins to shoot up its blade; this is the time of their feeding on it. They will not be at the pains of searching for it at random in the sown land, for that is more trouble than so small a grain will requite them for: but as soon as these blades appear, they are by them directed, without loss of time or pains, to the places where the grains lie; and in three or four days time they will root up such vast quantities, that a good crop is often thus destroyed in embryo. After a few days the wheat continuing to grow, its blades appear green above ground; and then the time of danger from these birds is over; for then the seeds are so far robbed of their mealy matter, that they are of no value to that bird, and it will no longer give itself the trouble to destroy them.

Wheat that is sown so early as to shoot up its green blades before the harvest is all carried in, is in no danger from these birds; because while it is in a state worth their searching for, the scattered corn in the harvest fields is easier come at, and they feed wholly on this, neglecting the sown grain. But as this cannot always be done, the farmers, to drive away these ravenous and mischievous birds, dig holes in the ground and stick up the feathers of rooks in them, and hang up dead rooks on sticks in several parts of the fields: but all this is of very little use; for the living rooks will tear up the ground about the feathers, and under the dead ones.

Roof
||
Rook.

50 Conclusion

Rook
||
Rooke.

ones, to steal the seeds. A much better way than either is to tear several rooks to pieces, and to scatter the pieces over the fields; but this lasts but a little while, for the kites and other birds of prey soon carry off the pieces and feed upon them. A gun is a good remedy while the person who has it is present; but as soon as he is gone, they will return with redoubled vigour to the field and tear up every thing before them.

The best remedy the farmer has is to watch well the time of the corn's being in the condition in which they feed upon it; and as this lasts only a few days, he should keep a boy in constant pay to watch the field from daybreak till the dusk of the evening. Every time they settle upon the ground to fly over it, the boy is to holloa, and throw up a dead rook into the air: this will always make them rise; and by degrees they will be so tired of this constant disturbance, that they will seek out other places of preying, and will leave the ground even before the time of the corn's being unfit for them. The reason of their rising at the tossing up of their dead fellow creature is, that they are a bird extremely apprehensive of danger, and they are always alarmed when one of their comrades rises. They take this for the rising of an out-bird, and all fly off at the signal.

ROOKE, SIR GEORGE, a gallant naval commander, born of an ancient and honourable family in Kent, in 1650. His merit raised him by regular steps to be vice admiral of the blue: in which station he served in the battle of La Hogue, on the 22d of May 1692; when it was owing to his vigorous behaviour, that the last stroke was given on that important day, which threw the French entirely into confusion. But the next day he obtained still more glory; for he had orders to go into La Hogue, and burn the enemy's ships as they lay there. There were 13 large men of war, which had crowded as far up as possible; and the transports, tenders and ammunition ships, were disposed in such a manner that it was thought impossible to burn them. Besides, the French camp was in sight, with all the French and Irish troops that were to have been employed in the invasion of England; and several batteries were raised on the coast, well provided with heavy artillery. The vice-admiral made the necessary preparations for obeying his orders, but found it impossible to carry in the ships of his squadron: he therefore ordered his light frigates to ply in close to the shore; and having manned out all his boats, went himself to give directions for the attack, burnt that very night six three-deck-ships, and the next day six more, from 76 to 60 guns, together with most of the transports and ammunition vessels; and this under the fire of all the batteries just mentioned, and in sight of all the French and Irish troops: yet this bold action cost the lives of no more than ten men. The vice-admiral's behaviour on this occasion appeared so great to King William, that having no opportunity at that time of promoting him, he settled a pension of 1000*l.* per annum on him for life; and afterwards going to Portsmouth to view the fleet, went on board Mr Rooke's ship, dined with him, and then conferred on him the honour of knighthood, he having a little before made him vice-admiral of the red.

In consequence of other services he was in 1694 raised to the rank of admiral of the blue: towards the close

of the next year, he was admiral of the white; and was also appointed admiral and commander in chief in the Mediterranean.

During King William's reign, Sir George was twice elected member for Portsmouth; and upon the accession of Queen Anne in 1702, he was constituted vice-admiral and lieutenant of the admiralty of England, as also lieutenant of the fleets and seas of this kingdom. Upon the declaration of war against France, he was ordered to command a fleet sent against Cadiz, the duke of Ormond having the command of the land forces. On his passage home, receiving an account that the galleons, under the escort of a strong French squadron, were got into the harbour of Vigo, he resolved to attack them; and on the 11th of October came before the harbour of Rondondello, where the French commander had neglected nothing necessary for putting the place into the best posture of defence. But notwithstanding this, a detachment of 15 English and 10 Dutch men of war, of the line of battle, with all the fire-ships, were ordered in; the frigates and bomb-vessels followed; the great ships moved after them, and the army landed near Rondondello. The whole service was performed under Sir George's directions, with admirable conduct and bravery; for, in short, all the ships were destroyed or taken, prodigious damage done to the enemy, and vast wealth acquired by the allies. For this action Sir George received the thanks of the House of Commons, a day of thanksgiving was appointed both by the queen and the states-general, and Sir George was appointed to a seat in the privy-council; yet, notwithstanding this, the House of Lords resolved to inquire into his conduct at Cadiz. But he so fully justified himself, that a vote was passed, approving his behaviour.

In the spring of the year 1704, Sir George commanded the ships of war which convoyed King Charles III. of Spain to Lisbon. In July, he attacked Gibraltar; when, by the bravery of the English seamen, the place was taken on the 24th, though the town was extremely strong, well furnished with ammunition, and had 100 guns mounted, all facing the sea and the narrow passes to the land: An action which was conceived and executed in less than a week; though it has since endured sieges of many months continuance, and more than once baffled the united forces of France and Spain. This brave officer being at last obliged, by the prevalence of party-spirit, to quit the service of his country, retired to his seat in Kent; where he spent the remainder of his days as a private gentleman.

He was thrice married; and by his second lady Mrs Luttrell left one son. He died January 24. 1708-9, in his 58th year, and was buried in Canterbury cathedral, where a monument is erected to his memory. In his private life he was a good husband and a kind master, lived hospitably towards his neighbours, and left behind him a moderate fortune; so moderate, that when he came to make his will, it surprised those who were present: but Sir George assigned the reason in a few words, "I do not leave much (said he), but what I leave was honestly gotten; it never cost a sailor a tear, or the nation a farthing."

ROOM, chamber, parlour, or other apartment in a house. See ARCHITECTURE and VENTILATION.

ROOT, among botanists, denotes that part of a plant

Rooke
||
Root.

Root
||
Rope.

plant which imbibes the nutritious juices of the earth, and transmits them to the other parts. See PLANT and RADIX.

Colour extracted from ROOTS. See COLOUR-Making N^o 41.

ROOT, in *Algebra* and *Aritmetic*, denotes any number which, multiplied by itself once or oftener, produces any other number; and is called the *square*, *cube*, *biquadrate*, &c. *root*, according to the number of multiplications. Thus, 2 is the square of 4; the cube-root of 8; the biquadrate root of 16, &c.

ROOT of an equation, denotes the value of the unknown quantity in an equation, which is such a quantity, as being substituted instead of that unknown letter, into the equation, shall make all the terms to vanish, or both sides equal to each other. Thus, of the equation $3^x + 5 = 14$, the root or value of x is 3, because substituting 3 for x makes it become $9 + 5 = 14$.

ROOTS, *real and imaginary*. The odd roots, as the 3d, 5th, 7th, &c. of all real quantities, whether positive or negative, are real, and are respectively positive or negative. So the cube root of a^3 is a , and of $-a^3$ is $-a$. But the even roots, as the 2d, 4th, 6th, &c. are only real when the quantity is positive, being imaginary or impossible when the quantity is negative. So the square root of a^2 is a , which is real; but the square root of $-a^2$, that is, $\sqrt{-a^2}$, is imaginary or impossible, because there is no quantity, neither $+a$ nor $-a$, which by squaring will make the given negative square $-a^2$.

ROPE, is a word too familiar to need a definition; and we need say no more than that it is only applied to a considerable collection of twisted fibres. Smaller bands are called lines, strings, cords; and it is not applied with great propriety even to those, unless they are composed of smaller things of the same kind twisted together. Two hay bands twisted together would be called a *rope*. All the different kinds of this manufacture, from a fishing-line or whip-cord to the cable of a first-rate ship of war, go by the general name of CORDAGE.

Ropes are made of every substance that is sufficiently fibrous, flexible, and tenacious, but chiefly of the barks of plants. The Chinese and other orientals even make them of the ligneous parts of several plants, such as certain bamboos and reeds, the stems of the aloes, the fibrous covering of the cocoa nut, the filament of the cotton pod, and the leaves of some grasses such as the sparte (*Lygeum*, Linn.) The aloe (*Agave*, Linn.) and the sparte exceed all others in strength. But the barks of plants are the most productive of fibrous matter fit for this manufacture. Those of the linden tree (*Tilia*), of the willow, the bramble, the nettle, are frequently used: but hemp and flax are of all others the best; and of these the hemp is preferred, and employed in all cordage exceeding the size of a line, and even in many of this denomination.

Hemp is very various in its useful qualities. These are great strength, and the length and fineness of the fibre. Being a plant of very greedy growth, it sucks up much of the unaltered juices of the soil, and therefore differs greatly according to its soil, climate, and culture. The best in Europe comes to us through Riga, to which port it is brought from very distant places to the southward. It is known by the name of *Riga rein* (that is, clean) hemp. Its fibre is not the

longest (at least in the dressed state in which we get it) of all others, but it is the finest, most flexible, and strongest. The next to this is supposed to be the Peterburgh braak hemp. Other hems are esteemed nearly in the following order:—Riga outshot, Peterburgh outshot, hemp from Koningzburg, Archangel, Sweden, Memel. *Chucking* is a name given to a hemp that comes from various places, long in the fibre, but coarse and harsh, and its strength is inferior to hems which one would think weaker. Its texture is such, that it does not admit splitting with the hatchet so as to be more completely dressed. It is therefore kept in its coarse form, and used for inferior cordage. It is, however, a good and strong hemp, but will not make fine work. There are doubtless many good hems in the southern parts of Europe, but little of them is brought to our market. Codilla, half clean, &c. are portions of the above-mentioned hems, separated by the dressing, and may be considered as broken fibres of those hems.

Only the first qualities are manufactured for the rigging of the royal navy and for the ships of the East India company.

ROPE-MAKING is an art of very great importance, and there are few that better deserve the attention of the intelligent observer. Hardly any art can be carried on without the assistance of the rope-maker. Cordage makes the very sinews and muscles of a ship; and every improvement which can be made in its preparation, either in respect to strength or pliability, must be of immense service to the mariner, and to the commerce and the defence of nations.

We shall give a very short account of the manufacture, which will not indeed fully instruct the artificers, but will give such a view of the process as shall enable the reader to judge, from principles, of the propriety of the different parts of the manipulation, and perceive its defects, and the means for removing them.

The aim of the rope-maker is to unite the strength of a great number of fibres. This would be done in the completest manner by laying the fibres parallel to each other, and fastening the bundle at the two ends: but this would be of very limited use, because the fibres are short, not exceeding three feet and a half at an average. They must therefore be entangled together, in such a manner that the strength of a fibre shall not be able to draw it out from among the rest of the bundle. This is done by twisting or twining them together, which causes them mutually to compress each other. When the fibres are so disposed in a long skain, that their ends succeed each other along its length, without many of them meeting in one place, and this skain is twisted round and round, we may cause them to compress each other to any degree we please, and the friction on a fibre which we attempt to pull out may be more than its cohesion can overcome. It will therefore break. Consequently, if we pull at this twisted skain, we will not separate it by drawing one parcel out from among the rest, but the whole fibres will break; and if the distribution of the fibres has been very equable, the skain will be nearly of the same strength in every part. If there is any part where many ends of fibres meet, the skain will break in that part.

We know very well that we can twist a skain of fibres so very hard, that it will break with any attempt

Rope-
making.

Importance
of the art
of rope-
making.

The aim of
which is to
unite the
strength of
numerous
fibres.

Rope-making.
3
These fibres may be so much twisted as to break with the least additional twist.

4
Practical inference.

5
Method to be observed in twisting the fibres.

6
Spinning of rope-yarns.

7
Description of the apparatus and manner of using it.
Plate CCCLXV.
Fig. 1.

to twist it harder. In this state all the fibres are already strained to the utmost of their strength. Such a skain of fibres can have no strength. It cannot carry a weight, because each fibre is already strained in the same manner as if loaded with as much weight as it is able to bear. What we have said of this extreme case is true in a certain extent of every degree of twist that we give the fibres. Whatever force is actually exerted by a twisted fibre, in order that it may sufficiently compress the rest to hinder them from being drawn out, must be considered as a weight hanging on that fibre, and must be deduced from its absolute strength of cohesion, before we can estimate the strength of the skain. The strength of the skain is the remainder of the absolute strength of the fibres, after we have deduced the force employed in twisting them together.

From this observation may be deduced a fundamental principle in rope-making, that all twisting, beyond what is necessary for preventing the fibres from being drawn out without breaking, diminishes the strength of the cordage, and should be avoided when in our power. It is of importance to keep this in mind.

It is necessary then to twist the fibres of hemp together, in order to make a rope; but we should make a very bad rope if we contented ourselves with twisting together a bunch of hemp sufficiently large to withstand the strains to which the rope is to be exposed. As soon as we let it go out of our hands, it would untwist itself, and be again a loose bundle of hemp; for the fibres are strained, and they are in a considerable degree elastic; they contract again, and thus untwist the rope or skain. It is necessary to continue the twist in such a manner, that the tendency to untwist in one part may act against the same tendency in another and balance it. The process, therefore, of rope-making is more complicated.

The first part of this process is SPINNING OF ROPE-YARNS. This is done in various ways, and with different machinery, according to the nature of the intended cordage. We shall confine our description to the manufacture of the larger kinds, such as are used for the standing and running rigging of ships.

An alley or walk is inclosed for the purpose, about 200 fathoms long, and of a breadth suited to the extent of the manufacture. It is sometimes covered above. At the upper end of this ROPE-WALK is set up the spinning-wheel, of a form resembling that in fig. 1. The band of this wheel goes over several rollers called WHIRLS, turning on pivots in brass holes. The pivots at one end come through the frame, and terminate in little hooks. The wheel being turned by a winch, gives motion in one direction to all those whirls. The spinner has a bundle of dressed hemp round his waist, with the two ends meeting before him. The hemp is laid in this bundle in the same way that women spread the flax on the distaff. There is great variety in this; but the general aim is to lay the fibres in such a manner, that as long as the bundle lasts there may be an equal number of the ends at the extremity, and that a fibre may never offer itself double or in a bight. The spinner draws out a proper number of fibres, twists them with his fingers, and having got a sufficient length detached, he fixes it to the hook of a whirl. The wheel is now turned, and the skain is twisted, becoming what is called a ROPE-YARN, and the spinner walks back-

wards DOWN the rope-walk. The part already twisted draws along with it more fibres out of the bundle. The spinner aids this with his fingers, supplying hemp in due proportion as he walks away from the wheel, and taking care that the fibres come in equally from both sides of his bundle, and that they enter always with their ends, and not by the middle, which would double them. He should also endeavour to enter every fibre at the heart of the yarn. This will cause all the fibres to mix equally in making it up, and will make the work smooth, because one end of each fibre is by this means buried among the rest, and the other end only lies outward; and this, in passing through the grasp of the spinner, who presses it tight with his thumb and palm, is also made to lie smooth. The greatest fault that can be committed in spinning is to allow a small thread to be twisted off from one side of the hemp, and then to cover this with hemp supplied from the other side: for it is evident that the fibres of the central thread make very long spirals, and the skin of fibres which covers them must be much more oblique. This covering has but little connection with what is below it, and will easily be detached. But even while it remains, the yarn cannot be strong; for, on pulling it, the middle part, which lies the straightest, must bear all the strain, while the outer fibres, that are lying obliquely, are only drawn a little more parallel to the axis. This defect will always happen if the hemp be supplied in a considerable body to a yarn that is then spinning small. Into whatever part of the yarn it is made to enter, it becomes a sort of loosely connected wrapper. Such a yarn, when untwisted a little, will have the appearance of fig. 2. Fig. 3. while a good yarn looks like fig. 3. A good spinner therefore endeavours always to supply the hemp in the form of a thin flat skain with his left hand, while his right is employed in grasping firmly the yarn that is twining off, and in holding it tight from the whirl, that it may not run into loops or KINKS.

It is evident, that both the arrangement of the fibres and the degree of twisting depend on the skill and dexterity of the spinner, and that he must be instructed, not by a book, but by a master. The degree of twist depends on the rate of the wheel's motion, combined with the retrograde walk of the spinner.

We may suppose him arrived at the lower end of the walk, or as far as is necessary for the intended length of his yarn. He calls out, and another spinner immediately detaches the yarn from the hook of the whirl, gives it to another, who carries it aside to the reel, and this second spinner attaches his own hemp to the whirl hook. In the mean time, the first spinner keeps fast hold of the end of his yarn; for the hemp, being dry, is very elastic, and if he were to let it go out of his hand it would instantly untwist, and become little better than loose hemp. He waits, therefore, till he sees the reeler begin to turn the reel, and he goes slowly up the walk, keeping the yarn of an equal tightness all the way, till he arrives at the wheel, where he waits with his yarn in hand till another spinner has finished his yarn. The first spinner takes it off the whirl hook, joins it to his own, that it may follow it on the reel, and begins a new yarn.

Rope-yarns, for the greatest part of the large rigging, are from a quarter of an inch to somewhat more than a third of an inch in circumference, or of such a size that 160 fathoms weigh from three and a half to four

Rope-making.

Rope-making.

four pounds when white. The different sizes of yarns are named from the number of them contained in a strand of a rope of three inches in circumference. Few are so coarse that 16 will make a strand of British cordage; 18 is not unfrequent for cable yarns, or yarns spun from harsh and coarse hemp; 25 is, we believe, the finest size which is worked up for the rigging of a ship. Much finer are indeed spun for sounding lines, fishing lines, and many other marine uses, and for the other demands of society. Ten good spinners will work up above 600 weight of hemp in a day; but this depends on the weather. In very dry weather the hemp is very elastic, and requires great attention to make smooth work. In the warmer climates, the spinner is permitted to moisten the rag with which he grasps the yarn in his right hand for each yarn. No work can be done in an open spinning walk in rainy weather, because the yarns would not take on the tar, if immediately tarred, and would rot if kept on the reel for a long time.

Method of converting the rope-yarns into ropes, cords, or lines.

The second part of the process is the conversion of the yarns into what may with propriety be called a rope, cord, or line. That we may have a clear conception of the principle which regulates this part of the process, we shall begin with the simplest possible case, the union of two yarns into one line. This is not a very usual fabric for rigging, but we select it for its simplicity.

When hemp has been split into very fine fibres by the hatchel, it becomes exceedingly soft and pliant, and after it has lain for some time in the form of fine yarn, it may be unreeled and thrown loose, without losing much of its twist. Two such yarns may be put on the whirl of a spinning wheel, and thrown, like flaxen yarn, so as to make sewing thread. It is in this way, indeed, that the sailmaker's sewing thread is manufactured; and when it has been kept on the reel, or on balls or bobbins, for some time, it retains its twist as well as its uses require. But this is by no means the case with yarns spun for great cordage. The hemp is so elastic, the number of fibres twisted together is so great, and the diameter of the yarn (which is a sort of lever on which the elasticity of the fibre exerts itself) is so considerable, that no keeping will make the fibres retain this constrained position. The end of a rope-yarn being thrown loose, it will immediately untwist, and this with considerable force and speed. It would, therefore, be a fruitless attempt to twist two such yarns together; yet the ingenuity of man has contrived to make use of this very tendency to untwist not only to counteract itself, but even to produce another and a permanent twist, which requires force to undo it, and which will recover itself when this force is removed. Every person must recollect that, when he has twisted a packthread very hard with his fingers between his two hands, if he slackens the thread by bringing his hands nearer together, the packthread will immediately curl up, running into loops or kinks, and will even twist itself into a neat and firm cord. Familiar as this fact is, it would puzzle any person not accustomed to these subjects to explain it with distinctness. We shall consider it with some care, not as a piece of mechanical curiosity, but as a fundamental principle in this manufacture, which will give us clear instructions to direct us in the most delicate part of the whole process. And we beg the attention of the

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artists themselves to a thing which they seem to have overlooked.

Let md , nd (fig. 4.) be two yarns fixed to one point d , and let both of them be twisted, each round its own axis, in the direction abc , which will cause the fibres to lie in a screw form, as represented in the figure. If the end d of the yarn md were at liberty to turn round the point d , it would turn accordingly, as often as the end m is turned round, and the yarn would acquire no twist; but being attached to some solid body it cannot turn without turning this body. It has, however, this tendency, and the body must be forcibly prevented from turning. If it be held fast for a time, and then let go, it will be turned round, and it will not stop till it has turned as often as the end m has been twisted, and now all the twist will be undone. Thus it is the tendency of the yarn md to untwist at the end d (because it is kept fast at m), which produces this motion of the body attached to it at d . What we have said of the yarn md is equally true of the yarn nd . Both tend to turn, and will turn, the body attached at d round the common axis, in the same direction in which they are twisted. Let fig. 5. be supposed a cross section of the two yarns touching each other at d , and there glued to a board. The fibres of each pull obliquely, that is, they both pull away from the board, and pull laterally. The direction of this lateral pull of the fibres in the circumference of each yarn is represented by the little darts drawn round the circumferences. These actions directly oppose and balance each other at d ; but in the semicircles oet , tfo , they evidently conspire to turn the board round in the same direction. The same may be said of the outer halves of any circles described within these. In the inner halves of these inner circles the actions of some fibres oppose each other; but in every circle there are many more conspiring actions than opposing ones, and the conspiring actions exert themselves by longer levers, so that their joint momentum greatly exceeds that of the opposing forces. It may be demonstrated, that if all the fibres exert equal forces, the force which tends to turn the board round the common axis is two-thirds of the force employed to twist both the yarns.

Suppose then that the solid body to which the yarns are attached is at liberty to turn round the common axis; it cannot do this without carrying the yarns round with it. They must, therefore, turn round each other, and thus compose a rope or cord kl , having its component yarns (now called *strands*) lying in a direction opposite to that of the fibres in each strand. The rope will take this twist, while each of the strands is really untwisting, and the motion will not stop till all is again in equilibrio. If the yarns had no diameter and no rigidity, their elastic contraction would not be balanced till the cord had made half the number of turns which had been given to that part of the yarn which is thus doubled up. But, as the yarns have a sensible diameter, the same ultimate contraction of the fibres will be expended by the twisting of the cord in fewer turns, even if the yarns had no rigidity. The turns necessary for this purpose will be so much fewer, in proportion to the twist of the yarns, as the fibres of the yarn lie more obliquely, that is, as the yarns are more twisted. But further, this contractile force has to overcome the

M m

rigidity

Rope-making.

Fig. 4.

Fig. 5.

Rope-making.

rigidity or stiffness of the yarns. This requires force merely to *bend* it into the screw form; and therefore, when all is again at rest, the fibres are in a state of strain, and the rope is not so much closed by doubling as it would have been had the yarns been softer. If any thing can be done to it in this state which will soften the yarns, it will twist itself more up. It has therefore a *tendency* to twist more up; and if this be aided by an external force which will bend the strands, this will happen. Beating it with a soft mallet will have this effect; or, if it be forcibly twisted till the fibres are allowed to contract as much as they would have done had the yarn been perfectly soft, the cord will keep this twist without any effort; and this must be considered as its most perfect state, in relation to the degree of twist originally given to the yarns. It will have no tendency to run into kinks, which is both troublesome and dangerous, and the fibres will not be exerting any useless effort.

To attain this state should therefore be the aim of every part of this second process; and this principle should be kept in view through the whole of it.

The component parts of a rope are called strands, as has been already observed; and the operation of uniting them with a permanent twist is called *laying* or *closing*, the latter term being chiefly appropriated to cables and other very large cordage.

TO
Description
of the machinery,
and mode
of using it.

Fig. 6.

Lines and cordage less than $1\frac{1}{2}$ inches circumference are laid at the spinning-wheel. The workman fastens the ends of each of two or three yarns to separate whirl-hooks. The remote ends are united in a knot. This is put on one of the hooks of a swivel called the *loper*, represented in fig. 6. and care is taken that the yarns are of equal lengths and twist. A piece of soft cord is put on the other hook of the loper; and, being put over a pulley several feet from the ground, a weight is hung on it, which stretches the yarn. When the workman sees that they are equally stretched, he orders the wheel to be turned in the same direction as when twining the yarns. This would twine them harder; but the swivel of the loper gives way to the strain, and the yarns immediately twist around each other, and form a line or cord. In doing this the yarns lose their twist. This is restored by the wheel. But this simple operation would make a very bad line, which would be slack, and would not hold its twist; for, by the turning of the loper, the strands twist immediately together, to a great distance from the loper. By this turning of the loper the yarns are untwisted. The wheel restores their twist only to that part of the yarns that remains separate from the others, but cannot do it in that part where they are already twined round each other, because their mutual pressure prevents the twist from advancing. It is, therefore, necessary to retard this tendency to twine, by keeping the yarns apart. This is done by a little tool called the top, represented in fig. 7.

Fig. 7.

It is a truncated cone, having three or more notches along its sides, and a handle called the staff. This is put between the strands, the small end next the loper, and it is pressed gently into the angle formed by the yarns which lie in the notches. The wheel being now turned, the yarns are more twisted, or *hardened up*, and their pressure on the top gives it a strong tendency to come out of the angle, and also to turn round. The workman does not allow this till he thinks the yarns

sufficiently hardened. Then he yields to the pressure, and the top comes away from the swivel, which immediately turns round, and the line begins to lay.—Gradually yielding to this pressure, the workman slowly comes up towards the wheel, and the laying goes on, till the top is at last close to the wheel, and the work is done. In the mean time, the yarns are shortened, both by the twining of each and the laying of the cord. The weight, therefore, gradually rises. The use of this weight is evidently to oblige the yarn to take a proper degree of twist, and not run into kinks.

A cord or line made in this way has always some tendency to twist a little more. However little friction there may be in the loper, there is some, so that the turns which the cord has made in the laying are not enough to balance completely the elasticity of the yarns; and the weight being appended causes the strands to be more nearly in the direction of the axis, in the same manner as it would stretch and untwist a little any rope to which it is hung. On the whole, however, the twist of a laid line is permanent, and not like that upon thread doubled or thrown in a mill, which remains only in consequence of the great softness and flexibility of the yarn.

The process for laying or closing large cordage is considerably different from this. The strands of which the rope is composed consist of many yarns, and require a considerable degree of hardening. This cannot be done by a whirl driven by a wheel band; it requires the power of a crank turned by the hand. The strands, when properly hardened, become very stiff, and when bent round the top are not able to transmit force enough for laying the heavy and unpliant rope which forms beyond it. The elastic twist of the hardened strands must, therefore, be assisted by an external force. All this requires a different machinery and a different process.

At the upper end of the walk is fixed up the *tackle-board*, fig. 8. This consists of a strong oaken plank called a *breast-board*, having three or more holes in it, such as A, B, C, fitted with brass or iron plates. Into these are put iron cranks, called *heavers*; which have hooks, or forelocks, and keys, on the ends of their spindles. They are placed at such a distance from each other, that the workmen do not interfere with each other while turning them round. This breast-board is fixed to the top of strong posts well secured by struts or braces facing the lower end of the walk. At the lower end is another breast-board fixed to the upright posts of a sledge, which may be loaded with stones or other weights. Similar cranks are placed in the holes of this breast-board. The whole goes by the name of the *sledge*; (see fig. 9.). The top necessary for closing large cordage is too heavy to be held in the hand. It therefore has a long staff, which has a truck on the end. This rests on the ground; but even this is not enough in laying great cables. The top must be supported on a carriage, as shown in fig. 10. where it must lie very steady, and need no attendance, because the master workman has sufficient employment in attending to the manner in which the strands close behind the top, and in helping them by various methods. The top is, therefore, fixed to the carriage by lashing its staff to the two upright posts. A piece of soft rope, or strap, is attached to the handle of the top by the middle, and its two ends are brought back and wrapped several times tight round the rope, in the direction of its twist, and

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11
Large or
hawser-
laid cor-
dage is dif-
ferently
formed.

12
Machinery,
and mode
of using it
in this case.
Fig. 8.

Fig. 9.

Fig. 10.

bound

Rope-making. bound down. This is shown at W, and it greatly assists the laying of the rope by its friction. This both keeps the top from flying too far from the point of union of the strands, and brings the strands more regularly into their places.

The first operation is *warping* the yarns. At each end of the walk are frames called warping frames, which carry a great number of reels or winches filled with rope yarn. The foreman of the walk takes off a yarn end from each, till he has made up the number necessary for his rope or strand, and bringing the ends together, he passes the whole through an iron ring fixed to the top of a stake driven into the ground, and draws them through: then a knot is tied on the end of the bundle, and a workman pulls it through this ring till the intended length is drawn off the reels. The end is made fast at the bottom of the walk, or at the sledge, and the foreman comes back along the skain of yarns, to see that none are hanging slacker than the rest. He takes up in his hand such as are slack, and draws them tight, keeping them so till he reaches the upper end, where he cuts the yarns to a length, again adjusts their tightness, and joins them all together in a knot, to which he fixes the hook of a tackle, the other block of which is fixed to a firm post, called the *warping-post*. The skain is well stretched by this tackle, and then separated into its different strands. Each of these is knotted apart at both ends. The knots at their upper ends are made fast to the hooks of the cranks in the tackle-board, and those at their lower ends are fastened to the cranks in the sledge. The sledge itself is kept in its place by a tackle, by which the strands are again stretched in their places, and every thing adjusted, so that the sledge stands square on the walk, and then a proper weight is laid on it. The tackle is now cast off, and the cranks are turned at both ends, in the contrary direction to the twist of the yarns. (In some kinds of cordage the cranks are turned the same way with the spinning twist). By this the strands are twisted and hardened up; and as they contract by this operation, the sledge is dragged up the walk. When the foreman thinks the strands sufficiently hardened, which he estimates by the motion of the sledge, he orders the heavers at the cranks to stop. The middle strand at the sledge is taken off from the crank. This crank is taken out, and a stronger one put in its place at D, fig. 9. The other strands are taken off from their cranks, and all are joined on the hook which is now in the middle hole. The top is then placed between the strands, and, being pressed home to the point of their union, the carriage is placed under it, and it is firmly fixed down. Some weight is taken off the sledge. The heavers now begin to turn at both ends. Those at the tackle-board continue to turn as they did before; but the heavers at the sledge turn in the opposite direction to their former motion, so that the cranks at both ends are now turning one way. By the motion of the sledge crank the top is forced away from the knot, and the rope begins to close. The heaving at the upper end restores to the strand the twist which they are constantly losing by the laying of the rope. The workmen judge of this by making a chalk mark on intermediate points of the strand, where they lie on the stakes which are set up along the walk for their support. If the twist of the strands is diminished by the motion of closing, they

will lengthen, and the chalk mark will move away from the tackle-board: but if the twist increases by turning the cranks at the tackle-board, the strands will shorten, and the mark will come nearer to it.

As the closing of the rope advances, the whole shortens, and the sledge is dragged up the walk. The top moves faster, and at last reaches the upper end of the walk, the rope being now laid. In the mean time, the sledge has moved several fathoms from the place where it was when the laying began.

These motions of the sledge and top must be exactly adjusted to each other. The rope must be of a certain length. Therefore the sledge must stop at a certain place. At that moment the rope should be laid; that is, the top should be at the tackle-board. In this consists the address of the foreman. He has his attention directed both ways. He looks at the strands, and when he sees any of them hanging slacker between the stakes than the others, he calls to the heavers at the tackle-board to heave more upon that strand. He finds it more difficult to regulate the motion of the top. It requires a considerable force to keep it in the angle of the strands, and it is always disposed to start forward. To prevent or check this, some straps of soft rope are brought round the staff of the top, and then wrapped several times round the rope behind the top, and kept firmly down by a lanyard or bandage, as is shown in the figure. This both holds back the top and greatly assists the laying of the rope, causing the strands to fall into their places, and keep close to each other. This is sometimes very difficult, especially in ropes composed of more than three strands. It will greatly improve the laying of the rope, if the top have a sharp, smooth, tapering pin of hard wood, pointed at the end, projecting so far from the middle of its smaller end, that it gets in between the strands which are closing. This supports them, and makes their closing more gradual and regular. The top, its notches, the pin, and the warp or strap, which is lapped round the rope, are all smeared with grease or soap to assist the closing. The foreman judges of the progress of closing chiefly by his acquaintance with the walk, knowing that when the sledge is abreast of a certain stake the top should be abreast of a certain other stake. When he finds the top too far down the walk, he slackens the motion at the tackle-board, and makes the men turn briskly at the sledge. By this the top is forced up the walk, and the laying of the rope accelerates, while the sledge remains in the same place, because the strands are losing their twist, and are lengthening, while the closed rope is shortening. When, on the other hand, he thinks the top too far advanced, and fears that it will be at the head of the walk before the sledge has got to its proper place, he makes the men heave briskly on the strands, and the heavers at the sledge crank to work softly.— This quickens the motion of the sledge by shortening the strands; and by thus compensating what has been overdone, the sledge and top come to their places at once, and the work appears to answer the intention.

But this is a bad manner of proceeding. It is evident, that if the strands be kept to one degree of hardness throughout, and the heaving at the sledge be uniformly continued, the rope will be uniform. It may be a little longer or shorter than was intended, and the laying may be too hard in proportion to the twist of

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the strands, in which case it will not keep it; or it may be too slack, and the rope will tend to twist more. Either of these faults is discoverable by slackening the rope before it come off the hooks, and it may then be corrected. But if the error in one place be compensated by that in another, this will not be easily seen before taking off the hooks; and if it is a large and stiff rope, it will hardly ever come to an equable state in its different parts, but will be apt to run into loops during service.

14
another
method
proposed,
&c.

It is, therefore, of importance to preserve the uniformity throughout the whole. M. Du Hamel, in his great work on rope-making, proposes a method which is very exact, but requires an apparatus which is cumbersome, and which would be much in the way of the workmen. We think that the following method would be extremely easy, embarrass no one, and is perfectly exact. Having determined the proportion between the velocity of the top and sledge, let the diameter of the truck of the top carriage be to that of another truck fixed to the sledge, in the proportion of the velocity of the top to that of the sledge. Let a mark be made on the rim of each; let the man at the sledge make a signal every time that the mark on the sledge truck is uppermost. The mark on the carriage truck should be uppermost at the same instant; and in this way the foreman knows the state of the rope at all times without quitting his station. Thus, in making a cable of 120 fathoms, it is usual to warp the yarns 180 fathoms, and to harden them up to 140 before closing. Therefore, in the closing, the top must have 140 fathoms, and the sledge only 20. The diameter of the carriage truck should therefore be seven times the diameter of the sledge truck.

We have hitherto proceeded on the supposition, that the twist produced by the cranks is propagated freely along the strands and along the closing rope. But this is not the case. It is almost unavoidable that the twist is greater in the neighbourhood of the crank which produces it. The strands are frequently of very considerable weight, and lie heavy on the stakes. Force is therefore necessary to overcome their friction, and it is only the overplus that is propagated beyond the stake. It is proper to lift them up from time to time, and let them fall down again, as the sawer does with his marking line. This helps the twist to run along the strand. But this is not enough for the closed rope, which is of much greater weight, and much stiffer.—When the top approaches the tackle-board, the heaving at the sledge could not cause the strands, immediately behind the top to close well, without having previously produced an extravagant degree of twist in the intermediate rope. The effort of the crank must therefore be assisted by men stationed along the rope, each furnished with a tool called a *woolder*. This is a stout oak stick about three feet long, having a strap of soft rope-yarn or cordage fastened on its middle or end. The strap is wrapped round the laid rope, and the workman works with the stick as a lever, twisting the rope round in the direction of the crank's motion. The woolders should keep their eye on the men at the crank, and make their motion correspond with his. Thus they send forward the twist produced by the crank, without either increasing or diminishing it, in that part of the rope which lies between them and the sledge.

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It is usual before taking the rope from the hooks to heave a while at the sledge end, in order to harden the rope a little. They do this so as to take it up about $\frac{1}{10}$. The propriety or impropriety of this practice depends entirely on the proportion which has been previously observed between the hardening of the strands and the twisting of the closing rope. It is, in all cases, better to adjust these precisely, and then nothing remains to be done when the top has arrived at the upper end of the walk. The making of two strand and three strand line pointed out the principle which should be attended to in this case; namely, that the twist given to the rope in laying should be precisely what a perfectly soft rope would give to itself. We do not see any reason for thinking that the proportion between the number of turns given to the strands and the number of turns given to the laid line by its own elasticity, will vary by any difference of diameter. We would therefore recommend to the artists to settle this proportion by experiment. The line should be made of the finest, smallest, and softest threads or yarn. These should be made into strands, and the strands should be hardened up in the direction contrary to the spinning twist. The rope should then be laid, hanging perpendicularly, with a small weight on the top to keep it down, and a very small weight at the end of the rope. The number of turns given to the strands should be carefully noticed, and the number of turns which the rope takes of itself in closing. The weight should then be taken off, and the rope will make a few turns more. This whole number will never exceed what is necessary for the equilibrium; and we imagine it will not fall much short of it. We are clearly of opinion that an exact adjustment of this particular will tend greatly to improve the art of rope-making, and that experiments on good principles for ascertaining this proportion would be highly valuable, because there is no point about which the artists themselves differ more in their opinions and practice.

The cordage, of which we have been describing the manufacture, is said to be HAWSER-LAID. It is not uncommon to make ropes of four strands. These are used for shrouds, and this cordage is therefore called SHROUD-LAID cordage. A rope of the same size and weight must be smoother when it has four strands, because the strands are smaller: but it is more difficult to lay close. When three cylindrical stands are simply laid together, they leave a vacuity at the axis amounting to $\frac{1}{8}$ of the section of a strand. This is to be filled up by compressing the strands by twisting them. Each must fill up $\frac{1}{8}$ of it by changing its shape; and $\frac{1}{2}$ of this change is made on each side of the strand. The greatest change of shape therefore made on any one part of a strand amounts only to $\frac{1}{16}$ of the section of the strand. The vacuity between four cylinders is $\frac{3}{8}$ of one of them. This being divided into eight parts, is $\frac{3}{64}$ of a strand, and is the greatest compression which any part of it has to undergo. This is nearly five times greater than the former, and must be more difficult to produce. Indeed it may be seen by looking at the figures 11. and 12. that it will be easier to compress a strand into the obtuse angle of 120 degrees than into the right angle of 90; and without reasoning more about the matter, it appears that the difficulty will increase

15
Mode of
making
shroud-laid
cordage
of four
strands,Fig. 11. and
12.

Rope-making.

crease with the number of strands. Six strands must touch each other, and form an arch leaving a hollow in the middle, into which one of the strands will slip, and then the rest will not completely surround it. Such a rope would be uneven on the surface. It would be weak; because the central strand would be slack in comparison of the rest, and would not be exerting its whole force when they are just ready to break. We see then that a four strand rope must be more difficult to lay well than a hawser-laid rope. With care, however, they may be laid well and close, and are much used in the royal navy.

16
and with
a heart in
the middle.

Ropes are made of four strands, with a heart or strand in the middle. This gives no additional strength, for the reason just now given. Its only use is to make the work better and more easy, and to support all the strands at the same distance from the axis of the rope. This is of great consequence; because when they are at unequal distances from the axis, some must be more sloping than others, and they will not resist alike. This heart is made of inferior stuff, slack laid, and of a size just equal to the space it is to fill. When a rope of this fabric has been long used and become unserviceable, and is opened out, the heart is always found cut and chafed to pieces, like very short oakum. This happens as follows: When the rope is violently strained, it stretches greatly; because the strands surround the axis obliquely, and the strain draws them into a position more parallel to the axis. But the heart has not the obliquity of parts, and cannot stretch so much; at the same time, its yarns are firmly grasped by the hard strands which surround them; they must therefore be torn into short pieces.

The process for laying a rope with a heart is not very different from that already described. The top has a hole pierced through it, in the direction of the axis. The skain or strand intended for the heart passes through this hole, and is stretched along the walk. A boy attends it, holding it tight as it is taken into the closing rope. But a little attention to what has been said will show this method to be defective. The wick will have no more turns than the laid rope; and as it lies in the very axis, its yarns will be much straighter than the strands. Therefore when the rope is strained and stretched, the wick cannot stretch as much as the laid strands; and being firmly grasped by them, it must break into short pieces, and the strands, having lost their support in those places, will sink in, and the cordage grow loose. We should endeavour to enable all to stretch alike. The wick therefore should be twisted in the same manner as the strands, perhaps even a little more. It will thus communicate part of its strength to the rope. Indeed it will not be so uniformly solid, and may chance to have three spiral vacuities. But that this does no harm, is quite evident from the superior strength of cable-laid cordage, to be described presently, which have the same vacuities. In this way are the main and fore stays made for ships of the line. They are thought stronger than hawser-laid ropes, but unfit for running rigging; because their strands are apt to get out of their places when the rope is drawn into loops. It is also thought that the heart retains water, rots, and communicates its putrefaction to the surrounding strands.

Such is the general and essential process of rope-making. The fibres of hemp are twisted into yarns, that they may make a line of any length, and stick among each other with a force equal to their own cohesion. The yarns are made into cords of permanent twist by laying them; and, that we may have a rope of any degree of strength, many yarns are united in one strand, for the same reason that many fibres were united in one yarn; and in the course of this process it is in our power to give the rope a solidity and hardness which makes it less penetrable by water, which would rot it in a short while. Some of these purposes are inconsistent with others: and the skill of a rope-maker lies in making the best compensation; so that the rope may on the whole be the best in point of strength, pliancy, and duration, that the quantity of hemp in it can produce.

Rope-making.
17
Recapitulation.

There is another species of cordage in very general use. A rope of two or more strands may be used as a strand, in order to compose a still larger rope; and in this manner are cables and other ground tackle commonly made; for this reason such cordage is called CABLE-LAID cordage.

18
Mode of
making
cable-laid
cordage.

The process of cable-laying hardly differs from that of hawser-laying. Three ropes, in their state of permanent twist, may be twisted together; but they will not hold it, like fine thread, because they are stiff and elastic. They must therefore be treated like strands for a hawser. We must give them an *additional* twist, which will dispose them to lay or close themselves; and this disposition must be aided by the workmen at the sledge. We say the twist should be an addition to their twist as a rope. A twist in the opposite direction will indeed give them a disposition to close behind the top; but this will be very small, and the ropes (now strands) will be exceedingly open, and will become more open in laying. The twist is therefore given in the direction of their twist as a rope, or opposite to that of the primary strands, of which the ropes are composed. These primary strands are therefore partly untwisted in cable-laying a rope, in the same manner as the yarns are untwisted in the usual process of rope-making.

We need not insist farther on this part of the manufacture. The reader must be sensible that the hawsers intended for strands of a cable must not be so much twisted as those intended to remain hawsers; for the twist given to a finished hawser is presumed to be that which renders it most perfect, and it must be injured by any addition. The precise proportion, and the distribution of the working up between the hardening of the strands and closing the cable, is a subject about which the artists are no better agreed than in the case of hawser-laid cordage. We did not enter on this subject while describing the process, because the introduction of reasonings and principles would have hurt the simplicity of the description. The reader being now acquainted with the different parts of the manipulation, and knowing what can be done on any occasion, will now be able to judge of the propriety of the whole, when he learns the principle on which the strength of a rope depends.

We have already said, that a rope-yarn should be twisted till a fibre will break rather than be pulled out from among the rest, and that all twisting beyond this is injurious to the strength of the yarn: And we advanced

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Mode of
estimating
the strength
of ropes.
this

Rope-making.

this maxim upon this plain consideration, that it is needless to bind them closer together, for they will already break rather than come out; and because this closer binding is produced only by forcibly wrapping the outer fibres round the inner, and drawing the outer ones tight. Thus these fibres are on the stretch, and are strained as if a weight were hung on each of them. The process of laying lines, of a permanent twist, shows that we must do a little more. We must give the yarn a degree of elastic contractility, which will make it lay itself and form a line or cord which will retain its twist. This must leave the fibres of the yarns in a state of greater compression than is necessary for just keeping them together. But more than this seems to be needless and hurtful. The same maxim must direct us in forming a rope consisting of strands, containing more than one yarn. A needless excess of twist leaves them strained, and less able to perform their office in the rope.

It not unfrequently happens, that the workman, in order to make his rope solid and firm, hardens up the strands till they really break: and we believe that, in the general practice of making large hawsers, many of the outer yarns in the strands, especially those which chance to be outermost in the laid rope, and are therefore most strained, are broken during the operation.

20
Effect of twisting on the strength of ropes, &c.

But there is another consideration which should also make us give no greater twist in any part of the operation than is absolutely necessary for the firm cohesion of the parts, and this independent of the strain to which the fibres or yarns are subjected. Twisting causes all the fibres to lie obliquely with respect to the axis or general direction of the rope. It may just happen that one fibre or one yarn shall keep in the axis, and remain straight; all the rest must be oblique, and the more oblique as they are farther from the axis, and as they are more twisted. Now it is to be demonstrated, that when any strain is given to the rope in the direction of its length, a strain greater than this is actually excited on the oblique fibres, and so much the greater as they are more oblique; and thus the fibres which are already the weakest are exposed to the greatest strains.

Fig. 13.

Let CF (fig. 13.) represent a fibre hanging from a hook, and loaded with a weight F, which it is just able to bear, but not more. This weight may represent the absolute force of the fibre. Let such another fibre be laid over the two pulleys A, B (fig. 14.), which are in a horizontal line AB, and let weights F and f, equal to the former, be hung on the ends of this fibre, while another weight R, less than the sum of F and f, is hung on the middle point C by a hook or thread. This weight will draw down the fibre into such a position ACB, that the three weights F, R, and f, are in equilibrio by the intervention of the fibre. We affirm that this weight R is the measure of the relative strength of the fibre in relation to the form ACB; for the fibre is equally stretched in all its parts, and therefore in every part it is strained by the force F. If therefore the weights F and f are held fast, and any addition is made to the weight R, the fibre must break, being already strained to its full strength; therefore R measures its strength in relation to its situation. Complete the parallelogram ACBD, and draw the diagonal CD; because AB is horizontal, and AC=BC, DC is vertical, and coin-

Fig. 14.

cides with the direction CR, by which the weight R acts. The point C is drawn by three forces, which are in equilibrio. They are therefore proportional to the sides of a triangle, which have the same directions; or, the force acting in the direction CA is to that acting in the direction CR as CA to CD. The point R is supported by the two forces CA, CB, which are equivalent to CD; and therefore the weight F is to the weight R as CA is to CD. Therefore the absolute strengths of the two fibres AC, BC, taken separately, are greater than their united strengths in relation to their position with respect to CR: and since this proportion remains the same, whatever equal weights are hung on at F and f, it follows, that when any strain DC is made to act on this fibre in the direction DC, it excites a greater strain on the fibre, because CA and CB taken together are greater than CD. Each fibre sustains a strain greater than the half of CD.

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Now let the weight R be turned round the axis CR. This will cause the two parts of the fibre ACB to lap round each other, and compose a twisted line or cord CR, as in fig. 15. and the parallelogram ACBD will remain of the same form, by the yielding of the weights F and f, as is evident from the equilibrium of forces. The fibre will always assume that form which makes the sides and diagonal in the proportion of the weights. While the fibres lap round each other, they are strained to the same degree, that is, to the full extent of their strength, and they remain in this degree of strain in every part of the line or cord CR. If therefore each of the fibres has the strength AB, the cord has the strength DC; and if F and f be held fast, the smallest addition to R will break the cord. The sum of the absolute strength of the two fibres of which this thread is composed is to the sum of their relative strengths, or to the strength of the thread, as AC+CB is to CD, or as AC is to EC.

Fig. 15.

If the weights F and f are not held fast, but allowed to yield, a heavier weight r may be hung on at C without breaking the fibre; for it will draw it into another position A c B, such that r shall be in equilibrio with F and f. Since F and f remain the same, the fibre is as much strained as before. Therefore make c a, c b equal to CA and CB, and complete the parallelogram a c b d. c d will now be the measure of the weight r, because it is the equivalent of c a and c b. It is evident that c d is greater than CD, and therefore the thread formed by the lapping of the fibre in the position a c b is stronger than the former, in the proportion of c d to CD, or c e to CE. The cord is therefore so much stronger as the fibres are more parallel to the axis, and it must be strongest of all when they are quite parallel. Bring the pulleys A, B, close to each other. It is plain that if we hang on a weight R less than the sum of F and f, it cannot take down the bight of the fibre; but if equal to them, although it cannot pull it down, it will keep it down. In this case, when the fibres are parallel to each other, the strength of the cord, (improperly so called) is equal to the united absolute strengths of the fibres.

It is easy to see that the length of each of the fibres which compose any part CR of this cord is to the length of the part of the cord as AC to EC; and this is the case even although they should lap round a cylinder of any diameter. This will appear very clearly to

any

Rope-making.
Fig. 16.

any person who considers the thing with attention. Let $a c$ (fig. 16.) be an indefinitely small portion of the fibre which is lapped obliquely round the cylinder, and let $H K G$ be a section perpendicular to the axis. Draw $a e$ parallel to the axis, and draw $e c$ to the centre of the circle $H K G$, and $a e'$ parallel to $e c$. It is plain that $e' c$ is the length of the axis corresponding to the small portion $a c$, and that $e' c$ is equal to $a e$.

Hence we derive another manner of expressing the ratio of the absolute and relative strength; and we may say that the absolute strength of a fibre, which has the same obliquity throughout, is to its relative strength as the length of the fibre to the length of the cord of which it makes a part. And we may say, that the strength of a rope is to the united absolute strength of its yarns as the length of the cord to the length of the yarns; for although the yarns are in various states of obliquity, they contribute to the strength of the cord in as much as they contribute immediately to the strength of the strands. The strength of the yarns is to that of the strands as the length of the yarns to that of the strands, and the strength of the strands is to that of the rope as the length of the first to that of the last.

And thus we see that twisting the fibres diminishes the strength of the assemblage; because their obliquity, which is its necessary consequence, enables any external force to excite a greater strain on the fibres than it could have excited had they remained parallel; and since a greater degree of twisting necessarily produces a greater obliquity of the fibres, it must more remarkably diminish the strength of the cord. Moreover, since the greater obliquity cannot be produced without a greater strain in the operation of twisting, it follows, that immoderate twisting is doubly prejudicial to the strength of cordage.

21
Theoretical deductions confirmed by Reaumur's experiments,

These theoretical deductions are abundantly confirmed by experiment; and as many persons give their assent more readily to a general proposition when presented as an induction from unexceptionable particulars, than when offered as the consequence of uncontroverted principles, we shall mention some of the experiments which have been made on this subject. Mr Reaumur, one of the most zealous, and at the same time judicious, observers of nature made the following experiments. (*Mém. Acad. Paris*, 1711.)

1. A thread, consisting of 832 fibres of silk, each of which carried at a medium 1 dram and 18 grains, would hardly support $5\frac{1}{2}$ pounds, and sometimes broke with 5 pounds. The sum of the absolute strengths of the fibres is 1040 drams, or upwards of 8 pounds 2 ounces.

2. A skain of white thread was examined in many places. Every part of it bore $9\frac{1}{2}$ pounds, but none of it would bear 10. When twisted slack into a cord of 2 yarns it broke with 16 pounds.

3. Three threads were twisted together. Their mean strength was very nearly 8 pounds. It broke with $17\frac{1}{2}$, whereas it should have carried 24.

4. Four threads were twisted. Their mean strength was $7\frac{1}{2}$. It broke with $21\frac{1}{2}$ instead of 30. Four threads, whose strength was nearly 9 pounds, broke with 22 instead of 36.

5. A small and very well made hempen cord broke in different places with 58, 63, 67, 72 pounds. Another part of it was untwisted into its three strands. One

of them bore 29, another 33, and the third 35; therefore the sum of their absolute strengths was 98. In another part which broke with 72, the strands which had already borne this strain were separated. They bore 26, 28, and 30; the sum of which is 84.

Admiral Sir Charles Knowles made many experiments on cordage of size. A piece of rope $3\frac{1}{2}$ inches in circumference was cut into many portions. Each of these had a fathom cut off, and it was carefully opened out. It was white, or untarred, and contained 72 yarns. They were each tried separately, and their mean strength was 90 pounds. Each corresponding piece of rope was tried apart, and the mean strength of the nine pieces was 4552 pounds. But 90 times 72 is 6480.

Nothing is more familiarly known to a seaman than the superior strength of rope-yarns made up into a skain without twisting. They call such a piece of rope a SALVAGE. It is used on board the king's ships for rolling tackles, flinging the great guns, batt-flings, nippers for holding the viol on the cable, and in every service where the utmost strength and great pliancy are wanted.

It is therefore sufficiently established, both by theory and observation, that the twisting of cordage diminishes its strength. Experiments cannot be made with sufficient precision for determining whether this diminution is in the very proportion, relative to the obliquity of the fibres, which theory points out. In a hawser the yarns lie in a great variety of angles with the axis. The very outermost yarn of a strand is not much inclined to the axis of the rope: for the inclination of this yarn to the axis of its own strand nearly compensates for the inclination of the strand. But then the opposite yarn of the same strand, the yarn that is next the axis of the rope lies with an obliquity, which is the sum of the obliquities of the strand and of the yarn. So that all the yarns which are really in the axis of the rope are exceedingly oblique, and, in general, the inside of the rope has its yarns more oblique than the outside. But in a laid rope we should not consider the strength as made up of the strengths of the yarns; it is made up of the strengths of the strands: For when the rope is violently stretched, it untwists as a rope, and the strands are a little more twisted; so that they are resisting as strands, and not as yarns. Indeed, when we consider the process of laying the rope, we see that it must be so. We know, from what has been already said, that the three strands would carry more when parallel than when twisted into a rope, although the yarns would then be much more oblique to the axis. The chief attention therefore should be turned to the making the most perfect strands.

We are fully authorized to say that the twist given to cordage should be as moderate as possible. We are certain that it diminishes the strength, and that the appearance of strength which its superior smoothness and hardness gives is fallacious. But a certain degree of this is necessary for its duration. If the rope is laid too slack, its parts are apt to open when it happens to be caught in short loops at its going into a pulley, &c. in which case some of the strands or yarns are apt to kink and break. It also becomes too pervious to water, which soaks and rots it. To prevent these and other such inconveniences, a considerable degree of firmness or hardness.

Rope-making.

22
and by those of Sir C. Knowles.

23
Further remarks on twisting.

Rope-making

nefs is necessary; and in order to give the cordage this appearance of superior strength, the manufacturer is disposed to exceed.

Rope-making

24
Experiments of Du Hamel to ascertain the best degree of twist, &c.

Mr Du Hamel made many experiments in the royal dock yards in France, with a view to ascertain what is the best degree of twist. It is usual to work up the yarns to $\frac{2}{3}$ of their length. Mr Du Hamel thought this too much, and procured some to be worked up only to $\frac{1}{4}$ of the length of the yarns. The strength of the first, by a mean of three experiments, was 4321, and that of the last was 5187.

He caused three ropes to be made from the same hemp, spun with all possible equability, and in such proportion of yarn that a fathom of each was of the same weight. The rope which was worked up to $\frac{2}{3}$ bore 4098 pounds; that which was worked up to $\frac{1}{4}$ bore 4850; and the one worked up to $\frac{1}{2}$ bore 6205. In another trial the strengths were 4250, 6753, and 7397. These ropes were of different sizes.

He had influence enough, in consequence of these experiments, to get a considerable quantity of rigging made of yarns worked up only to $\frac{1}{4}$ of their length, and had them used during a whole campaign. The officers of the ships reported that this cordage was about $\frac{1}{4}$ lighter than the ordinary kind; nearly $\frac{1}{8}$ slenderer, so as to give less hold to the wind, was therefore more supple and pliant, and run easier through the blocks, and did not run into kinks; that it required fewer hands to work it, in the proportion of two to three; and that it was at least $\frac{1}{4}$ stronger. And they said that it did not appear to have suffered more by using than the ordinary cordage, and was fit for another campaign.

Mr Du Hamel also made experiments on other fabrics of cordage, which made all twisting unnecessary, such as simply laying the yarn in skains, and then covering it with a worming of small line. This he found greatly superior in strength, but it had no duration, because the covering opened in every short bending, and was soon fretted off. He also covered them with a woven coat in the manner practised for horse-furniture. But this could not be put on with sufficient tightness, without an enormous expence, after the manner of a horse-whip. Small ropes were woven solid, and were prodigiously strong. But all these fabrics were found too soft and pervious to water, and were soon rendered unserviceable. The ordinary process of rope-making therefore must be adhered to; and we must endeavour to improve it by diminishing the twist as far as is compatible with the necessary solidity.

In pursuance of this principle, it is surely advisable to lay slack all such cordage as is used for standing rigging, and is never exposed to short bendings. Shrouds, stays, backstays, pendants, are in this situation, and can easily be defended from the water by tarring, serving, &c.

The same principle also directs us to make such cordage of four strands. When the strands are equally hardened, and when the degree of twist given in the laying is precisely that which is correspondent to the twist of the strands, it is demonstrable that the strands are lying less obliquely to the axis in the four-strand cordage, and should therefore exert greater force. And experience fully confirms this. Mr Du Hamel caused two very small hawsers to be made, in which the strands

were equally hardened. One of them had three strands, and the other six with a heart. They were worked up to the same degree. The first broke with 865 pounds, and the other with 1325. Several comparisons were made, with the same precautions, between cordage of three and of four strands, and in them all the four-strand cordage was found greatly superior; and it appeared that a heart judiciously put in not only made the work easier and more perfect to the eye, but also increased the strength of the cordage.

It is surely unreasonable to refuse credit to such a uniform course of experiment, in which there is no motive for imposition, and which is agreeable to every clear notion that we can form on this complicated subject; and it argues a considerable presumption in the professional artists to oppose the vague notions which they have of the matter to the calm reflections, and minute examination of every particular, by a man of good understanding, who had no interest in misleading them.

The same principles will explain the superiority of cable-laid cordage. The general aim in rope-making is to make every yarn bear an equal share of the general strain, and to put every yarn in a condition to bear it. But if this cannot be done, the next thing aimed at is, to put the yarns in such situations that the strains to which they are exposed in the use of the rope may be proportioned to their ability to bear it. Even this point cannot be attained, and we must content ourselves with an approach towards it.

The greatest difficulty is to place the yarns of a large strand agreeably to those maxims. Supposing them placed with perfect regularity round the yarn which is in the middle: they will lie in the circumferences of concentric circles. When this whole mass is turned equally round this yarn as an axis, it is plain that they will all keep their places, and that the middle yarn is simply twisted round its axis, while those of the surrounding circles are lapped round it in spirals, and that these spirals are so much more oblique as the yarns are farther from the axis. Suppose the sledge kept fast, so that the strand is not allowed to shorten. The yarns must all be stretched, and therefore strained; and those must be the most extended which are the farthest from the middle yarn. Now allow the sledge to approach. The strand contracts in its general length, and those yarns contract most which were most extended. The remaining extension is therefore diminished in all; but still those which are most remote from the middle are most extended, and therefore most strained, and have the smallest remainder of their absolute force. Unfortunately they are put into the most unfavourable situations, and those which are already most strained are left the most oblique, and have the greatest strain laid on them by any external force. But this is unavoidable: Their greatest hurt is the strains they sustain in the manufacture. When the strand is very large, as in a nine-inch hawser, it is almost impossible to bring the whole to a proper firmness for laying without straining the outer yarns to the utmost, and many of them are broken in the operation.

The reader will remember that a two-strand line was laid or closed merely by allowing it to twist itself up at the swivel of the looper; and that it was the elasticity arising from the twist of the yarn which produced this effect: and he would probably be surprised when we said, ly stronger.

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Superiority of cable-laid cordage, &c.

26
In laying large ropes the strands are twisted in a direction opposite to that of spinning, and are consequently stronger.

Fig. 1.



Fig. 2.



Fig. 3.



Fig. 4.

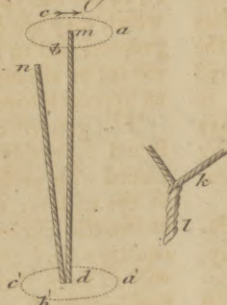


Fig. 5.



Fig. 7.

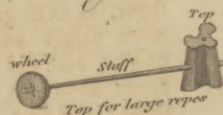


Fig. 6.

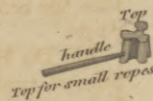


Fig. 8.

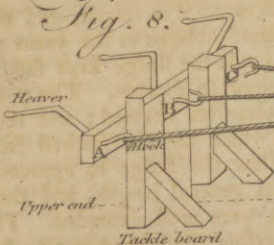


Fig. 10.

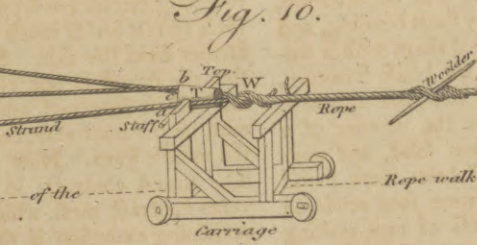


Fig. 9.

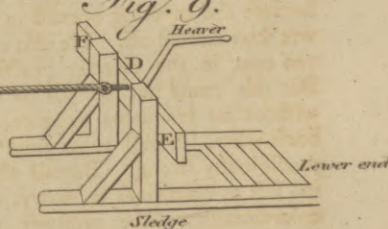


Fig. 11.

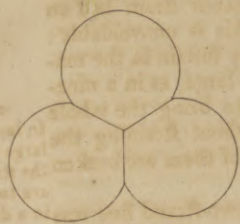


Fig. 12.



Fig. 13.

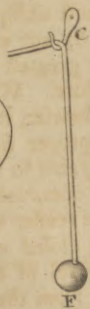


Fig. 14.

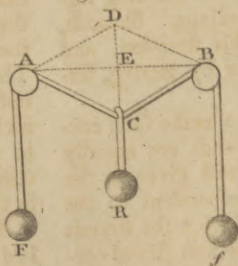


Fig. 15.

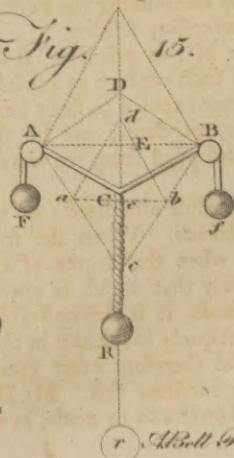
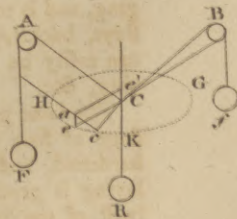


Fig. 16.



r. Bell Prin. W. & S. Sculp. foot.

Rope-making.

Rope-making.

said, that, in laying a larger rope, the strands are twisted in a direction opposite to that of the spinning. Since the tendency to close into a rope is nothing but the tendency of the strands to untwist, it would seem natural to twist the strands as the yarns were twisted before. This would be true if the elasticity of the fibres in a yarn produced the same tendency to untwist in the strand that it does in the yarn. But this is not the case. The contraction of one of the outer yarns of a strand tends to pull the strand backward round the axis of the strand: but the contraction of a fibre of this yarn tends to turn the yarn round its own axis, and not round the axis of the strand. It tends to untwist the yarn, but not to untwist the strand. It tends to untwist the strand only so far as it tends to contract the yarn. Let us suppose the yarn to be spun up to one-half the length of the fibres. The contracting power of this yarn will be only one half of the force exerted by the fibres: therefore, whatever is the force necessary for closing the rope properly, the fibres of the yarns must be exerting twice this force. Now let the same yarn, spun up to one-half, be made up in a strand, and let the strand be twisted in the opposite direction to the spinning till it has acquired the same elasticity fit for laying. The yarns are untwisted. Suppose to three-fourths of the lengths of the fibres. They are now exerting only four thirds of the force necessary for laying, that is, two-thirds of what they were obliged to exert in the other case; and thus we have stronger yarns when the strands are equally strained. But they require to be more strained than the other; which, being made of more twisted yarn, sooner acquire the elasticity fit for laying. But since the elasticity which fits the strand for laying does not increase so fast as the strain on the fibres of the yarn which produces it, it is plain, that when each has acquired that elasticity which is proper for laying, the strands made of the slack-twisted yarn are the strongest; and the yarns are also the strongest; and being softer, the rope will close better.

Experience confirms all this; and cordage, whose strands are twisted in the opposite direction to the twist of spinning, are found to be stronger than the other in a proportion not less than that of seven to six.

Such being the difficulty of making a large strand, and its defects when made, we have fallen on a method of making great cordage by laying it twice. A hawser-laid rope, slack spun, little hardened in the strands, and slack laid, is made a strand of a large rope called a *cable* or *cablet*. The advantages of this fabric are evident. The strands are reduced to one-third or one-fourth of the diameter which they would have in a hawser of the same size. Such strands cannot have their yarns lying very obliquely, and the outer yarns cannot be much more strained than the inner ones. There must therefore be a much greater equality in the whole substance of cable-laid cordage, and from this we should expect superior strength.

Accordingly, their superiority is great, not less than in the proportion of 13 to 9, which is not far from the proportion of four to three. A cable is more than a fourth part, but is not a third part, stronger than a hawser of the same size or weight.

They are seldom made of more than three hawsers of three strands each, though they are sometimes made of three four-stranded hawsers, or of four three-strand-

ed. The first of these two is preferred, because four small strands can be laid very close; whereas it is difficult to lay well four hawsers, already become very hard.

The superiority of a cable-laid cordage being attributed entirely to the greater perfection of the strands, and this seeming to arise entirely from their smallness, it was natural to expect still better cordage by laying cables as the strands of still larger pieces. It has been tried, and with every requisite attention. But although they have always equalled, they have not decidedly excelled, common cables of the same weight; and they require a great deal more work. We shall not therefore enter upon the manipulations of this fabric.

There is only one point of the mechanical process of rope-making which we have not considered minutely; and it is an important one, viz. the distribution of the total shortening of the yarns between the hardening of the strands and the laying the rope. This is a point about which the artists are by no means agreed. There is certainly a position of the strands of a laid rope which puts every part in equilibrio; and this is what an elasticity, but perfectly soft rope (were such a thing possible), would assume. But this cannot be discovered by any experiments made on large or even on firm cordage; and it may not be thought sufficiently clear that the proportion which would be discovered by the careful fabrication of a very small and soft line is the same that will suit a cordage of any diameter. We must proceed much on conjecture; and we cannot say that the arguments used by the partisans of different proportions are very convincing.

The general practice, we believe, is to divide the whole of the intended shortening of the yarns, or the working up into three parts, and to employ two of these in hardening the strands, and the remaining third in closing the hawser.

Mr Du Hamel thinks, that this repartition is injudicious, and that the yarns are too much strained, and the strands rendered weak. He recommends to invert this proportion, and to shorten one-third in the hardening of the strands, and two-thirds in laying the hawser. But if the strain of the yarns only is considered, one should think that the outside yarn of a strand will be more strained in laying, in proportion to the yarn of the same strand, that is, in the very axis of the rope. We can only say, that if a very soft line is formed in this way, it will not keep its twist. This shows that the turns in laying were more than what the elasticity or hardening of the strands required. The experiments made on soft lines always showed a tendency to take a greater twist when the lines were made in the first manner, and a tendency to lose their twist when made in Mr Du Hamel's manner. We imagine that the true proportion is between these two extremes, and that we shall not err greatly if we have the total shortening between the two parts of the process. If working up to two-thirds be insisted upon, and if it be really too much, Mr Du Hamel's repartition may be better, because part of this working will quickly go off when the cordage is used. But it is surely better to be right in the main point, the total working up, and then to adjust the distribution of it so that the finished cordage shall precisely keep the form we have given to it.

There must be the same uncertainty in the quadruple distribution

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Great cordage made by laying it twice.

Rope-making.

distribution of the working up a cable. When a cable has its yarns shortened to two-thirds, we believe the ordinary practice has been, 1st, To warp 180 fathoms; 2d, To harden up the strands 30 fathoms; 3d, To lay or close up 13 fathoms; 4th, To work up the hawfers nine fathoms; 5th, To close up eight fathoms. This leaves a cable of 120. Since Mr Du Hamel's experiments have had an influence at Rochefort, the practice has been to warp 190, to harden up 38, to lay up 12, to work up the hawfers 10, and then to close up six; and when the cable is finished, to shorten it two fathoms more, which our workmen call *throwing the turn well up*. This leaves a cable of 122 fathoms.

As there seems little doubt of the superiority of cordage shortened one-fourth over cordage shortened one-third, the following distribution may be adopted: warp 190 fathoms, harden up 12, lay up 11, work up the hawfers 12, and close up 12 more, which will leave a cable of 143.

30
Of the strains made use of during the operation.

There is another question about which the artists are divided in their opinions, viz. the strains made use of during the operation. This is produced by the weight laid on the sledge. If this be too small, the strands will not be sufficiently tightened, and will run into kinks. The sledge will come up by starts: and a small inequality of twist in the strands will throw it askew. The top will not run well without a considerable pressure to throw it from the closing point, and therefore the cordage will neither close fairly nor firmly; on the other hand, it is evident, that the strain on the strands is a complete expenditure of so much of their force, and it may be so great as to break them. These are the extreme positions. And we think that it may be fairly deduced from our principles, that as great a strain should be laid on the strands as will make good work, that is, as will enable the rope to close nearly and completely, but no more. But can any general rule be given for this purpose?

The practice at Rochefort was to load the sledge till its weight and load were double the weight of the yarns when warped 180 fathoms. A six-inch hawfer will require about a ton. If we suppose the friction one-third of the weight; the strain on each strand will be about two hundred and a quarter weight. Mr Du Hamel thinks this too great a load, and proposes to put only five-fourths or three-sevenths of the weight of the cordage; and still less if a shorter piece be warped, because it does not require so much force to throw the twist from the two cranks to the middle of the strand. We shall only say, that stronger ropes are made by heavy loading the carriage, and working up moderately, than by greater shortening, and a lighter load; but all this is very vague.

31
General rule for computing the strength of cordage.

The reader will naturally ask, after this account of the manufacture, what is the general rule for computing the strength of cordage? It cannot be expected to be very precise. But if ropes are made in a manner perfectly similar, we should expect the strength to be in proportion to the area of their section; that is, to the square of their diameters or circumferences, or to the number of equal threads contained in them.

Nor does it deviate far from this rule; yet Mr Du Hamel shows, from a range of experiments made on all cordage of $3\frac{1}{2}$ inch circumference and under, that the strength increases a little faster than the number

of equal threads. Thus he found that ropes of

9 threads bore	1014	pounds, instead of	946
12	1564		1262
18	2148		1893

Rope-making.

We cannot pretend to account for this. We must also observe, that the strength of cordage is greatly improved by making them of yarn spun fine. This requires finely dressed hemp; and being more supple, the fibres lie close, and do not form such oblique spirals. But all hemp will not spin equally fine. Every stalk seems to consist of a certain number of principal fibres, which split more easily into a second set, and these more difficultly into a third set, and so on. The ultimate fineness, therefore, which a reasonable degree of dressing can give to hemp, bears some proportion, not indeed very precise, to the size of the stalk. The British and Dutch use the best hemp, spin their yarn the finest, and their cordage is considerably stronger than the French, much of which is made of their own hemp, and others of a coarse and harsh quality.

The following rule for judging of the weight which a rope will bear is not far from the truth. It supposes them rather too strong; but it is so easily remembered that it may be of use.

Multiply the circumference in inches by itself, and take the fifth part of the product, it will express the tons which the rope will carry. Thus, if the rope have six inches circumference, 6 times 6 is 36, the fifth of which is $7\frac{1}{5}$ tons; apply this to the rope of 3 $\frac{1}{2}$, on which Sir Charles Knowles made the experiments formerly mentioned, $3\frac{1}{2} \times 3\frac{1}{2} = 10.25$, $\frac{1}{5}$ of which is 2.05 tons, or 4592 pounds. It broke with 4550.

32
Of tarring, and its effects on the strength of ropes.

This may suffice for an account of the mechanical part of the manufacture. But we have taken no notice of the operation of tarring; and our reason was, that the methods practised in different rope-works are so exceedingly different, that we could hardly enumerate them, or even give a general account of them. It is evidently proper to tar in the state of twine or yarn, this being the only way that the hemp could be uniformly penetrated. The yarn is made to wind off one reel, and having passed through a vessel containing hot tar, it is wound up on another reel; and the superfluous tar is taken off by passing through a hole surrounded with spongy oakum; or it is tarred in skains or hauls, which are drawn by a capstern through the tar-kettle, and through a hole formed of two plates of metal, held together by a lever loaded with a weight.

It is established beyond a doubt, that tarred cordage when new is weaker than white, and that the difference increases by keeping. The following experiments were made by Mr Du Hamel at Rochefort on cordage of three inches (French) in circumference, made of the best Riga hemp.

	August 8. 1741.	
	White.	Tarred.
Broke with	4500 pounds.	3400 pounds.
	4900	3300
	4800	3250
	April 25. 1743.	
	4600	3500
	5000	3400
	5000	3400

Rope-
making.

September 3. 1746.		
3800		3000
4000		2700
4200		2800

A parcel of white and tarred cordage was taken out of a quantity which had been made February 12. 1746. It was laid up in the magazines, and comparisons were made from time to time as follows :

	White bore.	Tarred bore.	Differ.
1746 April 14.	2645 pounds.	2312 pounds.	333
1747 May 18.	1762	2155	607
1747 Oct. 21.	2710	2050	660
1748 June 19.	2575	1752	823
1748 Oct. 2.	2425	1837	588
1749 Sep. 25.	2917	1865	1052

Mr Du Hamel says, that it is decided by experience, 1. That white cordage in continual service is one-third more durable than tarred. 2. That it retains its force much longer while kept in store. 3. That it resists the ordinary injuries of the weather one-fourth longer.

We know this one remarkable fact. In 1758 the shrouds and stays of the Sheer hulk at Portsmouth dock-yard were overhauled, and when the worming and service were taken off, they were found to be of white cordage. On examining the storekeeper's books, they were found to have been formerly the shrouds and rigging of the Royal William, 110 guns, built in 1715, and rigged in 1716. She was thought top-heavy and unfit for sea, and unrigged and her stores laid up. Some few years afterwards, her shrouds and stays were fitted on the Sheer hulk, where they remained in constant and very hard service for about 30 years, while every tarred rope about her had been repeatedly renewed. This information we received from Mr Brown, boatswain of the Royal William during the war 1758, &c.

Why then do we tar cordage? We thus render it more unpliant, weaker, and less durable. It is chiefly serviceable for cables and ground tackle, which must be continually wetted and even fouled. The result of careful observation is, 1. That white cordage, exposed to be alternately very wet and dry, is weaker than tarred cordage. 2. That cordage which is superficially tarred is constantly stronger than what is tarred throughout, and it resists better the alternatives of wet and dry. N. B. The shrouds of the Sheer hulk were well tarred and blacked, so that it was not known that they were of white cordage.

Tar is a curious substance, miscible completely with water. Attempts were made to anoint cordage with oils and fats which do not mix with water. This was expected to defend them from its pernicious effects. But it was distinctly found that these matters made the fibres of hemp glide so easily on each other, that it was hardly possible to twist them permanently. Before they grasped each other so hard that they could not be drawn, they were strained almost to breaking.

Attempts have been made to increase the strength of cordage by tanning. But though it remains a constant practice in the manufacture of nets, it does not appear that much addition, either of strength or durability, can be given to cordage by this means. The trial has been made with great care, and by persons fully able to conduct the process with propriety. But it is found that

the yarns take so long time in drying, and are so much hurt by drying slowly, that the room required for a considerable rope-work would be immense; and the improvement of the cordage is but trifling, and even equivocal. Indeed tanning is a chemical process, and its effects depend entirely on the nature of the materials to which the tan is applied. It unquestionably condenses, and even strengthens, the fibre of leather: but for any thing that we know *à priori*, it may destroy the cohesion of hemp and flax; and experiment alone could decide the question. The result has been unfavourable; but it does not follow from this that a tan cannot be found which shall produce on the texture of vegetables effects similar to what oak-bark and other astringents produce on the animal fibre or membrane. It is well known that some dyes increase the strength of flax and cotton, notwithstanding the corrosion which we know to be produced by some of the ingredients. This is a subject highly worth the attention of the chemist and the patriot.

ROPE-Dancer. See *ROPE-DANCER*.

ROPE-Yarn, among sailors, is the yarn of any rope untwisted, but commonly made up of junk; its use is to make finnet, mats, &c.

ROQUET. See *ROCKET*.

RORIDULA, a genus of plants belonging the pentandria class. See *BOTANY Index*.

ROSA, the *ROSE*; a genus of plants belonging to the icolandria class; and in the natural method ranking under the 35th order, *Senticosæc.* See *BOTANY Index*.

The sorts of roses are very numerous; and the botanists find it very difficult to determine with accuracy which are species and which are varieties, as well as which are varieties of the respective species. On this account Linnaeus, and some other eminent authors, are inclined to think that there is only one real species or rose, which is the *rosa canina*, or "dog rose of the hedges, &c. and that all the other sorts are accidental varieties of it. However, according to the present Linnæan arrangement, they stand divided into 14 supposed species, each comprehending varieties, which in some sorts are but few, in others numerous.

The supposed species and their varieties according to the arrangement of modern botanists, are as follows:

1. The canina, canine rose, wild dog-rose of the hedges, or hep-tree, grows five or six feet high, having prickly stalks and branches, pinnated five or seven-lobed leaves, with aculeated foot-stalks, smooth pedunculi, oval smooth germina, and small single flowers. There are two varieties, red-flowered and white-flowered. They grow wild in hedges abundantly all over the kingdom; and are sometimes admitted into gardens, a few to increase the variety of the shrubbery collection.

2. The alba, or common white-rose, grows five or six feet high, having a green stem and branches, armed with prickles, hispid pedunculi, oval smooth germina, and large white flowers. The varieties are,—large double white rose—dwarf single white rose—maidens-blush white rose, being large, produced in clusters, of a white and bluish-red colour.

3. The Gallica, or Gallican rose, &c. grows from about three or four to eight or ten feet high, in different varieties, with pinnated, three, five, or seven-lobed leaves, and large red and other coloured flowers in dif-

Rope-
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Rosa.33
Effect of
tanning.

Rosa. ferent sorts. This species is very extensive in supposed varieties, bearing the above specific distinction, several of which have been formerly considered as distinct species, but are now ranged among the varieties of the Gallican rose, consisting of the following noted varieties.

Common red officinal rose, grows erect, about three or four feet high, having small branches, with but few prickles, and large spreading half-double deep-red flowers.—Rosa mundi (rose of the world) or striped red rose, is a variety of the common red rose, growing but three or four feet high, having large spreading semi-double red flowers, beautifully striped with white—and deep red.—York and Lancaster variegated rose, grows five, six, or eight feet high, or more; bearing variegated red flowers, consisting of a mixture of red and white; also frequently disposed in elegant stripes, sometimes in half of the flower, and sometimes in some of the petals.—Monthly rose, grows about four or five feet high, with green very prickly shoots; producing middle-sized, moderately-double delicate flowers, of different colours in the varieties. The varieties are, common red-flowered monthly rose—blush-flowered—white-flowered—striped-flowered. All of which blow both early and late, and often produce flowers several months in the year, as May, June, and July; and frequently again in August or September, and sometimes, in fine mild seasons, continues till November or December: hence the name *monthly rose*.—Double virgin-rose, grows five or six feet high, having greenish branches with scarce any spines; and with large double pale-red and very fragrant flowers.—Red damask rose, grows eight or ten feet high, having greenish branches, armed with short aculea; and moderately-double, fine soft-red, very fragrant flowers.—White damask rose, grows eight or ten feet high, with greenish very prickly branches, and white-red flowers, becoming gradually of a whiter colour.—Blush Belgic rose, grows three or four feet high, or more; having greenish prickly branches, five or seven lobed leaves, and numerous, very double, blush-red flowers, with short petals, evenly arranged.—Red Belgic rose, having greenish and red shoots and leaves, and fine double deep-red flowers.—Velvet rose, grows three or four feet high, armed with but few prickles; producing large velvet-red flowers, comprising semi-double and double varieties, all very beautiful roses.—Marbled rose, grows four or five feet high, having brownish branches, with but few prickles; and large, double, finely-marbled, red flowers.—Red-and-yellow Austrian rose, grows five or six feet high, having reddish very prickly shoots; and numerous bright-yellow flowers.—Double yellow rose, grows six or seven feet high; with brownish branches, armed with numerous large and small yellowish prickles; and large very double yellow flowers.—Frankfort rose, grows eight or ten feet high, is a vigorous shooter, with brownish branches thinly armed with strong prickles; and produces largish double purplish-red flowers, that blow irregularly, and have but little fragrance.

4. The centifolia, or hundred-leaved red rose, &c. grows from about three or four to six or eight feet

Rosa. high, in different sorts, all of them hispid and prickly; pinnated three and five lobed leaves; and large very double red flowers, having very numerous petals, and of different shades in the varieties. The varieties are, —common Dutch hundred-leaved rose, grows three or four feet high, with erect greenish branches, but moderately armed with prickles; and large remarkably double red flowers, with short regularly arranged petals.—Blush hundred-leaved rose, grows like the other, with large very double pale-red flowers.—Provence rose, grows five or six feet, with greenish brown prickly branches, and very large double globular red flowers, with large petals folding over one another, more or less in the varieties.—The varieties are, common red Provence rose, and pale Provence rose; both of which having larger and somewhat looser petals than the following sort.—Cabbage Provence rose; having the petals closely folded over one another like cabbages.—Dutch cabbage rose, very large, and cabbage tolerably.—Childing Provence rose—Great royal rose, grows six or eight feet high, producing remarkably large, somewhat loose, but very elegant flowers.—All these are large double red flowers, somewhat globular at first blowing, becoming gradually a little spreading at top, and are all very ornamental fragrant roses.—Moss Provence rose, supposed a variety of the common rose; grows erectly four or five feet high, having brownish stalks and branches, very closely armed with short prickles, and double crimson-red flowers; having the calyx and upper part of the peduncle surrounded with a rough mossy-like substance, effecting a curious singularity. This is a fine delicate rose, of a high fragrance, which together with its mossy calyx, renders it of great estimation as a curiosity.

5. The cinnamomea, or cinnamon rose, grows five or six feet high, or more, with purplish branches thinly aculeated; pinnated five or seven lobed leaves, having almost inermous petioles, smooth pedunculi, and smooth globular germina; with small purplish-red cinnamon-scented flowers early in May. There are varieties with double flowers.

6. The Alpina, or Alpine inermous rose, grows five or six feet high, having smooth or unarmed reddish branches, pinnated seven-lobed smooth leaves, somewhat hispid pedunculi, oval germina, and deep-red single flowers; appearing in May. This species, as being free from all kinds of armature common to the other sorts of roses, is esteemed as a singularity; and from this property is often called the *virgin rose*.

7. The Carolina, or Carolina and Virginia rose, &c. grows six or eight feet high, or more, having smooth reddish branches, very thinly aculeated; pinnated seven-lobed smooth leaves, with prickly foot-stalks; somewhat hispid pedunculi, globose hispid germina, and single red flowers in clusters, appearing mostly in August and September. The varieties are, dwarf Pennsylvanian rose, with single and double red flowers.—American pale-red rose. This species and varieties grow naturally in different parts in North America; they effect a fine variety in our gardens, and are in estimation for their late-flowering property, as they often continue in blow from August until October; and the flowers are succeeded by numerous red berry-like hews in autumn, causing a variety all winter.

8. The villosa, or villose apple-bearing rose, grows six

Rosa. six or eight feet high, having strong erect brownish smooth branches; aculeated sparsely pinnated seven-lobed villose or hairy leaves, downy underneath, with prickly foot-stalks, hispid peduncles, a globular prickly germen; and large single red flowers, succeeded by large round prickly hips, as big as little apples. This species merits admittance into every collection as a curiosity for the singularity of its fruit, both for variety and use; for it having a thick pulp of an agreeable acid relish, is often made into a tolerable good sweetmeat.

9. The *pimpinellifolia*, or burnet-leaved rose, grows about a yard high, aculeated sparsely; small neatly pinnated seven-lobed leaves, having obtuse folioles and rough petioles, smooth peduncles, a globular smooth germen, and small single flowers. There are varieties with red flowers—and with white flowers. They grow wild in England, &c. and are cultivated in shrubberies for variety.

10. The *spinossima*, or most spinous, dwarf burnet-leaved rose, commonly called *Scotch rose*, grows but two or three feet high, very closely armed with spines; small neatly pinnated seven-lobed leaves, with prickly foot-stalks, prickly pedunculi, oval smooth germen, and numerous small single flowers, succeeded by round dark-purple hips. The varieties are, common white-flowered—red-flowered—striped-flowered—marbled-flowered. They grow naturally in England, Scotland, &c. The first variety rises near a yard high, the others but one or two feet, all of which are single-flowered; but the flowers being numerous all over the branches, make a pretty appearance in the collection.

11. The *eglantaria*, eglantine rose, or sweet-briar, grows five or six feet high, having green branches, armed with strong spines sparsely; pinnated seven-lobed odoriferous leaves, with acute folioles and rough foot-stalks, smooth pedunculi, globular smooth germina, and small pale-red flowers. The varieties are, common single-flowered—semi-double flowered—double-flowered—blush double-flowered—yellow-flowered. This species grows naturally in some parts of England, and in Switzerland. It claims culture in every garden for the odoriferous property of its leaves; and should be planted in the borders, and other compartments contiguous to walks, or near the habitation, where the plants will impart their refreshing fragrance very profusely all around; and the young branches are excellent for improving the odour of nosegays and bow-pots.

12. The *moschata*, or musk-rose, supposed to be a variety only of the ever-green musk-rose, hath weak smooth green stalks and branches, rising by support from six to eight or ten feet high or more, thinly armed with strong spines; pinnated seven-lobed smooth leaves, with prickly foot-stalks; hispid peduncles; oval hispid germen; and all the branches terminated by large umbellate clusters of pure-white musk-scented flowers in August, &c.

13. The *sempervirens*, or ever-green musk-rose, hath a somewhat trailing stalk and branches, rising by support five or six feet high or more, having a smooth bark armed with prickles; pinnated five-lobed smooth shining evergreen-leaves, with prickly petioles, hispid pedunculi, oval hispid germen; and all the branches terminated by clusters of pure-white flowers of a musky fragrance; appearing the end of July, and in August. The semper-

virent property of this elegant species renders it a curiosity among the rosy tribe; it also makes a fine appearance as a flowering shrub. There is one variety, the deciduous musk-rose above-mentioned. This species and variety flowers in August, and is remarkable for producing them numerously in clusters, continuing in succession till October or November.

The above 13 species of rosa, and their respective varieties, are of the shrub-kind; all deciduous, except the last sort, and of hardy growth, succeeding in any common soil and situation, and flowering annually in great abundance from May till October, in different sorts; though the general flowering season for the principal part of them is June and July: but in a full collection of the different species, the blow is continued in constant succession several months, even sometimes from May till near Christmas; producing their flowers universally on the same year's shoots, rising from those the year before, generally on long pedunculi, each terminated by one or more roses, which in their characteristic state consist each of five large petals and many stamina; but in the doubles, the petals are very numerous; and in some sorts, the flowers are succeeded by fruit ripening to a red colour in autumn and winter, from the seed of which the plants may be raised; but the most certain and eligible mode of propagating most of the sorts is by suckers and layers; and by which methods they may be increased very expeditiously in great abundance.

The white and red roses are used in medicine. The former distilled with water yields a small portion of a butyraceous oil, whose flavour exactly resembles that of the roses themselves. This oil and the distilled water are very useful and agreeable cordials. These roses also, besides the cordial and aromatic virtues which reside in their volatile parts, have a mild purgative one, which remains entire in the decoction left after distillation. The red rose, on the contrary, has an astringent and gratefully corroborating virtue.

ROSA, SALVATOR, an admirable painter, born at Naples in 1614. He was first instructed by Francesco Francazano, a kinsman: but the death of his father reduced him to sell drawings sketched upon paper for any thing he could get; one of which happening to fall into the hands of Lanfranc, he took him under his protection, and enabled him to enter the school of Spagnoletto, and to be taught moreover by Daniel Falcone, a distinguished painter of battles at Naples. Salvator had a fertile imagination. He studied nature with attention and judgement; and always represented her to the greatest advantage: for every tree, rock, cloud, or situation, that enters into his composition, shows an elevation of thought that extorts admiration. He was equally eminent for painting battles, animals, sea or land storms; and he executed these different subjects in such taste as renders his works readily distinguishable from all others. His pieces are exceedingly scarce and valuable; one of the most capital is that representing Saul and the witch of Endor, which was preserved at Versailles. He died in 1673; and as his paintings are in few hands, he is more generally known by his prints, of which he etched a great number. He painted landscapes more than history; but his prints are chiefly historical. The capital landscape of this
master.

Rosa
||
Rosamond.

master at Chiswick is a noble picture. However, he is said to have been ignorant of the management of light, and to have sometimes shaded faces in a disagreeable manner. He was however a man of undoubted genius; of which he has given frequent specimens in his works. A roving disposition, to which he is said to have given full scope, seems to have added a wildness to all his thoughts. We are told that he spent the early part of his life in a troop of banditti; and that the rocky desolate scenes in which he was accustomed to take refuge, furnished him with those romantic ideas in landscape, of which he is so exceedingly fond, and in the description of which he so greatly excels. His *robbers*, as his detached figures are commonly called, are supposed also to have been taken from the life.

Salvator Rosa is sufficiently known as a painter; but he is little known as a musician. Among the musical manuscripts purchased at Rome by Dr Burney, was a music book of Salvator, in which are many airs and cantatas of different masters, and eight entire cantatas, written, set, and transcribed by this celebrated painter himself. From the specimens of his talents for music here given, we make no scruple of declaring, that he had a truer genius for this science, in point of melody, than any of his predecessors or contemporaries: there is also a strength of expression in his verses, which sets him far above the middle rank as a poet. Like most other artists of real original merit, he complains of the ill usage of the world, and the difficulty he finds in procuring a bare subsistence.

ROSACEA. See *GUTTA Rosacea*.

ROSACEOUS, among botanists, an appellation given to such flowers as are composed of several petals or leaves disposed in a sort of circular form, like those of a rose.

ROSAMOND, daughter of Walter Lord Clifford, was a young lady of exquisite beauty, fine accomplishments, and blessed with a most engaging wit and sweetness of temper. She had been educated, according to the custom of the times, in the nunnery of Godstow; and the popular story of her is as follows: Henry II. saw her, loved her, declared his passion, and triumphed over her honour. To avoid the jealousy of his queen Elinor, he kept her in a wonderful labyrinth at Woodstock, and by his connection with her had William Longsword earl of Salisbury, and Geoffrey bishop of Lincoln. On Henry's absence in France, however, on account of a rebellion in that country, the queen found means to discover her, and, though struck with her beauty, she recalled sufficient resentment to poison her. The queen, it is said, discovered her apartment by a thread of silk; but how she came by it is differently related. This popular story is not however supported by history; several writers mention no more of her, than that the queen so vented her spleen on Rosamond as that the lady lived not long after. Other writers assert that she died a natural death; and the story of her being poisoned is thought to have arisen from the figure of a cup on her tomb. She was buried in the church of Godstow, opposite to the high altar, where her body remained till it was ordered to be removed with every mark of disgrace by Hugh bishop of Lincoln in 1191. She was, however, by many considered as a saint after her death, as appears from an inscription on a cross which Leland says stood near Godstow:

*Qui meat hac orat, signum salutis adoret,
Vique sibi detur veniam. Rosamunda precetur.*

Rosary
||
Roscom-
mon.

And also by the following story: Rosamond during her residence at her bower, made several visits to Godstow; where being frequently reproved for the life she led, and threatened with the consequences in a future state, she always answered, that she knew she should be saved; and as a token to them, showed a tree which she said would be turned into a stone when she was with the saints in heaven. Soon after her death this wonderful metamorphosis happened, and the stone was shown to strangers at Godstow till the time of the dissolution.

ROSARY, among the Roman Catholics. See *CHAPLET*.

ROSBACH, a town of Germany, in Saxony, famous for a victory obtained here by the king of Prussia over the French, on November 5. 1757, in which 10,000 of the French were killed or taken prisoners, with the loss of no more than 500 Prussians. See *PRUSSIA*, N^o 30.

ROSCILD, a town of Denmark, in the isle of Zealand, with a bishop's see and a small university. It is famous for a treaty concluded here in 1658; and in the great church there are several tombs of the kings of Denmark. It is seated at the bottom of a small bay, in E. Long. 12. 20. N. Lat. 55. 40.

ROSCOMMON, a county of Ireland, in the province of Connaught, bounded on the west by the river Suc, on the east by the Shannon, on the north by the Curlew mountains, on the south and south-east by the King's county and part of Galway. Its length is 50 miles, its breadth 28. The air of the county, both on the plains and mountains, is healthy; the soil yields plenty of grass with some corn, and feeds numerous herds of cattle. The Curlew mountains on the north are very high and steep; and, till a road with great labour and difficulty was cut through them, were impassable. This county contains 59 parishes, and formerly sent eight members to parliament.

ROSCOMMON, which gives the title of earl to the family of Dillon, and name to the county, though not large, is both a parliamentary borough, and the county town.

ROSCOMMON, *Wentworth Dillon, Earl of*, a celebrated poet of the 17th century, was the son of James Dillon earl of Roscommon; and was born in Ireland, under the administration of the first earl of Strafford, who was his uncle, and from whom he received the name of *Wentworth* at his baptism. He passed his infancy in Ireland; after which the earl of Strafford sent for him into England, and placed him at his own seat in Yorkshire, under the tuition of Dr Hall, afterwards bishop of Norwich, who instructed him in Latin, without teaching him the common rules of grammar, which he could never retain in his memory, and yet he learnt to write in that language with classical elegance and propriety. On the earl of Strafford's being impeached, he went to complete his education at Caen in Normandy; and after some years travelled to Rome, where he became acquainted with the most valuable remains of antiquity, and in particular was well skilled in medals, and learned to speak Italian with such grace and fluency, that he was frequently taken for a native. He returned

Roscom-
mon.

turned to England soon after the Restoration, and was made captain of the band of pensioners; but a dispute with the lord privy-seal, about a part of his estate, obliged him to resign his post, and revisit his native country, where the duke of Ormond appointed him captain of the guards. He was unhappily very fond of gaming; and as he was returning to his lodgings from a gaming-table in Dublin, he was attacked in the dark by three ruffians, who were employed to assassinate him. The earl defended himself with such resolution, that he had dispatched one of the aggressors, when a gentleman passing that way took his part, and disarmed another, on which the third sought his safety in flight. This generous assistant was a disbanded officer of good family and fair reputation, but reduced to poverty; and his lordship rewarded his bravery by resigning to him his post of captain of the guards. He at length returned to London; when he was made master of the horse to the duchess of York, and married the lady Frances, eldest daughter of Richard earl of Burlington, who had been the wife of Colonel Courtney. He here distinguished himself by his writings; and in imitation of those learned and polite assemblies with which he had been acquainted abroad, began to form a society for refining and fixing the standard of the English language, in which his great friend Mr Dryden was a principal assistant. This scheme was entirely defeated by the religious commotions which ensued on King James's accession to the throne. In 1683 he was seized with the gout; and being too impatient of pain, he permitted a bold French empiric to apply a repelling medicine, in order to give him present relief; this drove the distemper into his bowels, and in a short time put a period to his life, in January 1684. He was buried with great pomp in Westminster-abbey.

His poems, which are not numerous, are in the body of English poetry collected by Dr Johnson. His "Essay on Translated Verse," and his translation of "Horace's Art of Poetry," have great merit. Waller addressed a poem to his lordship upon the latter, when he was 75 years of age. "In the writings of this nobleman we view (says Fenton) the image of a mind naturally serious and solid; richly furnished and adorned with all the ornaments of art and science; and those ornaments unaffectedly disposed in the most regular and elegant order. His imagination might probably have been more fruitful and sprightly, if his judgement had been less severe; but that severity (delivered in a masculine, clear, succinct style) contributed to make him so eminent in the didactical manner, that no man, with justice, can affirm he was equalled by any of our nation, without confessing at the same time that he is inferior to none. In some other kinds of writing his genius seems to have wanted fire to attain the point of perfection; but who can attain it? He was a man of an amiable disposition, as well as a good poet; as Pope, in his 'Essay on Criticism,' hath testified in the following lines:

—Roscommon not more learn'd than good,
With manners generous as his noble blood;
To him the wit of Greece and Rome was known,
And every author's merit but his own."

We must allow of Roscommon, what Fenton has not mentioned so distinctly as he ought, and, what is yet

very much to his honour, that he is perhaps the only correct writer in verse before Addison; and that, if there are not so many or so great beauties in his compositions as in those of some contemporaries, there are at least fewer faults. Nor is this his highest praise; for Pope has celebrated him as the only moral writer of King Charles's reign:

Unhappy Dryden! in all Charles's days,
Roscommon only boasts unspotted lays.

Of Roscommon's works, the judgement of the public seems to be right. He is elegant; but not great; he never labours after exquisite beauties, and he seldom falls into gross faults. His versification is smooth, but rarely vigorous, and his rhymes are remarkably exact. He improved taste, if he did not enlarge knowledge, and may be numbered among the benefactors to English literature.

ROSE, in *Botany*. See ROSA.

Essence of ROSES. See ROSES, *Otter of*.

ROSE of Jericho, so called because it grows in the plain of Jericho, though it did not originally grow there. It has perhaps been so named by travellers who did not know that it was brought from Arabia Petraea. Rose bushes are frequently found in the fields about Jericho; but they are of a species much inferior to those so much extolled in Scripture, the flowers of which some naturalists pretend to have in their cabinets.

"The rose shrub of Jericho (says Mariti) is a small plant, with a bushy root, about an inch and a half in length. It has a number of stems which diverge from the earth: they are covered with few leaves; but it is loaded with flowers, which appear red when in bud, turn paler as they expand, and at length become white entirely. These flowers appear to me to have a great resemblance to those of the elder-tree; with this difference, that they are entirely destitute of smell. The stems never rise more than four or five inches from the ground. This shrub sheds its leaves and its flowers as it withers. Its branches then bend in the middle, and, becoming entwined with each other to the top, form a kind of globe. This happens during the great heats; but during moist and rainy weather they again open and expand.

"In this country of ignorance and superstition, people do not judge with a philosophical eye of the alternate shutting and opening of this plant: it appears to them to be a periodical miracle, which heaven operates in order to make known the events of this world. The inhabitants of the neighbouring cantons come and examine these shrubs when they are about to undertake a journey, to form an alliance, to conclude any affair of importance, or on the birth of a son. If the stems of the plants are open, they do not doubt of success; but they account it a bad omen to see them shut, and therefore renounce their project if it be not too late.

"This plant is neither subject to rot nor to wither. It will bear to be transplanted; and thrives without degenerating in any kind of soil whatever."

ROSES, Otter or essential oil of, is obtained from roses by simple distillation, and may be made in the following manner: A quantity of fresh roses, for example 40 pounds, are put in a still with 60 pounds of water, the roses being left as they are with their calyxes, but with

Rose

Rofe.

with the stems cut clofe. The mafs is then well mixed together with the hands, and a gentle fire is made under the ftill; when the water begins to grow hot, and fumes to rife, the cap of the ftill is put on, and the pipe fixed; the chinks are then well luted with pafte, and cold water put on the refrigeratory at top: the receiver is alfo adapted at the end of the pipe; and the fire is continued under the ftill, neither too violent nor too weak. When the impregnated water begins to come over, and the ftill is very hot, the fire is leffened by gentle degrees, and the diftillation continued till 30 pounds of water are come over, which is generally done in about four or five hours; this rofe-water is to be poured again on a frefh quantity (40 pounds) of rofes, and from 15 to 20 pounds of water are to be drawn by diftillation, following the fame procefs as before. The rofe-water thus made and cohobated will be found, if the rofes were good and frefh, and the diftillation carefully performed, highly fcented with the rofes. It is then poured into pans either of earthen ware or of tinned metal, and left expofed to the frefh air for the night. The otter or effence will be found in the morning congealed, and fwimming on the top of the water; this is to be carefully feparated and collected either with a thin fhell or a fkimmer, and poured into a vial. When a certain quantity has thus been obtained, the water and feces muft be feparated from the clear effence, which, with refpect to the firft, will not be difficult to do, as the effence congeals with a flight cold, and the water may then be made to run off. If, after that, the effence is kept fluid by heat, the feces will fubfide, and may be feparated; but if the operation has been neatly performed, thefe will be little or none. The feces are as highly perfumed as the effence, and muft be kept, after as much of the effence has been fkimmed from the rofe-water as could be. The remaining water fhould be ufed for frefh diftillations, inftead of common water, at leaft as far as it will go.

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The above is the whole procefs, as given in the Afatic Researches by Lieutenant-colonel Polier*, of making genuine otter of rofes. But attempts (he fays) are often made to augment the quantity, though at the expence of the quality. Thus the rafpings of fandewood, which contain a deal of effential oil, are ufed; but the impofition is eafily difcovered, both by the fmell, and becaufe the effential oil of fandewood will not congeal in common cold. In other places they adulterate the otter by diftilling with the rofes a fweet-fcented gras, which colours it of a high clear green. This does not congeal in a flight cold. There are numerous other modes, far more palpable, of adulteration. The quantity of effential oil to be obtained from rofes is very precarious, depending on the fkill of the diftiller, on the quality of the rofes, and the favourablenefs of the feafon. The colour of the otter is no criterion of its goodnefs, quality, or country. The calyxes by no means diminifh the quality of otter, nor do they impart any green colour to it. They indeed augment the quantity, but the trouble neceffary to ftrip them is fuch as to prevent their being often ufed.

The following is a fimpler and lefs expenfive procefs for preparing this delicate and highly valued perfume; but whether it be equally productive, we know not. A large earthen or ftone jar, or a large clean wooden cask is filled with the leaves of the flowers of rofes, well

picked and freed from the feeds and ftalks; and as much fpring water as will cover them being poured into the vefiel, it is fet in the fun in the morning at funrife and allowed to ftand till the evening, when it is removed into the houfe for the night. In the fame way it is to be expofed for fix or feven days fucceffively. At the end of the third or fourth day a number of particles of a fine yellow oily matter is feen floating on the furface. Thefe particles in the courfe of two or three days more collect into a fcum, which is the otter of rofes. This is taken up by means of cotton tied to the end of a piece of ftick, and fqueezed with the finger and thumb into a fmall phial, which is immediately well ftopped; and this is repeated for fome fucceffive evenings, or while any of this fine effential oil rifes to the furface of the water.

It is faid that a few drops of this effential oil have at different times been collected in the city of London by diftillation, in the fame manner as thofe effential oils which are obtained from other plants.

ROSE-Noble, an ancient Englifh gold coin, firft ftruck in the reign of Edward III. It was formerly current at 6s. 8d. and fo called becaufe ftamped with a rofe. See MONEY.

ROSE-Wood. See ASPALATHUS, BOTANY Index.

ROSETTO, or ROSETTA, a town of Africa, in Egypt, is pleafantly fituated on the weft fide of that branch of the Nile called by the ancients *Bolbitinum*, affirmed by Herodotus to have been formed by art; the town and caftle being on the right hand as you enter that river. Any one that fees the hills about Roletto would judge that they had been the ancient barriers of the fea, and conclude that the fea has not loft more ground than the fpace between the hills and the water.

Roletto is efteemed one of the pleafanteft places in Egypt; it is about two miles long, and confifts only of two or three ftreets. The country about it is moft delightful and fertile, as is the whole Delta on the other fide of the Nile, exhibiting the moft pleafant profpect of gardens, orchards, and corn-fields, excellently cultivated. The caftle ftands about two miles north of the town, on the weft fide of the river. It is a fquare building, with round towers at the four corners, mounted with fome pieces of brafs cannon. The walls are of brick, cafed with ftone, fuppofed to have been built in the time of the holy war, though fince repaired by Cheyk Begh. At a little diftance lower, on the other fide of the river, is a platform, mounted with fome guns, and to the eaft of it are the falt lakes, from which great quantities of that commodity are gathered. At fome farther diftance, failing up the river, we fee a high mountain, on which ftands an old building that ferves for a watch-tower. From this eminence is difcovered a large and deep gulf, in form of a crefcent, which appears to have been the work of art, though it be now filled up, and difcovers nothing but its ancient bed. Roletto is a confiderable place for commerce, and hath fome good manufactures in the linen and cotton way; but its chief bufinefs is the carriage of goods to Cairo, all the European merchandife being brought thither from Alexandria by fea, and carried in other boats to that capital; as thofe that are brought down from it on the Nile are there fhipped off for Alexandria; on which account the Europeans

Rofe,
Roletto.

Rosetto,
Rosicru-
cians.

ropeans have here their vice-consuls and factors to transact their business; and the government maintains a beigh, a customhouse, and a garrison, to keep all safe and quiet.

In the country to the north of Rosetto are delightful gardens, full of orange, lemon, and citron trees, and almost all sorts of fruits, with a variety of groves of palm-trees; and when the fields are green with rice, it adds greatly to the beauty of the country. It is about 25 miles north-east of Alexandria, and 100 north west of Cairo. E. Long. 30. 45. N. Lat. 31. 30.

ROSICRUCIANS, a name assumed by a sect or cabal of hermetical philosophers; who arose, as it has been said, or at least became first taken notice of, in Germany, in the beginning of the fourteenth century. They bound themselves together by a solemn secret, which they all swore inviolably to preserve; and obliged themselves, at their admission into the order, to a strict observance of certain established rules. They pretended to know all sciences, and chiefly medicine; whereof they published themselves the restorers. They pretended to be masters of abundance of important secrets, and, among others, that of the philosopher's stone; all which they affirmed to have received by tradition from the ancient Egyptians, Chaldeans, the Magi, and Gymnosophists. They have been distinguished by several names, accommodated to the several branches of their doctrine. Because they pretend to protract the period of human life, by means of certain nostrums, and even to restore youth, they were called *Immortales*; as they pretended to know all things, they have been called *Illuminati*; and because they have made no appearance for several years, unless the sect of Illuminated which lately started up on the continent derives its origin from them, they have been called the *invisible brothers*. Their society is frequently signed by the letters F. R. C. which some among them interpret *fratres rosis coeli*; it being pretended, that the matter of the philosopher's stone is dew concocted, exalted, &c. Some, who are no friends to free-masonry, make the present flourishing society of free-masons a branch of Rosicrucians; or rather the Rosicrucians themselves, under a new name or relation, viz. as retainers to building. And it is certain, there are some free-masons who have all the characters of Rosicrucians; but how the æra and original of masonry (see MASONRY), and that of Rosicrucianism, here fixed from Naudæus, who has written expressly on the subject, consist, we leave others to judge.

Notwithstanding the pretended antiquity of the Rosicrucians, it is probable that the alchemists, Paracelsists, or fire-philosophers, who spread themselves through almost all Europe about the close of the sixteenth century, assumed about this period the obscure and ambiguous title of Rosicrucian brethren, which commanded at first some degree of respect, as it seemed to be borrowed from the arms of Luther, which were a cross placed upon a rose. But the denomination evidently appears to be derived from the science of chemistry. It is not compounded, says Mosheim, as many imagine, of the two words *rosa* and *crux*, which signify rose and cross, but of the latter of these words, and the Latin *ros*, which signifies dew. Of all natural bodies, dew was deemed the most powerful dissolvent of gold; and the cross, in the chemical language, is equivalent to light, because the figure of a cross \dagger exhibits, at the

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same time, the three letters of which the word *lux*, or light, is compounded. Now *lux* is called, by this sect, the seed or menstruum of the red dragon, or, in other words, that gross and corporeal light which, when properly digested and modified, produces gold. Hence it follows, if this etymology be admitted, that a Rosicrucian philosopher is one who, by the intervention and assistance of the dew, seeks for light, or, in other words, the substance called the philosopher's stone. The true meaning and energy of this denomination did not escape the penetration and sagacity of Gassendi, as appears by his *Examen Philosophiæ Fluddanæ*, sect. 15. tom. iii. p. 261. And it was more fully explained by Renaudot, in his *Conferences Publiques*, tom. iv. p. 87.

At the head of these fanatics were Robert Fludd, an English physician, Jacob Behmen, and Michael Mayer; but if rumour may be credited, the present Illuminated have a head of higher rank. The common principles, which serve as a kind of centre of union to the Rosicrucian society, are the following: They all maintain, that the dissolution of bodies, by the power of fire, is the only way by which men can arrive at true wisdom, and come to discern the first principles of things. They all acknowledge a certain analogy and harmony between the powers of nature and the doctrines of religion; and believe that the Deity governs the kingdom of grace by the same laws with which he rules the kingdom of nature; and hence they are led to use chemical denominations to express the truths of religion. They all hold, that there is a sort of divine energy, or soul, diffused through the frame of the universe, which some call the *archeus*, others the *universal spirit*, and which others mention under different appellations. They all talk in the most superstitious manner of what they call the signatures of things, of the power of the stars over all corporeal beings, and their particular influence upon the human race, of the efficacy of magic, and the various ranks and orders of demons.—These demons they divide into two orders, *Sylphs* and *gnomes*; which supplied the beautiful machinery of Pope's Rape of the Lock. In fine, the Rosicrucians and all their fanatical descendants agree in throwing out the most crude incomprehensible notions and ideas, in the most obscure, quaint, and unusual expressions.—Mosh. Eccl. Hist. vol. iv. p. 266, &c. English edition, 8vo. See BEHMEN and THEOSOPHISTS.

ROSIER. See PILATRE.

ROSIERS-AUX-SALINES, a town of France, in the department of Meurthe, famous for its salt-works. The works that King Stanislaus made here are much admired. It is seated on the river Muerthe, in E. Long. 6. 27. N. Lat. 48. 35.

ROSKILD, formerly the royal residence and metropolis of Denmark, stands at a small distance from the bay of Isefiord, not far from Copenhagen. In its flourishing state it was of great extent, and comprised within its walls 27 churches, and as many convents.—Its present circumference is scarcely half an English mile, and it contains only about 1620 souls. The houses are of brick, and of a neat appearance. The only remains of its original magnificence are the ruins of a palace and of the cathedral, a brick building with two spires, in which the kings of Denmark are interred. Little of the original building now remains. According to Holberg, it was constructed of wood, and afterwards

Rosicru-
cians
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Roskild.

Roskild,
Roslin.

terwards built with stone, in the reign of Canute.—From an inscription in the choir, it appears to have been founded by Harold VI. who is styled king of Denmark, England, and Norway. Some verses, in barbarous Latin, obscurely allude to the principal incidents of his life; adding, that he built this church, and died in 980.—See Coxe's Travels into Poland, Russia, Sweden, and Denmark, vol. ii. p. 525.

ROSLEY-HILL, a village in Cumberland, with a fair on Whit-Monday, and every fortnight after till September 29. for hortes, horned cattle, and linen cloth.

ROSLIN, or ROSKELYN, a place in the county of Mid Lothian in Scotland, remarkable for an ancient chapel and castle. The chapel was founded in 1446, by St Clare, prince of Orkney, for a provost, six prebendaries, and two singing boys. The outside is ornamented with a multitude of pinnacles, and variety of ludicrous sculpture. The inside is 69 feet long, the breadth 34, supported by two rows of clustered pillars, between seven and eight feet high, with an aisle on each side. The arches are obtusely Gothic. These arches are continued across the side-aisles, but the centre of the church is one continued arch, elegantly divided into compartments, and finely sculptured. The capitals of the pillars are enriched with foliage, and a variety of figures; and amidst a heavenly concert appears a cherubin blowing the ancient Highland bagpipes. The castle is seated on a peninsulated rock, in a deep glen far beneath, and accessible by a bridge of great height. This had been the seat of the great family of *Sinclair*. Of this house was Oliver, favourite of James V. and the innocent cause of the loss of the battle of Solway Moss, by reason of the envy of the nobility on account of his being preferred to the command.

Near this place the English received three defeats in one day under John de Segrave the English regent of Scotland in 1302. The Scots, under their generals Cummin and Frazer, had resolved to surprize Segrave; with which view they began their march on the night of Saturday preceding the first Sunday of Lent, and reached the English army by break of day. Segrave, however, had time to have fallen back upon the other division which lay behind him; but either despising his enemies too much, or thinking that he would be dishonoured by a retreat, he encountered the Scots; the consequence of which was, that he himself was made prisoner, and all his men either killed or taken, except such as fled to the other division. As in this routed division there had been no fewer than 300 knights, each of whom brought at least five horsemen into the field, great part of the Scots infantry quickly furnished themselves with their horses; but, as they were dividing the spoils, another division of the English appeared, and the Scots were obliged to fight them also. The English, after a bloody engagement, were defeated a second time; which was no sooner done, than the third and most powerful division made its appearance. The Scots were now quite exhausted; and, pleading the excessive labours they had already undergone, earnestly requested their generals to allow them to retreat while it was yet in their power. Their two generals, who perhaps knew that to be impracticable, reminded them of the cause for which they were fighting, the tyranny of the English, &c. and by these arguments prevailed upon them to fight a third time; though, previous to the engage-

ment, they were reduced to the cruel necessity of putting all the common soldiers whom they had made prisoners to the sword. The victory of the Scots at this time was less complete than the other two had been; since they could not prevent the retreat of the English to Edinburgh, nor Segrave from being rescued from his captivity.

ROSMARINUS, ROSEMARY, a genus of plants belonging to the diandria class, and in the natural method ranking under the 42d order, *Verticillate*. See BOTANY Index.

ROSS, in Herefordshire, in England, 119 miles from London, is a fine old town, with a good trade, on the river Wye. It was made a free borough by Henry III. It is a populous place, famous for cyder, and was noted in Camden's time for a manufacture of iron-wares. There are in it two charity-schools, which lately have been enriched by a legacy of 200l. per annum from Mr Scott, in Dec. 1786, a second *Man of Ross*. And its market and fairs are well stored with cattle and other provisions. At the west end of it there is a fine broad causeway, constructed by Mr John Kyrle, the celebrated *Man of Ross*, who also raised the spire upward of 100 feet, and inclosed a piece of ground with a stone wall, and sunk a reservoir in its centre, for the use of the inhabitants of the town. He died in 1714, aged 90, with the blessing of all who knew him, both rich and poor. The banks of the Wye, between this town and Monmouth, are extremely pleasant. W. Long. 2. 25. N. Lat. 51. 56.

ROSSANO, a strong town of Italy, in the kingdom of Naples, and in the latter Calabria, with an archbishop's see, and the title of a principality. It is pretty large, well peopled, and seated on an eminence surrounded with rocks. There is nothing in this archiepiscopal city that claims much notice; the buildings are mean, the streets vilely paved and contrived. The number of inhabitants does not exceed 6000, who subsist by the sale of their oil, the principal object of their attention, though the territory produces a great deal of good wine and corn.

Rossano probably owes its origin to the Roman emperors, who considered it as a post equally valuable for strength and convenience of traffic. The Marsani, a family of French extraction, possessed this territory, with the title of prince, from the time of Charles II. to that of Alphonfus II. when the last male heir was, by that prince's order, put to death in Ischia, where he was confined for treason. It afterwards belonged to Bona, queen of Poland, in right of her mother Isabella, daughter to Alphonfus II. and at her decease returned to the crown. It was next in the possession of the Aldobrandini, from whom the Borgbesi inherited it. So late as the 16th century, the inhabitants of this city spoke the Greek language, and followed the rites of the eastern church. Here was formerly the most celebrated rendezvous of the Basilian monks in Magna Græcia. E. Long. 16. 52. N. Lat. 39. 45.

ROS SOLIS, *Sun-dew*, an agreeable spirituous liquor, composed of burnt brandy, sugar, cinnamon, and milk-water; and sometimes perfumed with a little musk. It has its name from being at first prepared wholly of the juice of the plant *ros solis*, or *drosera*. See DRUCERA, BOTANY Index.

ROSS-SHIRE, is the most extensive county in Scotland,

Roslin
Roslin.

Rofs-shire. land, measuring about 80 miles in length by almost as much in breadth, and contains 1,776,000 square acres. It is even more extensive than any county of England, if we except Yorkshire; and contains in it the island of Lewis, which is one of the Hebrides, or Western Isles. The county of Sutherland, is the northern boundary of Rofs; on the east it is bounded by the county of Cromarty and the ocean; on the south by the shire of Inverness; and on the west by the ocean.

Rofs-shire is very fertile in corn, and its eastern coast, which is ornamented with different country seats inhabited by the proprietors, has always been regarded as constituting a part of the Lowlands of Scotland; but the western parts rise into mountains, and properly form part of the Highlands, where the vernacular tongue is the Erse or Gaelic.

Among the different waters which are met with in this county, we may mention the friths of Dornoch and Cromarty, the latter of which stretches far into the land from the Moray frith. The river Ockel, which has its source in the parish of Assint in Sutherlandshire, is one of the chief streams of Rofs; and after a course of more than 40 miles, discharges itself into the head of the frith of Dornoch. The river Conan bends its course towards the east coast, and empties itself into the most inland part of the frith of Cromarty. It contains abundance of salmon, and pearls at one period were found not far from its mouth. The frith of Beaully constitutes the boundary of Rofs with Inverness-shire; and this, together with those of Dornoch and Cromarty, are of considerable importance, as they afford access to a great part of it by means of water-carriage. Between the friths of Moray and Cromarty, the coast is bold and rocky, abounding with dreadful precipices and highly romantic views. Along the shore there are numerous caves hollowed out by the hand of nature, some of them extremely deep, and one in particular runs entirely through the rock, a distance of about 150 feet. There are also natural caves on the north side of the frith of Cromarty, some of which, it is said, are of such vast dimensions as to be able to contain about 600 men. From their upper parts there are drops of water continually distilling, and by the petrification thus gradually accomplished, their appearance above resembles the finest marble. In these a variety of birds, take up their residence, and pigeons bring forth their young.

The western coast is deeply indented with arms of the sea called bays, or otherwise lochs; among which are great and little Loch Broom, to the southward of which there is a fresh water lake of considerable extent, known by the name of Loch Mari, in the parish of Gairloch. It is about 16 miles long, but its breadth varies considerably. It contains 24 small islands, which are decorated with fir and other trees. We find the ruins of a druidical edifice on the large island called Mari, round which there is a burying ground made use of by the inhabitants on the north side of Loch Mari as a place of interment.

The cod-fishing has been long established at Gairloch, in the same vicinity; nearly 40,000 cod being annually sent to market by a single proprietor. It has also been long celebrated, as well as Loch-Broom, for the herring-fishery. In the parish of Loch Alsh there are extensive banks of corals, which have been found, upon trial, to be valuable manure.

Rofs-shire. In the level parts of the country between the mountains there are numerous lakes adorned with delightful scenery, and some of them measuring not less than three miles in length. This county is almost wholly mountainous, yet even here we find some which are more memorable than others, and very much calculated to arrest the attention. Tulloch Ard is a mountain of great height, and becomes remarkable on account of the use which was made of it in ancient times. At the commencement of hostilities with any enemy, a barrel of burning tar might be seen flaming from its summit, which was the established signal, in consequence of which the tenants and vassals of Seaforth appeared at the castle of St Donan in twenty-four hours, completely equipped for marching against the foe. The arms of that honourable family have this mountain for a crest. Ben-Uaish, in the parish of Kiltearn, rears its summit above the rest of the mountains, and may be seen across the Moray frith, from the counties of Elgin and Banff. It is constantly covered with snow, from which the family of Foulis must give, if demanded, to his Britannic majesty on any day of the year, a snowball as quit-rent for its tenure of the forest of Uaish. There is plenty of heath and grass around its base, which affords excellent pasture for cattle.

The county of Rofs contains 82 proprietors of land, 7 of whom are of the first class, 3 of the second, 12 of the third, 16 of the fourth, and 44 of the fifth class; the valued rent of all these amounting to 75,040l. 10s. 3d. Scots money, as settled in the reign of Charles I. while the real rent is computed at not less than 38,711l. sterling.

The grains usually cultivated in the shire of Rofs are barley, oats, pease and beans, potatoes, and wheat on particular occasions. A great part of the county, however, is converted into grass, owing to the want of markets for the consumption of other productions; and those who adopt this plan find it more for their interest than that which is usually followed in more fortunate situations. The soil in general is good; some of it bears luxuriant crops, and the vast improvements in modern agriculture, if carefully attended to, would make the most unfavourable spots become worthy of cultivation. Lime, marl, and shelly sand, constitute the manure which is used by gentlemen and extensive farmers, while smaller tenants substitute a compost of earth and dung, in the proportion of three loads of the former to one of the latter. The country in general lies open, but the farms of gentlemen and some of the wealthier tenants are inclosed; and such as are so are reckoned one half more valuable than those which are open.

Would proprietors in this county grant their tenants leases for 19 at least, instead of 5 or 7 years, they would hold out a stimulus to industry and improvement which cannot possibly be felt as circumstances now stand. What encouragement has a man to bestow money and labour on the property of another, of which he knows he must be deprived in the course of seven years! The man who holds a farm during such a trifling period, must tear all out of it he can at the least possible expence, and leave it to the proprietor, when he departs, little better than a common.

The proprietors of the county of Rofs have of late become very attentive to different species of improve-

Ross-shire ments; and in the lower parts of it we meet with excellent roads, as well as bridges built over every rivulet of any extent whatever, which facilitate travelling, and render it agreeable. The moors which once exhibited nothing but sterility, are now covered with firs; while pines, with different species of timber, surround their houses. The fir, elm, oak, and beech, are found to thrive in this county, as well as various kinds of fruit trees, not even excepting apricots, peaches, and plums. In the central district of Ross still remains the extensive forest of Fainish, about 20 miles in length. The western district is very extensive; but its general aspect is by no means inviting. From the top of a mountain a stranger sees nothing around him but a desolate and dreary region, vast piles of rocky mountains with forked summits; yet interspersed among these are many beautiful and fertile vales, exhibiting, however, a great variety of soil, owing to the peculiarity of their situation.

The climate may be said to be as unequal as the face of the country itself, since no two days in succession can at all be depended on at any given period of the year. Indeed the seasons may not improperly be regarded as always wet, and the lower classes of the inhabitants especially consider almost every thing as an indication of rain. If mist settle on the tops of the hills; if the clouds be heavy; if a crow chatter, or if the day be hot or cold, rain, in the judgement of a Highlander, may be assuredly expected to follow. From thus having what some have denominated a weeping climate, it is easy to see that it must be much better adapted for pasturage than agriculture; yet invincible patience, perseverance, and a competent knowledge of husbandry have, in many parts of it, surmounted the obstacles that such a climate must ever throw in the way of improvement.

The mineral productions are not very abundant, but some of them are of considerable importance in the arts and manufactures. Here there is plenty of freestone, and different species of limestone, some of which are of the nature of marble. Marl is also to be met with, and ironstone in great abundance. A copper mine in the northern district of the parish of Applecross, has been considered by Williams, in his Mineral Kingdom, as equally rich with any mine of the same metal to be met with in the British empire. There is a rich ore of iron in the parish of Alness; and in the same vicinity there is a vein of lead, containing a large proportion of silver. Indications of lead ore have likewise been met with in the parish of Kiltearn. There is a chalybeate spring near the storehouse of Foulis, the good effects of which were experienced many years ago; but of the medical properties of the spring at Tienleod, known by the name of St Colman's Well, we have no certain accounts, although the votaries of superstition have frequently drunk of its waters, and then suspended some rags from the branches of the surrounding trees, as an oblation to the saint.

This county contains three royal boroughs, viz. Tain, Dingwall, and Fortrose, a description of which will be found in this work, in the order of the alphabet, as well as of Lewis, one of the Hebrides, and its chief town Stornoway, which have sometimes been taken notice of in a general description of Ross-shire, although wholly detached from it.

In this county there are many remains of antiquity, the most memorable of which we shall here enumerate. There is a Druidical circle or temple on the eastern part of the county, and parish of Kiltearn, consisting of twelve large stones placed perpendicularly, and so arranged as to form two ovals, which are united together, and having equal areas, measuring 13 feet each from east to west, and ten feet in the middle from north to south.

There is a large obelisk in the parish of Nigg, with figures of different animals on one side of it, and a cross on the other, executed with considerable taste. The former is conjectured to be of greater antiquity than the latter. According to tradition, it was erected to perpetuate a shipwreck suffered by the Danes, at which time three sons of the king of Denmark are supposed to have perished, and to have been interred in the place on which the obelisk stands. In the churchyard of Nigg there once stood another of a similar nature, likewise supposed to have been erected by the Danes, which in consequence of a violent wind was thrown down about the year 1725. The sculpture is still in a state of tolerable preservation, and resembles that which is found on the other monuments left by that people in different parts of Scotland.

Craigchenichan in the parish of Kincardine, is memorable for being the place where the celebrated marquis of Montrose fought his last battle, when he was defeated by Colonel Strachan. Having swum across the Kyle, he lay for some time concealed in Affint; but on being discovered, he was apprehended, and sent prisoner to Inverness. The ground on which the battle was fought derived its name from the issue of that interesting day; for the signification of Craigchenichan is, the *Rock of Lamentation*. There is still seen in the parish of Avoch, the foundation of a large castle of great antiquity, on the summit of a hill in the neighbourhood of Castletown Point, elevated about 200 feet above the level of the sea. Some people call this Ormondy hill; and tradition has given the name of Douglas castle to the ruins. It covers a space of ground in the form of a parallelogram, the longest sides of which measure 350, and the shortest 160 feet, so that the whole area contains upwards of 6,300 square yards.

According to tradition, there are many places in the eastern district of this county where bloody battles were fought, either with the invading Danes and Norwegians, with daring plunderers, or between rival clans, who bitterly contended for superiority. Large collections of stones, called *cairns*, direct the traveller to the spots where the remains of the dead were deposited, who had fallen in the field of battle. There are manifest indications of an encampment on a large plain to the westward of the church of Eddertown, where a battle is said to have been fought with the invading Danes. In its vicinity there is an extensive circle of earth, about two feet higher than the circumjacent ground, being flat at the top, with an obelisk in the centre about 10 feet in height, on which a number of rude figures may still be traced. This is regarded as the tomb of some Danish prince.

The abbey and castle of Lochlin are the most remarkable remains of antiquity in the parish of Fearn, the former of which is said to have been first built of mud, but afterwards constructed of more durable materials.

Rofs-shire. terials. It measured 99 feet in length within walls, was 25 feet six inches broad, and its walls were 24 feet in height. This abbey continued to be employed as a place of worship till the month of October 1742, at which time the roof fell in during divine service, and 36 persons are said to have lost their lives by this melancholy accident. The castle of Lochlin is supposed to be more than five centuries old. It is situated on an eminence about six miles to the eastward of Tain, and seems evidently to have been erected as a place of security against the sudden incursions of any invading enemy. Its form resembles that of a double square united at the angles, in which union there is a staircase leading to the top of it, which is about 60 feet in height. The squares are not of equal and similar dimensions, the one towards the west measuring 20, and the other towards the east about 38 feet every way, fortified with three turrets of such dimensions, that any one of them can contain three or more men with ease. The castle of Caddboll, of which few remains can now be traced, is supposed to be more ancient than that of Lochlin, deriving all its interest from a singular tradition, viz. that no person ever died in it, though inhabited for ages;—a circumstance, however, which may be satisfactorily accounted for without recurring to the marvellous. Many of the inhabitants becoming weary of life, requested to be removed; and a lady May in particular, whose residence it was about 100 years before the present period, and whose lingering diseases made her long for death, begged that she might be carried out of it, which was at last granted in consequence of her importunity; and we are told that after her removal she instantly expired. The cave or subterraneous dwelling in the district of Applecrofs, is considered by many, and with great probability, as the quondam magazine of plunder, rather than the habitation of men; and perhaps the same may be said of every other place of a similar nature to be met with in this county. The castle of Donan in the peninsula of Kintail, which is now in ruins, was probably built in the reign of Alexander III. of Scotland, with a view to oppose the incursions of the Danes. It was demolished by a ship of war in the year 1719, after the battle of Glensheil, a mile above which some of the bullets fired against it are occasionally found, employed by the people as weights in selling butter and cheese.

The chief clans in Rofs shire are the Mackenzies, Rosses, Frazers, Mackays, Macraes, and the Munroes, all of whom speak Gaelic, and wear the Highland dress, esteeming the earl of Seaforth as their head, being the lineal descendant of Mackenzie Lord Seaforth, who was attainted for his concern in the rebellion. This county contains 30 parochial districts, sends one member to the British parliament, and by a census taken in 1801, in consequence of the population act, it was found to contain 52,291 inhabitants, being an increase of 9,798 since the return to Dr Webster in 1755. The following table exhibits a view of the population of this county according to its parishes at two different periods.

Parishes.	Population in 1755.	Population in 1790—1798.
Alnefs	1090	1121
Applecrofs	835	1734
Avoch	1457	1318
Contin	1949	2500

Parishes.	Population in 1755.	Population in 1790—1798.	Rofs-shire Rostoff.	
5 Dingwall	1030	1379	}	
Eddertown	780	1000		
Fearn	1898	1600		
Gairloch	2050	2200		
Glenshiel	509	721		
10 Killearnan	945	1147		
Kilmuir, Easter	1095	1975		
Wester	1367	1805		
Kiltearn	1570	1616		
Kincardine	1743	1600		
15 Kintail	698	840		
Kirkmichael	1371	1234		
Lochalbh	613	1334		
Lochbroom	2211	3500		
Lochcarron	771	1068		
20 Logie, Easter	850	1125		
Nigg	1261	1133		
Roskeean	1958	1700		
Rosemarkie	1140	1262		
Tain	1870	2100		
25 Urquhart	2590	2901		
Urray	2456	1860		
<i>Island of Lewis.</i>				
Barvas	1995	2006		
Lochs	1267	1768		
Stornaway	1812	2639		
30 Uig	1312	1898		
Total, 42,493		50,146		
		42,493		
		Increase, 7,653		

ROSTOCK, a town of Germany, in the circle of Upper Saxony, and duchy of Mecklenburg, with an university and a very good harbour. It is the best town in this country; and has good fortifications, with an arsenal. The duke has a strong castle, which may be looked upon as a citadel. It is divided into three parts, the Old, the New, and the Middle Towns. It was formerly one of the Hanseatic towns, and is still Imperial, under the protection of the duke of Mecklenburg. It is seated on a lake where the river Varne falls into it, and carries large boats. The government is in the hands of 24 aldermen, elected out of the nobility, university, and principal merchants; four of whom are burgomasters, two chamberlains, two stewards for the river, and two judges of civil and criminal matters. These 24 are called the Upper House, and have in a manner the whole executive power lodged in them, with the power of coining money, and electing officers. There is also a common council of 100 inferior citizens, who are summoned to give their advice upon extraordinary emergencies relating to the whole community. The principal things worth seeing are the fortifications, the prince's palace, the stadthouse, the arsenal, and the public library. The town is famous for good beer, which they export in great quantities. Some years ago they had no less than 250 privileged brewers, who, it is said, brewed so many thousand tuns a year, besides what particular persons brew for their own use. E. Long. 12. 55. N. Lat. 54. 8.

ROSTOFF, or ROSTOW, a large town of the Russian empire, and capital of a territory of the same name, with

Rostoff
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Rota.

an archbishop's see, seated on the lake Coteri, in E. Long. 40. 25. N. Lat. 57. 5. The duchy of Rostoff is bounded on the north by Jaroslaw, on the east by Sutdal, on the south by the duchy of Moscow, and on the west by that of Tuere.

ROSTRA, in antiquity, a part of the Roman forum, wherein orations, pleadings, funeral harangues, &c. were delivered.

ROSTRUM, literally denotes the beak or bill of a bird; and hence it has been figuratively applied to the beak or head of a ship.

ROSYCRUCIANS. See ROSICRUCIANS.

ROT, a very fatal disease incident to sheep, arising from wet seasons, and too moist pasture. It is very difficult of cure, and is attended with the singular circumstance of a kind of animals being found in the blood-vessels. See SHEEP, diseases of, under FARRIERY.

ROTA, the name of an ecclesiastical court of Rome, composed of 12 prelates, of whom one must be a German, another a Frenchman, and two Spaniards; the other eight are Italians, three of whom must be Romans, and the other five a Bolognese, a Ferraran, a Milanese, a Venetian, and a Tuscan.—This is one of the most august tribunals in Rome, which takes cognizance of all suits in the territory of the church, by appeal; as also of all matters, beneficiary and patrimonial.

ROTA ARISTOTELICA, or *Aristotle's Wheel*, denotes a celebrated problem in mechanics, concerning the motion or rotation of a wheel about its axis, so called because Aristotle was the first who took notice of it.

The difficulty of it may be represented in the following manner. While a circle makes one revolution on its centre, advancing at the same time in a right line along a plane, it describes on that plane, a right line which is equal to its circumference. Now, if this circle carry with it another smaller circle, concentric with it, like the nave of a coach wheel; then this smaller circle or nave, will describe a line in the time of the revolution, which shall be equal to that of the large wheel or circumference itself, because its centre advances in a right line as fast as that of the wheel does, being in reality the same with it.

Aristotle attempted to solve this problem, but his solution can only be regarded as a good account of the difficulty.

It was next attempted by Galileo, who had recourse to an infinite number of infinitely small vacuities in the right line described by the two circles, and imagined that the little circle never applies its circumference to those vacuities; but in reality only applies it to a line equal to its own circumference, though it appears to have applied it to a much larger. This, however, is nothing to the purpose.

According to Tacquet, the little circle making its rotation more slowly than the great one, does, on that account, describe a line longer than its own circumference; yet without applying any point of its circumference to more than one point of its base. This is no more satisfactory than the former.

After the fruitless endeavours of many great men, M. Dortous de Meyran, a French gentleman, had the good fortune to hit upon a solution which, after being fully examined by a committee of the Academy of Sciences,

was declared to be satisfactory. The following is his solution.

The wheel of a coach is only acted on, or drawn in a right line; its rotation or circular motion arises purely from the resistance of the ground. Now this resistance is equal to the force which draws the wheel in a right line, as it defeats that direction, and therefore the causes of the two motions are equal. The wheel therefore describes a right line on the ground equal to its circumference.

On the contrary, the nave is drawn in a right line by the same force as the wheel, but it only turns round because the wheel does so, and can only turn in the same time with it. Hence, its circular velocity is less than that of the wheel, in the ratio of the two circumferences, and therefore its circular motion is less than the rectilinear one. Since it must describe a right line equal to that of the wheel, it can only do it by partly sliding and partly revolving, the sliding part being more or less as the nave itself is smaller or greater.

ROTACEÆ (from *rota*, "a wheel"), the name of the 20th order in Linnaeus's Fragments of a Natural Method; consisting of plants with one flat, wheel-shaped petal, without a tube. See BOTANY.

ROTALA, a genus of plants belonging to the triandria class. See BOTANY *Index*.

ROTANG. See CALAMUS.

ROTATION, is a term which expresses the motion of the different parts of a solid body round an axis, and distinct from the progressive motion which it may have in its revolution round a distant point. The earth has a rotation round its axis, which produces the vicissitudes of day and night; while its revolution round the sun, combined with the obliquity of the equator, produces the varieties of summer and winter.

The mechanism of this kind of motion, or the relation which subsists between the intensity of the moving forces, modified as it may be by the manner of application, and the velocity of rotation, is highly interesting, both to the speculative philosopher and to the practical engineer. The precession of the equinoxes, and many other astronomical problems of great importance and difficulty, receive their solutions from this quarter: and the *actual performance* of our most valuable machines cannot be ascertained by the mere principles of equilibrium, but require a previous acquaintance with certain general propositions of rotatory motion.

It is chiefly with the view of assisting the engineer that we propose to deliver in this place a few fundamental propositions; and we shall do it in as familiar and popular a manner as possible, although this may cause the application of them to the abstruse problems of astronomy to be greatly deficient in the elegance of which they are susceptible.

When a solid body turns round an axis, retaining its shape and dimensions, every particle is actually describing a circle round this axis, and the axis passes through the centre of the circle, and is perpendicular to its plane. Moreover, in any instant of the motion, the particle is moving at right angles with the radius vector, or line joining it with its centre of rotation. Therefore, in order to ascertain the direction of the motion of any particle P (fig. 1.), we may draw a straight line PC from the particle perpendicular to the axis AB of rotation.

Rota
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Rotation.

Definition
and interesting
nature of
the subject.

Plate
CCCCXLVI.
Fig. 1.
tation.

Rotation. $tation$. This line will lie in the plane of the circle Pmn of rotation of the particle, and will be its radius vector; and a line PQ drawn from the particle perpendicular to this radius vector will be a tangent to the circle of rotation, and will have the direction of the motion of this particle.

3 The whole body being supposed to turn together, it is evident, that when it has made a complete rotation, each particle has described a circumference of a circle, and the whole paths of the different particles will be in the ratio of these circumferences, and therefore of their radii; and this is true of any portion of a whole turn, such as $\frac{1}{2}$, $\frac{1}{4}$, or 20 degrees, or any arch whatever; therefore the velocities of the different particles are proportional to their radii vectors, or to their distances from the axis of rotation.

And, lastly, all these motions are in parallel planes, to which the axis of rotation is perpendicular.

5 How the rotation of different bodies in respect of velocity may be compared.

When we compare the rotations of different bodies in respect of velocity, it is plain that it cannot be done by directly comparing the velocity of *any* particle in one of the bodies with that of *any* particle of the other; for, as all the particles of each have different velocities, this comparison can establish no ratio. But we familiarly compare such motions by the number of complete turns which they make in equal times, and we say that the second hand of a clock turns 60 times faster than the minute hand; now this comparison is equally just in any part of a turn as in the whole. While the minute hand moves round one degree, the second hand moves 60; therefore, as the length or number of feet in the line uniformly described by a body in its progressive motion is a proper measure of its progressive velocity, so the number of degrees described by *any* particle of a whirling body in the circumference of its circle of rotation, or the angle described by *any* radius vector of that body, is a proper measure of its velocity of rotation. And in this manner may the rotation of two bodies be compared; and the velocity is with propriety termed **ANGULAR VELOCITY**.

6 An angle is directly as the length of the circumference on which it stands, and inversely as the radius of the circle, and may be expressed by the fraction of which the numerator is the arch, and the denominator the radius. Thus the angle PCp may be expressed by $\frac{Pp}{PC}$. This fraction expresses the portion of the radius which is equal to the arch which measures the angle; and it is converted into the usual denomination of degrees, by knowing that one degree, or the 360th part of the circumference, is $\frac{1}{57.296}$ of the radius, or that

an arch of 57.296 degrees is equal to the radius.

7 Effects, &c. of the several particles connected in one body on each other.

When a solid body receives an impulse on any one point, or when that point is anyhow urged by a moving force, it cannot move without the other points also moving. And whatever is the motion of any particle, that particle must be conceived as urged by a force precisely competent to the production of that motion, by acting immediately on the particle itself. If this is not the particle immediately acted on by the external force, the force which really impels it is a force arising from the cohesion of the body. The particle immediately impelled by the external force is pressed towards its neigh-

Rotation. bouring particles, or is drawn away from them; and, by this change of place, the connecting forces are brought into action, or are excited; they act on the particles adjoining, and change, or tend to change, their distances from the particles immediately beyond them; and thus the forces which connect this next series of particles are also excited, and another series of particles are made to exert their forces; and this goes on through the body till we come to the remote particle, whose motion we are considering. The forces which connect it with the adjoining series of particles are excited, and the particle is moved. We frequently say that the external moving force is propagated through the body to the distant particle; but this is not accurate. The particle is really and immediately moved by the forces which connect it with those adjoining. It will greatly assist our conception of the manner in which motion is thus produced in a distant particle, if we consider the particles as so many little balls, connected with each other by slender spiral springs like cork-screws. This would compose a mass which would be compressible, or which could be stretched, &c. And if we give an impulse to one of these balls, we shall set the whole assemblage in motion round any axis which we may suppose to support it. Now any one of these balls is really and immediately moved by the elasticity of the spiral wires which join it to its neighbours.

8 We are but little acquainted with the nature of these connecting forces. It can be learned only by the phenomena which are their effects. These are various, almost beyond description; but the mechanical philosopher has little to do with this variety. The distinctions which are the immediate causes of fluidity, of hardness, softness, elasticity, ductility, are not of very difficult conception. There is one general fact which is sufficient for our present purpose—the forces by which the particles of bodies act on each other are equal. This is a matter of unexcepted experience; and no other foundation can be given to it as a law of mechanical nature.

The forces by which the particles of bodies act on each other are equal, and the consequences.

9 An immediate consequence of this law is, that when two external forces A and B are in equilibrium by the intervention of a solid body (or rather when a solid body is in equilibrium between two external forces), these forces are equal and opposite; for the force A is in fact in immediate equilibrium with the opposite forces exerted by the particle to which it is applied, and is therefore equal and opposite to the force resulting from the combination of all the forces which connect that particle with the series of particles immediately adjoining. This resulting force may with propriety be called the equivalent of the forces from the combination of which it results. The use of this term will greatly abbreviate language. This first set of connecting forces consists of a number of distinct forces corresponding to each particle of the series, and each force has an equal and opposite force corresponding to it: therefore the compound force by which the first series of particles acts on that to which the external force A is applied, is equal and opposite to the compound force which connects this first series with the next series. And the same thing must be said of each succeeding series of particles, till we come at last to the particle to which the external force B is immediately applied. The force exerted by this particle is equal and opposite to that external

Rotation. fernal force; and it is equal to the compound force exerted by the second series of particles on that side; therefore the forces A and B are equal and opposite.

10 It results from this proposition, that *when any number of external forces are applied to a solid body, and it is in equilibrio between them, they are such as would be in equilibrio if they were all applied to one point.* Let the forces *a A, b B, c C* (fig. 2.), be applied to three particles of the solid body. Therefore *a A* is immediately in equilibrium with an equal and opposite force *A α*, resulting from the composition of the force AD, which connects the particles A and B, and the force AE which connects A with C. In like manner *b B* is immediately in equilibrio with *B β*, the equivalent of the forces BF and BG; and *c C* is in immediate equilibrio with the equivalent *C γ* of the forces CH and CI. We shall conceive it very clearly if we suppose the three forces *A a, B b, C c*, to be exerted by means of threads pulling at the solid body. The connecting parts between A and B, as also between A and C, are stretched. The lines AB and AC may be considered as elastic threads. Each thread is equally stretched through its whole length; and therefore if we take AD to represent the force with which the particle A is held back by the particle B, and if we would also represent the force with which B is held back by A, we must make BF equal to AD. Now (N^o 9.), the forces AD and BF are equal and opposite; so are the forces AE and CI; so are the forces CH and BG. Now it is evident, that if the six forces AD, BF, BG, CH, CI, AE, were applied to one particle, the particle would be in equilibrio; for each force is accompanied by an equal and opposite force: and if the force *A α* were applied in place of AD, AE, the equilibrium would remain, because *A α* is equivalent to AD and AE. The same is true of *B β* and *C γ*. Therefore if the three forces *A α, B β, C γ*, were applied to one point, they would be in equilibrio. Consequently if the three forces *a A, b B, c C*, which are respectively equal and opposite to *A α, B β, C γ*, are so applied, they will be in equilibrio. It is plain that this demonstration may be extended to any number of forces.

Fig. 2.

We may just remark by the bye, that if three forces are thus in equilibrio, they are acting in one plane; and, if they are not parallel, they are really directed to one point: for any one of them must be equal and opposite to the equivalent of the other two; and this equivalent is the diagonal of a parallelogram, of which the other two are the sides, and the diagonal and sides of any parallelogram are in one plane; and since they are in one plane, and any one of them is in equilibrio with the equivalent of the other two, it must pass through the same point with that equivalent, that is, through the point of concurrence of the other two.

These very simple propositions are the foundation of the whole theory of statics, and render it a very simple branch of mechanical science. It has been made abstruse by our very attempts to simplify it. Many elab-

orate treatises have been written on the fundamental property of the lever, and in them all it has been thought next to an insuperable difficulty to demonstrate the equilibrium of a straight lever when the parallel forces are inversely as their distances from the fulcrum.

We think the demonstrations of Archimedes, Fontenay, D'Alembert, and Hamilton, extremely ingenious; but they only bring the mind into such a state of conception that it cannot refuse the truth of the proposition; and, except Mr Hamilton's, they labour under the disadvantage of being applicable only to commensurable distances and forces. Mr Vince's, in the Philosophical Transactions for 1794, is the most ingenious of them all; and it is wonderful that it has not occurred long ago. The difficulty in them all has arisen from the attempt to simplify the matter by considering a lever as an inflexible straight line. Had it been taken out of this abstract form, and considered as what it really is, a natural body, of some size, having its particles connected by equal and opposite forces, all difficulty would have vanished.

That we may apply these propositions to explain the motion of rotation, we must recollect an unquestionable proposition in dynamics, that the force which produces any motion is equal and opposite to the force which would prevent it, when applied in the same place and in the same line, or which would extinguish it in the same time in which we suppose it to be produced. Therefore the force which is excited and made to act on any particle of a body, by the action of an external force on another particle, so as to cause it to move round an axis, is equal and opposite to the force which, when applied to that particle in the opposite direction, would be in equilibrio with the external force.

The only distinct notion we can form of the magnitude of any moving force is the quantity of motion which it can produce by acting uniformly during some given time. This will be had by knowing the velocity which it will produce in a body of known bulk. Thus we know that the weight of ten pounds of matter acting on it for a second will cause it to fall 16 feet with an uniformly accelerated motion, and will leave it in a state such that it would move on for ever at the rate of 32 feet in a second; which we call communicating the velocity of 32 feet per second. In the same manner, the best way of acquiring a distinct conception of the rotatory effort of a moving force, is to determine the quantity of rotatory motion which it can produce by acting uniformly during some known time.

Let a solid body turn round an axis passing through the point C (fig. 3.) perpendicular to the plane of this figure. Let this rotation be supposed to be produced by an external force acting in the direction FP. Let this force be such, that if the body were free, that is, unconnected with any axis supported by fixed points, it would, by acting uniformly during a small moment of time, cause its centre of gravity G (A) to describe a line of a certain length parallel to FP. This we know

(A) We take this term in its usual sense, as expressing that point where the sum of the equal gravitations of each particle may be supposed united. It is by no means (though commonly supposed) the point where the equivalent of the real gravitations of the particles may be supposed to act, and to produce the same motion as when

Rotation. to be the effect of a moving force acting on any solid body in free space. The centre of gravity will always describe a straight line. Other particles may chance to move differently, if the body, besides its progressive motion, has also a motion of rotation, as is generally the case. Draw GI parallel to FP, and make GI to GC as the velocity which the external force would communicate to the centre of the body (if moving freely, unconnected with a supported axis), to the velocity which it communicates to it in the same time round the axis Cc. Also let m be the number of equal particles, or the quantity of matter in the body. Then $m.GI$ will express the quantity of motion produced by this force, and is a proper measure of it as a moving force; for GI is twice the space described during the given time with an uniformly accelerated motion.

25 But since the body cannot move any way but round the axis passing through C, the centre G will begin to move with the velocity, and in the direction, GH perpendicular to the line CG (N^o 2.) And any particle A can only move in the direction AL, perpendicular to CA. Moreover, the velocities of the different particles are as their radii vectores; and CG is actually equal to the line GH, which expresses the velocity of a particle in G. Therefore CA will in like manner express the velocity of the particle A. If A express its quantity of matter, A·CA will express its quantity of motion, and will represent the force which would produce it by acting uniformly during the moment of time.

26 We expressed the external moving force by $m.GI$. Part of it is employed in exciting the force A·CA, which urges the particle A. In order to discover what part of the external force is necessary for this purpose, draw CP perpendicular to FP. The preceding observations show us, that the force wanted at A is equal to the force which, when applied at P in the direction FP, would balance the force A·CA applied to A in the direction LA. Therefore (by the property of the lever ACP, which is impelled at right angles at A and P) we must have CP to CA as the force A·CA to the balancing pressure, which must be exerted at P, or at any point in the line FP. This pressure is therefore $\frac{A \cdot CA \cdot CA}{CP}$ or $\frac{A \cdot CA^2}{CP}$. As we took $m.GI$ for the mea-

sure of the whole external force, GI being the velocity which it would communicate to the whole body moving in free space, we may take $G i$ for the velocity which would be communicated to the whole body by the pressure $\frac{A \cdot CA^2}{CP}$, and then this pressure will be

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properly expressed by $m.G i$. In like manner, $m.i k$ may express the portion of the external force employed in communicating to another particle B the motion which it acquires; and so on with respect to all the particles of the body.

Rotation.

It must be desirable to see the manner in which the forces are really concerned in giving motion to the different particles.

Suppose the external force to act immediately on the external particle F. The line FC connecting this particle with the axis in C is either stretched or compressed by the effort of giving motion to a remote particle A. It is plain that, in the circumstances represented in the figure, the line FC is compressed, and the axis is pushed by it against its supports in the direction Cλ; and the body must, on this account, resist in the opposite direction Ff. The particle A is dragged out of its position, and made to begin its motion in the direction AL perpendicular to AC. This cannot be, unless by the connexion of the two lines AC, AF. A resists by its inertia, and therefore both AC and AF are stretched by dragging it into motion. By this resistance the line AC tends to contract itself again, and it pulls C in the direction Cc, and A in the direction Aa; and if we take Cε to represent the action on C, Aa must be taken equal to it. In like manner AF is stretched and tends to contract, pulling F in the direction Fφ and A in the direction Aα with equal forces. Thus the particle A is pulled in the directions Aa and Aα; the particle F is pulled in the direction Fφ, and pushed in the direction Ff; and C is pulled in the direction Cc, and pushed in the direction Cε. Aa and Aα have produced their equivalent AL, by which A is dragged into motion; Ff and Fφ produce their equivalent Fg, by which the external force is resisted, and Fg is equal and opposite to $m.G i$; the forces Cc and Cε produce their equivalent Cd by which the axis is pressed on its supports, and this is resisted by an equal and opposite reaction of the supports in the direction dC. The forces therefore which excite in the body the motion A.AL are both external, viz. the impelling force gF, and the supporting force dC. AL therefore is not only the immediate equivalent of Aa and Aα, but also the remote equivalent of gF and dC. We may therefore ascertain the proportion of gF (that is, of $m.G i$) to AL (that is, of A.AC), independent of the property of the lever. gF is to AL in the ratio compounded of the ratios of gF to Fφ or Aα, and of Aα to AL. But we shall obtain it more easily by considering gF as the equivalent of AL and dC. By what has been demonstrated above, the

P p directions

acting on each particle separately. It is this point only when all the particles gravitate alike, and in parallel directions. If the body were near the centre of the earth, for instance, the gravitations of the different particles would neither be nearly equal nor in parallel lines; and the place of its real centre of gravity, on which the equivalent of its whole gravitation may be supposed to act, would be very different from G. Were we to denominate the point G, as usually determined, by its mathematical properties, we would call it the CENTRE OF POSITION; because its distance from any plane, or its position with respect to any plane, is the average distance and position of all the particles. The true designation of G is "the point through which if any plane whatever be made to pass, and if perpendiculars to this plane be drawn from every particle, the sum of all the perpendiculars on one side of this plane is equal to the sum of all the perpendiculars on the other side."

If we were to denominate G by its mechanical properties, we would call it the CENTRE OF INERTIA; for this is equal in every particle, and in the same direction: and it is not in consequence of gravity, but of inertia, that the body describes with the point G a line parallel to FP. We wish this remark to be kept in mind.

Rotation. directions of the three forces gF , AL , and dC must meet in one point E , and gF must be equal to the diagonal tE of the parallelogram $Eete$, of which the sides Ee , Ee are respectively equal to AL and dC . Now tE is to Ee as the sine of the angle tEe to the sine of the angle Ete , that is, as the sine of CEA to the sine of CEP , that is, as CA to CP , as we have already demonstrated by the property of the lever. We preferred that demonstration as the shortest, and as abundantly familiar, and as congenial with the general mechanism of rotatory motions. And the intelligent reader will observe, that this other demonstration is nothing but the demonstration by the lever expanded into its own elements. Having once made our readers sensible of this internal process of the excitement and operation of the forces which connect the particles, we shall not again have recourse to it.

17 It is evident that the sum of all the forces gF , or $m.Gi$, must be equal to the whole moving force $m.GI$. that $m.P\rho$ may be $=m.GI$. That is, we must have $m.GI = \int \frac{A.CA^2}{CP}$; or, because CP is given when the position of the line FP is given, we must have $m.GI = \int \frac{A.CA^2}{CP}$, where both A and CA are variable quantities.

18 This equation gives us $m.GI.CP = \int A.CA^2$. Now we learn in mechanics that the energy of any force applied to a lever, or its power of producing a motion round the fulcrum, in opposition to any resistance whatever, is expressed by the product of the force by the perpendicular drawn from the fulcrum on the line of its direction. Therefore we may call $m.GI.CP$ the momentum (B), energy, or rotatory effort, of the force $m.GI$. And in like manner $\int A.CA^2$ is the sum of the momenta of all the particles of the body in actual rotation; and as this rotation required the momentum $m.GI.CP$ to produce it, this momentum balances, and therefore may express the energy of all the resistances made by the inertia of the particles to this motion of rotation. Or $\int A.CA^2$ may express it. Or, take ρ to represent the quantity of matter in any particle, and r to represent its radius vector, or distance from the axis of rotation, $\int \rho.r^2$ will express the momentum of inertia, and the equilibrium between the momentum of the external force $m.GI$, acting in the direction FP , and the combined momenta of the inertia of all the particles of the whirling body, is expressed by the equation $m.GI.CP = \int A.CA^2 = \int \rho.r^2$. The usual way of studying elementary mechanics gives us the habit of associating the word equilibrium with a state of rest; and this has made our knowledge so

imperfect. But there is the same equilibrium of the actual immediate pressures when motion ensues from the action. When a weight A descending raises a smaller weight B by means of a thread passing over a pulley, the thread is equally stretched between the acting and resisting weights. The strain on this thread is undoubtedly the immediate moving force acting on B , and the immediate resisting force acting on A .

The same equation gives us $GI = \frac{\int \rho.r^2}{m.CP}$.

Now $GI : CG = \frac{\int \rho.r^2}{m.CP} : CG = \int \rho.r^2 : m.CP.CG$; 19

but CG represents the velocity of the centre. Hence we derive this fundamental proposition $\int \rho.r^2 : m.CP.CG = GI : CG$; or, that $\int \rho.r^2$ is to $m.CP.CG$ as the velocity of the body moving freely to the velocity of the centre of gravity round the axis of rotation.

Therefore the velocity of the centre is $= \frac{m.GI.CP.CG}{\int \rho.r^2}$. 20

The velocity of any point B is $= \frac{m.GI.CP.CB}{\int \rho.r^2}$. 21

This fraction represents the length of the arch described by the point B in the same time that the body unconnected with any fixed points would have described GI .

Therefore the angular velocity (the arch divided by the radius) common to the whole body is $= \frac{m.GI.CP}{\int \rho.r^2}$. 22

It may be here asked, how this fraction can express an angle? It evidently expresses a number; for both the numerator and denominator are of the same dimensions, namely, surfaces. It therefore expresses the portion of the radius which is equal to the arch measuring the angle, such as $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, &c. And to have this angle in degrees, we have only to recollect that the radius is 57,2958.

This angular velocity will be a maximum when the axis of rotation passes through the centre of gravity G . For draw from any particle A the line Aa' perpendicular to CG , and join AG . Then $CA^2 = GA^2 + CG^2 \pm 2CG \times Ga$. Therefore $\int CA^2 = \int GA^2 + \int CG^2 \pm \int 2CG \times Ga = \int GA^2 + m.CG^2 \pm \int 2CG \times Ga$. But, by the nature of the centre of gravity, the sum of all the $+Ga$ is equal to that of all the $-Ga$; and therefore $\pm \int 2CG \times Ga$ is nothing; and therefore $\int CA^2 = \int GA^2 + m.CG^2$. 23

Therefore $\int CA^2$ or $\int \rho.r^2$ is smallest, and $\frac{m.GI.CP}{\int \rho.r^2}$ is greatest when $m.CG^2$ is nothing, or when CG is nothing; that is, when C and G coincide.

The absolute quantity of motion in the whirling body, 24

(B) The word *momentum* is very carelessly used by our mechanical writers. It is frequently employed to express the product of the quantity of matter and velocity, that is, the quantity of motion; and it is also used (with strict propriety of language) to express the power, energy, or efficacy of a force to produce motion in the circumstances in which it acts. We wish to confine it to this use alone. Sir Isaac Newton adhered rigidly to this employment of the term (indeed no man exceeds him in precision of expression), even when he used it to express the quantity of motion: for in these instances the energy of this quantity of motion, as modified by the circumstances of its action, was always in the ratio of the quantity of motion.

Rotation dy, or the sum of the motions of all its particles, is Rotation
 $\frac{m \cdot GI \cdot CP \cdot \int \rho \cdot r}{\int \rho r^2}$. For the motion of each particle is
 $\frac{m \cdot GI \cdot CP \cdot \rho \cdot r}{\int \rho r^2}$.

25
 Ratio of the resistance of a quantity of matter to a motion of rotation.

The resistance which a given quantity of matter makes to a motion of rotation is proportional to $\int \rho r^2$. For this must be measured by the forces which must be similarly applied in order to give it the same angular motion or angular velocity. Thus let one external force be $m \cdot GI$, and the other $m \cdot \gamma i$.—Let both be applied at the distance CP . Let r be the radius vector in the one body, and ρ in the other; now the angular velocities $\frac{m \cdot GI \cdot CP}{\int \rho r^2}$ and $\frac{m \cdot \gamma i \cdot CP}{\int \rho \rho^2}$ are equal by supposition. Therefore $m \cdot GI : m \cdot \gamma i = \int \rho r^2 : \int \rho \rho^2$.

As in the communication of motion to bodies in free space a given force always produces the same quantity of motion; so in the communication of motion to bodies obliged to turn round axes, a given force, applied at a given distance from the axes, always produces the same quantity of momentum. Whence it may easily be deduced (and we shall do it afterwards), that as in the communication of motion among free bodies the same quantity of motion is preserved, so in the communication of motion among whirling bodies the same quantity of whirling motion is preserved.

This is a proposition of the utmost importance in practical mechanics, and may indeed be considered as the fundamental proposition with respect to all machines of the rotatory kind when performing work; that is, of all machines which derive their efficacy from levers or wheels. There is a valuable set of experiments by Mr Smeaton in the Philosophical Transactions, Volume lxvi. which fully confirm it. We shall give an example by and bye of the utility of the proposition, showing how exceedingly imperfect the usual theories of mechanics are which do not proceed on this principle.

26 With respect to the general proposition from which all these deductions have been made, we must observe, that the demonstration is not restricted to the time necessary for causing each particle to describe an arch equal to the radius vector. We assumed the radius vector as the measure of the velocity merely to simplify the notation. Both the progressive motion of the free body and the rotation of the whirling body are uniformly accelerated, when we suppose the external force to act uniformly during any time whatever; and the spaces described by each motion in the same time are in a constant ratio. The formulæ may therefore with equal propriety represent the momentary accelerations in the different cases.

27
 All the particles of a body not necessarily supposed in one plane.

It must also be observed, that it is not necessary to suppose that all the particles of the body are in one plane, and that the moving force acts in a line FP lying also in this plane. This was tacitly allowed, merely to make the present investigation (which is addressed chiefly to the practical mechanic) more familiar and easy. The equilibrium between the force $A \times CA$, which is immediately urging the particle A , and the force $m \cdot Gi$ employed at P or F , in order to excite that force at A , would have been precisely the same although the lines AC and FP had been in different planes, pro-

vided only that these planes were parallel. This is known to every person in the least acquainted with the wheel and axle. But if the external moving force does not act in a plane parallel to the circles of rotation of the different particles, it must be resolved into two forces, one of which is perpendicular to these planes, or parallel to the axis of rotation, and the other lying in a plane of rotation. And it is this last only that we consider as the moving force; the other tends merely to push the body in the direction of its axis, but has no tendency to turn it round that axis. When we come to consider the rotation of a body perfectly free, it will be necessary to attend particularly to this circumstance. But there are several important mechanical propositions which do not require this.

The motion of any body is estimated by that of its centre of gravity, as is well known. The difference 28
 between the motion of the centre of a free body and the motion of the centre of a body turning round an axis, is evidently owing to the connexion which the parts of the body have with this axis, and to the action of the points of support on this axis. This action must be considered as another external force, combined with that which acts on the particle P , and therefore must be such as, if combined with it, would produce the very motion which we observe. That is, if we suppose the body unconnected with any fixed points, but as having its axis acted on by the same forces which these points exert, the body would turn as we observe it to do, the axis remaining at rest.

The motion of a body estimated by that of its centre of gravity, &c.

Therefore join I and H , and complete the parallelogram $GIHK$. It is plain that $m \cdot GK$ must represent the forces exerted by the axis on the fixed points. 29

If therefore GI should coincide with GH , and the point I with the point H , the force GK vanishes, and the body begins to turn round C , without exerting any pressure on the points of support; and the initial motion is the same as if the body were free. Or, the axis at C is then a spontaneous axis of conversion. 30

That this may be the case, it is necessary, in the first place, that the external force act in a direction perpendicular to CG ; for GI is always parallel to FP : it being a leading proposition in dynamics, that when a moving force acts on any part whatever of a solid body, unconnected with fixed points, the centre of gravity will proceed in a straight line parallel to the direction of that force. In the next place GH

must be equal to GI ; that is, (n^o 21) $\frac{m \cdot GI \cdot CP \cdot CG}{\int \rho r^2}$ is equal to GI , or $\frac{m \cdot CP \cdot CG}{\int \rho r^2} = 1$, and $CP = \frac{\int \rho r^2}{m \cdot CG}$.

The equation $CP = \frac{\int \rho r^2}{m \cdot CG}$ gives us $m \cdot CG \cdot CP$ 31
 $= \int \rho r^2$, $= \int A \cdot CA^2$. But it was shown (n^o 23), that $\int A \cdot CA^2 = \int A \cdot GA^2 + m \cdot CG^2$. Therefore $\int A \cdot GA^2 = m \cdot CG \cdot CP - m \cdot CG \cdot CG$, $= m \cdot CG (CP - CG)$, $= m \cdot CG \cdot GP$. Therefore we have (for another determination of the point of impulse P so as to annihilate all pressure on the axis) $GP = \frac{\int A \cdot GA^2}{m \cdot CG}$. This is generally the most easily obtain-

ed, the mathematical situation of the centre of gravity being well known.

Rotation.
32

N. B. When $CP = \frac{\int p r^2}{m \cdot CG}$, we shall always have the

velocity of the centre the same as if the body were free, but there will always be a pressure on the points of support, unless FP be also perpendicular to CG. In other positions of FP the pressure on the axis, or on its points of support, will be $m \cdot GI \times 2 \sin. GCP$.

33
Advantage of annihilating or diminishing the pressure on the supports of the axis of motion.

It would be a desirable thing in our machines which derive their efficacy from a rotatory motion, to apply the pressures arising from the power and from the resistance opposed by the work in such a manner as to annihilate or diminish this pressure on the supports of the axis of motion. Attention to this theorem will point out what may be done; and it is at all times proper, nay necessary, to know what are the pressures in the points of support. If we are ignorant of this, we shall run the risk of our machine failing in those parts; and our anxiety to prevent this will make us load it with needless and ill-disposed strength. In the ordinary theories of machines, deduced entirely from the principles of equilibrium, the pressure on the points of support (exclusive of what proceeds from the weight of the machine itself) is stated as the same as if the moving and resisting forces were applied immediately to these points in their own directions. But this is in all cases erroneous; and, in cases of swift motions, it is greatly so. We may be convinced of this by a very simple instance. Suppose a line laid over a pulley, and a pound weight at one end of it, and ten pounds at the other; the pressure of the axis on its support is eleven pounds, according to the usual rule; whereas we shall find it only $3\frac{1}{3}$. For, if we call the radius of the pulley 1, the momentum of the moving force is $10 \times 1 - 1 \times 1, = 9$; and the momentum of inertia is $10 \times 1^2 + 1 \times 1^2, (n^o 18.) = 11$. Therefore the angular velocity is $\frac{9}{11}$. But the distance CG of the centre of gravity from the axis of motion is also $\frac{1}{11}$, because we may suppose the two weights in contact with the circumference of the pulley. Therefore the velocity of the centre of gravity is $\frac{9}{11} \times \frac{1}{11}, = \frac{9}{121}$ of its natural velocity. It is therefore diminished $\frac{4}{11}$ by the figure of the axis of the pulley, and the 11 pounds press it with $\frac{4}{11}$ of their weight, that is, with $3\frac{1}{3}$ pounds.

34
Of knowing the momentum of inertia;

Since all our machines consist of inert matter, which requires force to put it in motion, or to stop it, or to change its motion, it is plain that some of our natural power is expended in producing this effect; and since the principles of equilibrium only state the proportion between the power and resistance which will preserve the machine at rest, our knowledge of the actual performance of a machine is imperfect, unless we know how much of our power is thus employed. It is only the remainder which can be stated in opposition to the resistance opposed by the work. This renders it proper to give some general propositions, which enable us to compute this with ease.

35
and consequently the force necessary to overcome it.

It would be very convenient, for instance, to know some point in which we might suppose the whole rotatory part of the machine concentrated; because then we could at once tell what the momentum of its inertia is, and what force we must apply to the impelled point of the machine, in order to move it with the desired velocity.

Fig. 3.

Let S, fig. 3. be this point of a body turning round

the supported axis passing through C; that is, let S be such a point, that if all the matter of the body were collected there, a force applied at P will produce the same angular velocity as it would if applied at the same point of the body having its natural form.

The whole matter being collected at S, the expression $\frac{m \cdot GI \cdot CP}{\int p r^2}$ of the angular velocity becomes $\frac{m \cdot GI \cdot CP}{m \cdot c S^2}$ (N^o 22.); and these are equal by supposition. Therefore $\int p r^2 = m \cdot CS^2$, and $CS = \sqrt{\frac{\int p r^2}{m}}$.

This point S has been called the CENTRE of GYRATION.

In a line or slender rod, such as a working beam, or the spoke of a wheel in a machine, CS is $\sqrt{\frac{1}{3}}$ of its length.

In a circle or cylinder, such as the solid drum of a capstane, $CS = \sqrt{\frac{1}{2}}$ its radius, or nearly $\frac{1}{\sqrt{2}}$. But if it turns round one of its diameters, $CS = \frac{1}{2}$ radius.

In the periphery of a circle, or rim of a wheel, $CS =$ radius nearly.

If it turn round a diameter, $CS = \sqrt{\frac{1}{2}}$ radius. The surface of a sphere, or a thin spherical shell, turning round a diameter, has $CS = \sqrt{\frac{3}{5}}$ radius, or nearly $\frac{2}{3}$ or $\frac{5}{6}$.

A solid sphere turning round a diameter has $CS = \sqrt{\frac{2}{5}}$ radius, or nearly $\frac{1}{\sqrt{2}}$. This is useful in the problem of the precession of the equinoxes. We may observe by the way, that if we consider the whirling body as a system of several bodies with rigid or inflexible connections, we may consider all the matter of each of these bodies as united in its centre of gyration, and the rotation of the whole will be the same; for this does not change the value of $\frac{\int p r^2}{m}$.

There is another way of making this correction of the motion of a machine, or allowing for the inertia of the machine itself, which is rather simpler than the one now given. We can suppose a quantity of matter collected at the point to which the moving force is applied, such that its inertia will oppose the same resistance to rotation that the machine does in its natural form. Suppose the moving force applied at P, as before, and that instead of the natural form of the body a quantity of

matter $= \frac{\int p r^2}{CP^2}$, collected at P; the moving force will produce the same angular velocity as on the body, in its natural form. For the angular velocity in this case must be $\frac{m \cdot GI \cdot CP}{\int p r^2 \cdot CP^2}$ (N^o 22.), which is $= \frac{m \cdot GI \cdot CP}{\int p r^2}$, the same as before.

A point O may be found, at such a distance from the axis, that if all the matter of the body were collected there, and an external force $m \cdot GI$ applied to it in a direction perpendicular or any how inclined to CO, it will produce the same angular velocity as when applied to the centre of gravity G, with the same inclination to the line CG.

In this case, the angular velocity must be $\frac{m \cdot GI \cdot CO}{m \cdot CO^2}$, (N^o 22.),

Rotation.

36
A simpler mode of allowing for the inertia of machines.

37
Centre of oscillation.

Rotation. (N^o 22.), which is $= \frac{GI}{CO}$. This must be equal (by supposition) to the angular velocity where the same force $m \cdot GI$ is applied in the same inclination to G .—

The angular velocity in this case must be $\frac{m \cdot GI \cdot CG}{\int p r^2}$.

33 Therefore we have $\frac{GI}{CO} = \frac{m \cdot GI \cdot CG}{\int p r^2}$, and $\frac{CO}{GI} = \frac{\int p r^2}{m \cdot GI \cdot CG}$, and $CO = \frac{\int p r^2}{m \cdot CG}$. Also, as in N^o 31. $GO = \frac{\int A \cdot GA^2}{m \cdot CG}$.

39 Remarkable properties of it.

This point O has several remarkable properties. In the first place, it is the point of a common heavy body swinging round C by its gravity, where, if all its weight be supposed to be concentrated, it will perform its oscillations in the same time. For while the body has its natural form, the whole force of gravity may be supposed to be exerted on its centre of gravity. When the matter of the body is collected at O , the force of gravity is concentrated there also; and if CG have the same inclination to the horizon in the first case that CO has in the second, the action of gravity will be applied in the same angle of inclination, and the two bodies will acquire the same angular velocity; that is, they will descend from this situation to the vertical situation (that is, through an equal angle) in the same time. These two bodies will therefore oscillate in equal times. For this reason, the point O so taken in the line CG , which is the radius vector of the centre of inertia, that CO is equal to $\frac{\int A \cdot CA^2}{m \cdot CC}$, or $GO = \frac{\int A \cdot GA^2}{m \cdot CG}$, is called the CENTRE OF OSCILLATION of the body; and a heavy point suspended by a thread of the length CO is called its *equivalent* or *synchronous pendulum*, or the *simple pendulum*, corresponding to the body itself, which is considered as a *compound pendulum*, or as consisting of a number of simple pendulums, which by their rigid connection disturb each other's motions.

That CO may be the equivalent pendulum, and O the centre of oscillation, O must be in the line CG , otherwise it would not rest in the same position with the body, when no force was keeping it out of its vertical position. The equation $CO = \frac{\int A \cdot CA^2}{m \cdot CG}$ only determines the distance of the centre of oscillation from the centre of suspension, or the length of the equivalent simple pendulum, but does not determine the precise point of the body occupied by the centre of oscillation; a circumstance also necessary in some cases.

40 Mode of determining its situation.

Mathematicians have determined the situation of this point in many cases of frequent occurrence. Huyghens, in his *Horologium Oscillatorium*, and all the best writers of treatises of mechanics, have given the method of investigation at length. The general process is, to multiply every particle by the square of its distance from the axis of suspension, and to divide the sum of all these products by the product of the whole quantity of matter multiplied by the distance of its centre of gravity from the same axis. The quotient is the distance of the centre of oscillation, or the length of the equivalent simple pendulum: for $CO = \frac{\int p \cdot r^2}{m \cdot CG}$.

Rotation. *a.* If the body is a heavy straight line, suspended by one extremity, CO is $\frac{2}{3}$ of its length.

b. This is nearly the case of a slender rod of a cylindrical or prismatic shape. It would be exactly so if all the points of a transverse section were equally distant from the axis of suspension.

c. If the pendulum is an isosceles triangle suspended by its apex, and vibrating perpendicularly to its own plane, CO is $\frac{3}{4}$ of its height.

d. This is nearly true of a very slender triangle (that is, whose height many times exceeds its base) swinging round its vertex in any direction.

e. In a very slender cone or pyramid swinging from its vertex, CO is $\frac{4}{5}$ of its height nearly.

f. If a sphere, of which r is the radius, be suspended by a thread whose weight may be neglected, and whose length is l , the distance between its centre of suspension and centres of oscillation is $a + r + \frac{2}{3} \frac{r^2}{a + r}$; and the distance between its centres of bulk and oscillation is $\frac{2}{3} \frac{r}{a + r}$. Thus, in a common second's pendulum,

whose length at London is about $39\frac{1}{8}$ inches, the centre of oscillation will be found about $\frac{1}{100}$ of an inch below the centre of the ball, if it be two inches in diameter.

g. If the weight of the thread is to be taken into the account, we have the following distance between the centre of the ball and that of oscillation, where B is the weight of the ball, a the distance of the point of suspension and its centre, d the diameter of the ball, and w the weight of the thread or rod, $GO = \frac{(\frac{1}{2}w + \frac{2}{3}B) d^2 - \frac{1}{2}w (a d + a^2)}{(\frac{1}{2}w + B) a - \frac{1}{2}d w}$: or, if we consider the weight of the thread as an unit, and the weight of the ball as its multiple (or as expressed by the number of times it contains the weight of the thread),

$$GO = \frac{\frac{1}{2}a}{B + \frac{1}{2}}$$

As the point O , determined as above, by making $CO = \frac{\int p r^2}{m \cdot CG}$, is the centre of oscillation of the body turning round C , so C is the centre of oscillation of the same body turning round O : for, resuming $A \cdot CA$ in place of $p r$, we have $\int A \cdot CA^2 = m \cdot CO \cdot CG$. Now $\int A \cdot CA^2 = \int A \cdot OA^2 + \int A \cdot OC^2 - \int A \cdot OC \cdot 2 O a$, (Euclid, II. 12. 13.), or $m \cdot CO \cdot CG = \int A \cdot OA^2 + \int A \cdot OC^2 - \int A \cdot OC \cdot 2 O a$. But $\int A \cdot OC^2 = m \cdot OC^2 = m \cdot OC \cdot OC$; and (by the nature of the centre of gravity) $\int A \cdot OC \cdot 2 O a = m \cdot OC \cdot 2 OG$. Therefore we have $m \cdot CO \cdot CG = \int A \cdot OA^2 + m \cdot OC \cdot OC - m \cdot OC \cdot 2 OG$; and $\int A \cdot OA^2 = m \cdot OC \cdot CG + m \cdot CO \cdot 2 OG - m \cdot CO \cdot CO = m \cdot CO (CG + 2 OG - CO)$. But $CG + 2 OG$ is equal to $CO + OG$, and $CG + 2 OG - CO$ is equal to OG . Therefore $\int A \cdot OA^2 = m \cdot CO \cdot OG$, and $CO = \frac{\int A \cdot OA^2}{m \cdot OG}$, which is all that is wanted (according

to N^o 39.) to make C the centre of oscillation when O is the centre of suspension.

If the point of suspension, or axis of rotation, be anywhere in the circumference of a circle of which G is the centre, the point O will be in the circumference of another circle of which G is the centre: for, by N^o 38. GO

Rotation.

41

42

GO

Rotation. $GO = \frac{SA.GA^2}{m.CG}$. Now $\int A.GA^2$ is a fixed quantity ; and therefore while CG is constant, OG will also be constant.

43 We may also observe, that the distance of the axis from the centre S of gyration is a mean proportional between its distance from the centre G of gravity and the centre O of oscillation : for we had (N^o . . .) $CS^2 = \frac{\int p r^2}{m}$, and $CO = \frac{\int p - r^2}{m.CG}$, and therefore $CO.CG = \frac{\int p r^2}{m} = CS^2$ and $CO : CS = CS : CG$.

44 We see also that the distance CO is that at which an external force must be applied ; so that there may not be any pressure excited in the axis upon its points of support, and the axis may be a spontaneous axis of conversion. This we learn, by comparing the value of CO with that of CP in art. 30. This being the case, it follows, that if an external force is applied in a direction passing through O , perpendicularly to CO , it will produce the same initial velocity of the centre as if the body were free : for as it exerts no pressure on the points of support, the initial motion must be the same as if they were not there.

45 If the external force be applied at a greater distance in the line CG , the velocity of the centre will be greater than if the body were free. In this case the pressure excited in the axis will be backward, and consequently the points of support will react forward, and this reaction will be equivalent to another external force conspiring with the one applied at O . Some curious consequences may be deduced from this.

46 Why this point is sometimes called the centre of percussion.
47

If the external force be applied to a point in the line GC lying beyond C , the motion of the centre will be in the opposite direction to what it would have taken had the body been free, and so will be the pressures exerted by the points of support on the axis.

A force $m.GI$ applied at P produces the initial progressive motion $m.GH$; and any force applied at O , perpendicularly to CG , produces the same motion of the centre as if the body were free. Therefore a force $m.GH$ applied thus at O will produce a motion $m.GH$ in the centre, and therefore the same motion which $m.GI$ applied at P would produce ; and it will produce the momentum $m.GI$ at P . Therefore if a force equal to the progressive motion of the body be applied at O , perpendicularly to CO , in the opposite direction, it will stop all this motion without exciting any strain on the axis or points of support. Therefore the equivalent of all the motions of each particle round C is conceived as passing through O in a direction perpendicular to CO ; and the blow given by that point to any body opposed to its motion is considered as equal to the compounded effect of the rotatory motion, or to the progressive motion of the body combined with its rotation.

48 Improperity of the term.

For such reasons O has been called the CENTRE OF PERCUSSION of the body turning round C . But the name of *centre of momentum*, or *rotatory effort*, would have been more proper.

We can feel this property of the point O when we give a smart blow with a stick. If we give it a motion round the joint of the wrist only, and strike smartly

with a point considerably nearer or more remote than two-thirds of its length, we feel a painful shock or wrench in the hand ; but if we strike with that point which is precisely at two-thirds of its length, we feel no such disagreeable strain.

Mechanical writers frequently say, that O considered as the centre of percussion, is that with which the most violent blow is struck. But this is by no means true ; O is that point of a body turning round C which gives a blow precisely equal to the progressive motion of the body, and in the same direction. As we have already said, it is the point where we may suppose the whole rotatory momentum of the body accumulated. Every particle of the body is moving in a particular direction, with a velocity proportional to its distance from the axis of rotation ; and if the body were stopped in any point, each particle tending to continue its motion endeavours to drag the rest along with it. Whatever point we call the centre of percussion should have this property, that when it is stopped by a sufficient force, the whole motion and tendency to motion of every kind should be stopped ; so that if at that instant the supports of the axis were annihilated, the body would remain in absolute rest.

Rotation.

49

The consideration of a very simple case will show that this point of stoppage cannot be taken indifferently. Suppose a square or rectangular board $CDD'C'$, fig. 4, advancing in the direction GH , perpendicular to its plane, without any rotation. Let G be the centre of gravity, and the middle of the board. It is evident, that if a force be applied at G , in the direction HG , and equal to the quantity of motion of the board, all motion will be stopped : for when the point G is stopped, no reason can be assigned why one part of the board shall advance more than another. The same thing must happen if the board be stopped by a straight edge put in its way, and passing through G : for example, in the line LGM , or $g G h$. But if this edge be so placed that the board shall meet it with the line IPK , then, because this line does not divide it equally, and because there is a greater quantity of motion in the part $CIKC'$ than in the part $IDD'K$, though the progressive motion may be stopped, the upper part will advance, and a motion of rotation will commence, of which IK will be the axis. Now suppose that the board, instead of having been moving along in the direction GH , every part with the same velocity had been swinging round the axis CC' like a pendulum, from the position $Cdd'C'$, and that it is stopped by a straight edge meeting it in the line LGM parallel to CO' , in the moment that it has attained the vertical position $CDD'C'$; all its motion will not be stopped : for, although LGM divides the board equally, there is more motion in the lower part $LDD'M$ than in the upper part $CLMC'$, because every particle of the lower part is describing larger circles and moving swifter. Therefore when the line LGM is stopped, there will be a tendency of the lower part to advance, and the pivots C and C' of the axis will be pressed backwards on their holes ; and if the holes were at that instant removed, a rotation would commence, of which LM is the axis. The board must therefore be stopped in some line IPK below LGM , and so situated, that the sum of all the momenta on each side of it shall be equal. This alone

Centre of percussion, how defined. Fig. 4.

Rotation. can hinder a rotation round the axis IPK. From what has been already demonstrated, it appears, that this will be prevented if the edge meets the board in a line IPK passing through O the centre of oscillation, which is situated in the line $g G h$ passing through the centre of gravity perpendicular to the axis CC' . This line IOK may therefore be called the *line* or *axis* of percussion.

51 But any point of this line will not do. It is evident that if the board should meet the fixed edge in the line $g GO h$, all motion will be stopped, for the motions on each side are equal, and neither can prevail. But if it be stopped in the line $p P q$, there is more motion in the part $p q D'C'$ than in the part $p q DC$; and if the supports at C and C' were that instant taken away, there would commence a rotation round the axis $p q$. Consequently, if the body were not stopped by an edge, but by a simple point at P, this rotation would take place. The motions above and below P would indeed balance each other, but the motions on the right and left sides of it would not. Therefore it is not enough for determining the centre of percussion that we have ascertained its distance $g O$ from the axis of rotation by the equation $g O = \frac{\sum p r^2}{m \cdot g G}$. This equation only gives

us the line IOK parallel to CC' , but not the point of percussion. This point (suppose it P) must be such that if any line $p P q$ be drawn through it, and considered as an axis round which a rotation may commence, it shall not commence, because the sum of all the momenta round this axis on the right side is equal to the sum of the momenta on the left. Let us investigate in what manner this condition may be secured.

52 Let there be a body in a state of rotation round the axis $D d$ (fig. 5.), and let G be its centre of gravity, and CGO a line through the centre of gravity perpendicular to the axis $DC d$. At the moment under consideration, the centre of gravity is moving in the direction GH, perpendicular to the radius vector GC, as also perpendicular to a plane passing through the lines $D d$ and CG. Let O be the centre of oscillation. Draw the line $n O$ parallel to $D d$. The centre of percussion must be somewhere in this line. For the point of percussion, wherever it is, must be moving in the same direction with the progressive motion of the body, that is, in a direction parallel to GH, that is, perpendicular to the plane DCG. And its distance from the axis $D d$ must be the same with that of the centre of oscillation. These conditions require it therefore to be in some point of $n O$. Suppose it at P. Draw $P p$ perpendicular to $D d$. P must be so situated, that all the momenta tending to produce a rotation round the line $p P$ may balance each other, or their sum total be nothing.

Now let A be any particle of the body which is out of the plane DCG, in which lie all the lines CGO, $p P$, $n O P$, &c. Draw its radius vector $A a$ perpendicular to $D a$, and draw $a n$ parallel to CG, and therefore perpendicular to $D a$. The plane $A a n$ is perpendicular to the plane $D a n$ (Euclid, XI. 4.). Draw AL perpendicular to $A a$, and $A l$ perpendicular to $a n$. Then, while the body is beginning to turn round $D d$, the incipient motion of the particle A is in the direction AL, perpendicular to its radius vector $A a$.

Rotation. This motion AL may be considered as compounded of the motion $A l$, perpendicular to the plane DCG, and the motion $l L$ in this plane. It is evident that it is $A l$ only which is opposed by the external force stopping the body at P, because $A l$ alone makes any part of the progressive motion of the centre of gravity in the direction GH.

We have hitherto taken the *radii vectores* for the measures of the velocities or motions of the particles. Therefore the quantity of motion or the moving force of A is $A \cdot A a$, and this is exerted in the direction AL, and may be conceived as exerted on any point in this line, and therefore on the point L. That is, the point L might be considered as urged in this direction with the force $A \cdot A a$, or with the two forces of which the force $A \cdot A a$ is compounded. The force in the direction AL is to the force in the direction $A l$ as AL to $A l$, or as $a A$ to $a l$, because the triangles $A l L$ and $a l A$ are similar. Therefore, instead of supposing the point L urged by the force $A \cdot A a$, acting in the direction AL, we may suppose it impelled by the force $A \cdot a l$, acting perpendicularly to the line $A l$, or to the plane DCG, and by the force $A \cdot A l$ acting in this plane, viz. in the direction $L n$. This last force has nothing to do with the percussion at P. Therefore we need consider the point L as only impelled by the force $A \cdot A l$. The momentum of this force, or its power to urge the plane DCG forward in the direction GH, by turning it round $D d$, must be $A \cdot a l \cdot a L$. (N. B. This is equal to $A \cdot A a^2$, because $a l : a A = a A : a L$, and $A \cdot A a^2$, has been shown long ago to be the general expression of the rotatory momentum of a particle).

Draw $L m$ perpendicular to $P p$. If we consider $P p$ as an axis about which a motion of rotation may be produced, it is plain that the momentum of the point L to produce such a rotation will be $A \cdot a l \cdot L m$. In like manner, its momentum for producing a rotation round $n P$ would be $A \cdot a l \cdot L n$. In general, its momentum for producing rotation round any axis is equal to the product of the perpendicular force at L (that is, $A \cdot a l$) and the distance of L from this axis.

In order therefore that P may be the centre of percussion, the sum of all the forces $A \cdot a l \cdot L m$ must be equal to nothing; that is, the sum of the forces $A \cdot a l \cdot L m$ on one side of this axis $P p$ must be balanced by the sum of forces $A' \cdot a' l' \cdot L' m'$ on the other side. To express this in the usual manner, we must have $\int A \cdot a l \cdot n P = 0$. But $n P = n O - O P$. Therefore $\int A \cdot a l \cdot n O - \int A \cdot a l \cdot O P = 0$, and $\int A \cdot a l \cdot n O = \int A \cdot a l \cdot O P$. But OP is the same wherever the particle A is situated; and because G is the centre of gravity, the sum of all the quantities is $A \cdot a l$ is $m \cdot GC$, m being the quantity of matter of the body; that is, $\int A \cdot a l = m \cdot GC$, and $\int A \cdot a l \cdot O P = m \cdot GC \cdot O P = \int A \cdot a l \cdot n O$. Hence we derive the final equation $O P = \frac{\int A \cdot a l \cdot n O}{m \cdot GC}$.

Therefore the centre of percussion P of a body turning round the axis $D d$ is determined by these conditions: 1st, It is in the plane DCG passing through the axis and the centre of gravity; 2d, It is in a line $n O$ passing through the centre of oscillation, and parallel to the axis, and therefore its distance $P p$ from the axis of rotation

Rotation.

Rotation is $\frac{\int A \cdot A a^2}{m \cdot CG}$; and, 3d, Its distance OP from the centre of oscillation is $\frac{\int A \cdot a \cdot l \cdot n \cdot O}{m \cdot CG}$.

Rotation.

perpendicular to this plane, in O for instance, must evidently be $A \cdot A \cdot l \cdot n \cdot O$, and round P it must be $A \cdot A \cdot l \cdot n \cdot P$, &c. We shall have occasion to consider these afterwards.

58
Of balls and cylinders rolling down inclined planes.

54
How both centres coincide.

In order therefore that the centres of oscillation and percussion may coincide, or be one and the same, OP must vanish, or $\int A \cdot a \cdot l \cdot n \cdot O$ must be equal to nothing, that is, the sum of all the quantities $A \cdot a \cdot l \cdot n \cdot O$ on one side of the line CO must be equal to the sum of all the quantities $A \cdot a \cdot l \cdot n \cdot O$ on the other side.

55

Let $D d \delta \Delta$ be a plane passing through the axis $D d$ perpendicular to that other plane DCG through it, in which the centre of gravity is situated, and let $C g \gamma \alpha$ be a third plane passing through the centre of gravity perpendicular to both the planes $D d \delta \Delta$ and DCG . Draw $l r$ and $a \alpha$ perpendicular to $a L$, and $r \dot{a}$ perpendicular to cr , and then draw $A \alpha$, $A \dot{a}$ perpendicular to $a \alpha$ and $r \dot{a}$. It is evident that $A \alpha$ and $A \dot{a}$ are respectively equal to $a l$ and $l r$, or to $a l$ and $n o$; so that the two factors or constituents of the momentum of a particle A round the centre of percussion are the distances of the particle from the planes $D d \delta \Delta$ and $\alpha c g \gamma$, both of which are perpendicular to that plane through the axis in which the centre of gravity is placed.

We may see, from these observations, that the centres of oscillation and percussion do not necessarily coincide, and the circumstance which is necessary for their coincidence, viz. that $\int A \cdot A \alpha \cdot A \dot{a}$ is equal to O . It is of importance to keep this in mind.

56
Further considerations of importance.

There occurs here another observation of great importance. Since every force is balanced by an equal force acting in the opposite direction, and since all motion progressive and rotatory is stopped by an external force applied at P in the direction $q P$, it follows that, if the body were at rest, and the same force be applied there, it will set the body in rotation round the axis $D d$, in the opposite direction, with the same angular velocity, and without any pressure on the pivots D and d . For whatever motion of the particle A , in the direction AL , was stopped by a part of the external force applied at P , the same motion will be produced by it in the quiescent particle A in the opposite direction LA . And as the pivots D and d had no motion in the case of the body turning round them, they will acquire no motion, or will have no tendency to motion, or no pressure will be exerted on them, in the last case. Therefore when an external force is applied at P in a direction perpendicular to the line $P p$, the line $D d$ will become a momentary spontaneous axis of conversion, and the incipient motion of the body will perfectly resemble the rotation of the same body round a fixed axis $D d$.

57

There is another set of forces of which we have as yet taken no notice, viz. that part of each force AL which is directed along the plane DCG , and is represented by $l L$ when the whole force is represented by AL , or by $A l$ when the whole force is represented by $A a$. These forces being all in the plane DCG , and in the direction CG or GC , can have no effect on the rotation round any axis in that plane. But they tend, separately, to produce rotation round any axis passing through this plane perpendicularly. And the momentum of A to produce a rotation round an axis

It is usual in courses of experimental philosophy to illustrate the motions of bodies on inclined planes and curved surfaces by experiments with balls rolling down these surfaces. But the motions of such rolling balls are by no means just representations of the motions they represent. The ball not only goes down the inclined plane by the action of gravity, but it also turns round an axis. Force is necessary for producing this rotation; and as there is no other source but the weight of the ball, part of this weight is expended on the rotation, and the remainder only accelerates it down the plane. The point of the ball which rests on the plane is hindered from sliding down by friction; and therefore the ball tumbles, as it were, over this point of contact, and is instantly caught by another point of contact, over which it tumbles in the same manner. A cylinder rolls down in the very same way; and its motion is nearly the same as if a fine thread had been lapped round it, and one end of it made fast at the head of the inclined plane. The cylinder rolls down by unwinding this thread.

The mechanism of all such motions (and some of them are important) may be understood by considering them as follows: Let a body of any shape be connected with a cylinder FCB (fig. 6.) whose axis passes through G the centre of gravity of the body. Suppose that body suspended from a fixed point A by a thread wound round the cylinder. This body will descend by the action of gravity, and it will also turn round, unwinding the thread. Draw the horizontal line OGC . It will pass through the point of contact C of the thread and cylinder, and C is the point round which it begins to turn in descending. Let O be its centre of oscillation corresponding to the momentary centre of rotation C . It will begin to descend in the same manner as if all its matter were collected in O : for it may be considered, in this instant, as a pendulum suspended at C . But in this case O will descend in the same manner as if the body were falling freely. Therefore the velocity of G (that is, the velocity of descent) will be to the velocity with which a heavy body would fall as CG to CO . Now since the points C, G, O , are always in a horizontal line, and the radius CG is given; as also CO (N^o 48.) the velocity of a body falling freely, and of the body unwinding from this thread, will always be in the same proportion of CO to CG , and so will the spaces described in any given time. And thus we can compare their motions in every case when we know the place of the centre of oscillation.

Cor. 1. The weight of the descending body will be to the tension of the thread as CO to GO : for the tension of the thread is the difference between the momentum of the rolling body and that of the body falling freely.

Observe, that this proportion between the weight of the body and the tension of the thread will be always the same: for it has been demonstrated already, N^o 42. that if C be in the circumference of a circle whose centre is G , O will be in the circumference of another circle

Rotation. circle round the same centre, and therefore the ratio of CG to CO is constant.

61 *Cor.* 2. If a circular body FCB roll down an inclined plane by unfolding a thread, or by friction which prevents all sliding, the space described will be to that which the body would describe freely as CG to CO: for the tendency down the inclined plane is a determined proportion of the weight of the body. The motion of rotation in these cases, both progressive and whirling, is uniformly accelerated.

62 *Case of pendulous bodies.* Something of the same kind obtains in common pendulous bodies. A ball hung by a thread not only oscillates, but also makes part of a rotation; and for this reason its oscillations differ from those of a heavy point hanging by the same thread, and the centre of oscillation is a little below the centre of the ball. A ball hung by a thread, and oscillating between cycloidal cheeks, does not oscillate like a body in a cycloid, because its centre of oscillation is continually shifting its place. Huyghens avoided this by suspending his pendulous body from two points, so that it did not change its attitude during its oscillation. If our spring-carriages were hung in this manner, having the four lower staples to which the straps are fixed as far asunder as the four upper staples at the ends of the springs, the body of the carriage would perform its oscillations without kicking up and down in the disagreeable manner they now do, by which we are frequently in danger of striking the glasses with our heads. The swings would indeed be greater, but incomparably easier; and we could hold things almost as steadily in our hand as if the carriage were not swinging at all.

This will suffice for an account of the rotation round fixed axes, as the foundation for a theory of machines actually performing work. The limits of our undertaking will not allow us to do any more than just point out the method of applying it.

63 *Method of applying this theory of rotation to practice.* Let there be any machine of the rotatory kind, i. e. composed of levers or wheels, and let its construction be such, that the velocity of the point to which the power is applied (which we shall call the *impelled point*) is to the velocity of the working point in the ratio of m to n . It is well known that the energy of this machine will be the same with that of an axis in peritrochio, of which the radii are m and n .

Let p express the actual pressure exerted on the impelled point by the moving power, and let r be the actual pressure or resistance exerted on the working point by the work to be performed. Let x be the inertia of the power, or the quantity of dead matter which must move with the velocity of the impelled point in order that the moving power may act. Thus the moving power may be the weight of a bucket of water in a water-wheel; then x is the quantity of matter in this bucket of water. Let y in like manner be the inertia of the work, or matter which must be moved with the velocity of the working-point, in order that the work may be performed. Thus y may be a quantity of water which must be continually pushed along a pipe. This is quite different from the weight of the water, though it is proportional to it, and may be measured by it.

Let f be a pressure giving the same resistance when applied at the working-point with the friction of the machine, and let an^2 be the momentum of the machine's

Rotation. inertia, viz. the same as if a proper quantity of matter a were attached to the working-point, or to any point at the same distance from the axis.

This state of things may be represented by the wheel and axle PQS (fig. 7.) where x and y and a are represented by weights acting by lines. P is the impelled point, and R the working-point; CP is m and CR is n . The moving force is represented by PA, the resistance by RB, and the friction by BF.

It is evident that the momentum of the inertia of $x, y,$ and a are the same as if they were for a moment attached to the points P and R.

Hence we derive the following expressions,

1. The angular velocity = $\frac{p m - r + f n}{x m^2 + y + a n^2}$
2. Velocity of the working-point = $\frac{p m n - r + f n^2}{x m^2 + y + a n^2}$
3. Work performed = $\frac{p m n r - r + f n^2 r}{x m^2 + y + a n^2}$. For the

work is proportional to the product of the resistance and the velocity with which it is overcome.

We shall give a very simple example of the utility of these formulæ. Let us suppose that water is to be raised in a bucket by the descent of a weight, and that the machine is a simple pulley. Such a machine is described by Defaguliers*, who says he found it preferable to all other machines. The bucket dipped itself in the cistern. A chain from it went over a pulley, and at its extremity was a stage on which a man could step from the head of a stair. His preponderance brought down the stage and raised the bucket, which discharged its water into another cistern. The man quit the stage, and walked up stairs, and there he found it ready to receive him, because the empty bucket is made heavier than the empty stage.

Now, if there be no water in the bucket, it is evident, that although the motion of the machine will be the quickest possible, there will be no work performed. On the other hand, if the loaded stage and the full bucket are of equal weight, which is the usual statement of such a machine in elementary treatises of mechanics, the machine will stand still, and no work will be performed. In every intermediate state of things the machine will move, and work will be performed. Therefore the different values of the work performed must be a series of quantities which increase from nothing to a certain magnitude, and then diminish to nothing again. The maxim which is usually received as a fundamental proposition in mechanics, viz. that what is gained in force by the intervention of a machine is lost in time, is therefore false. There must be a particular proportion of the velocities of the impelled and working-points, which will give the greatest performance when the power and resistance are given; and there is a certain proportion of the power and resistance which will have the same effect when the structure of the machine has previously fixed the velocities of the impelled and working points.

This proportion will be found by treating the formula which expresses the work as a fluxionary quantity, and finding its maximum. Thus, when the ratio of the power and resistance is given, and we wish to know what must be the proportion of the velocities

64 Formule, and their use in practice.

65

66

* *Exper. Phil.* vol. ii. p. 503.

67

Rotation.

m and *n*, that we may construct the machine accordingly, we have only to consider *n* as the variable quantity in the third formula. This gives us

$$n = m \times \frac{\sqrt{x^2 \times r + f^2 + p^2 x a + y} - x r + f}{p a + y}$$

68

This is a fundamental proposition in the theory of working machines: but the application requires much attention. Some natural powers are not accompanied by any inertia worth minding; in which case *x* may be omitted. Some works, in like manner, are not accompanied by any inertia; and this is a very general case. In many cases the work exerts no contrary strain on the machine at rest, and *r* is nothing. In most instances the intensity of the power varies with the velocity of the impelled point, and is diminished when this increases; the resistance or actual pressure at the working-point frequently increases with the velocity of the working-point. All these circumstances must be attended to; but still they only modify the general proposition. These are matters which do not come within the limits of the present article. We only took this opportunity of showing how imperfect is the theory of machines in equilibrio for giving us any knowledge of their performance or just principles of their construction.

69
Common mode of estimating external impulsions.

One thing, however, must be particularly attended to in this theory. The forces which are applied to the body moveable round an axis are considered in the theory as pressures actually exerted on the impelled points of the body or machine, as when a weight is appended to a lever or wheel and axle, and, by descending uniformly, acts with its whole weight. In this case the weight multiplied by its distance from the axis will always express its momentum, and the rotation will (*ceteris paribus*) be proportional to this product. But in many important cases our machines are actuated by external impulsions. A body in motion strikes on the impelled point of the machine, and causes it to turn round its axis. It is natural for us to consider the quantity of motion of this impelling body as the measure of our moving force. Supposing *n* to be its quantity of matter, and *V* its velocity, *nV* appears a very proper measure of its intensity. And if it be applied at the distance *CP* from the axis of rotation, *nV·CP* should express its energy, momentum, or power to turn the machine round *C*; and we should express the angular velocity by $\frac{nV \cdot CP}{\int p r^2}$. Accordingly, this is the manner in which calculations are usually made for the construction and performance of the machine, as may be seen in almost every treatise of mechanics.

70
shown to be erroneous.

But nothing can be more erroneous, as we shall show by a very simple instance. It should result from these principles that the angular velocity will be proportional to *CP*. Let us suppose our moving power to be a stream of water moving at the rate of ten feet per second, and that every second there passes 100 pounds of water. We should then call our moving force 1000. It is evident, that if we suppose the arm of the float-board on which it strikes to be infinitely long, the impelled point can never move faster than 10 feet in a second, and this will make the angular velocity infinitely small, instead of being the greatest of all. The rota-

tion will therefore certainly be greater if *CP* be shorter. We need not examine the case more minutely.

Rotation.

We must therefore carefully distinguish between the quantity of motion of the impelling body and its moving power, as it is modified by its manner of acting. The moving power is the pressure actually exerted on the impelled point of the machine. Now the universal fact of the equality of action and reaction in the collision of bodies assures us, that their mutual pressure in their collision is measured by the change of motion which each sustains: for this change of motion is the only indication and measure of the pressure which we suppose to be its cause. A way therefore of ascertaining what is the real moving force on a machine actuated by the impulsion of a moving body, is to discover what quantity of motion is lost by the body or gained by the machine; for these are equal. Having discovered this, we may proceed according to the propositions of rotatory motion.

71
Distinction to be made between the quantity of motion and moving power of an impelling body.

Therefore let *AEF* (fig. 8.) represent a body moveable round an axis passing through *C*, perpendicular to the plane of the figure. Let this body be struck in the point *A* by a body moving in the direction *FA*, and let *BAD* be a tangent to the two bodies in the point of collision. It is well known that the mutual actions of two solid bodies are always exerted in a direction perpendicular to the touching surfaces. Therefore the mutual pressure of the two bodies is in the direction *AP* perpendicular to *AD*. Therefore let the motion of the impelling body be resolved into the directions *AP* and *AD*. The force *AD* has no share in the pressure. Therefore let *V* be the velocity of the impelling body estimated in the direction *AP*, and let *n* be its quantity of matter. Its quantity of motion in the direction *AP* will be *nV*.

72
Fig. 8.

Did *AP* pass through *C*, it is evident that the only effect would be to press the axis on its supports. But *AP*, the direction of the pressure, being inclined to *AC*, the point *A* is forced aside, and in some small moment of time describes the little arch *Aa* round the centre *C*. The point *P* will therefore describe a small arch *Pp*, subtending an angle *PCp = ACa*. Draw *ao* perpendicular to *AP*, and *ad* perpendicular to *AD*. The triangles *dAo*, *ACP* are similar, and *Aa : Ao = AC : CP*. But the angles *ACa*, *PCp* being equal, the arches are as their radii, and *Aa : Pp = AC : CP = Ao : Ao*; therefore *∅p = Ao*.

Now since, in consequence of the impulse, *A* describes *Aa* in the moment of time, it is plain that *Ao* is the space through which the impelling body continues to advance in the direction of the pressure; and if *V* be taken equal to the space which it described in an equal moment before the stroke, *v* will express the remaining velocity, and *V - v* is the velocity lost, and *n(V - v)* is the quantity of motion lost by the impelling body, and is the true measure of the pressure exerted. This gives us the whole circumstances of the rotatory motion. The angular velocity will be $\frac{n(V-v) \cdot CP}{\int p r^2}$, and the velocity of the point *A* will be $\frac{n(V-v) \cdot CP \cdot CA}{\int p r^2}$. Call this velocity *u*. The similarity of triangles gives us *CA : CP = Ao (or u) : Ao (or v)* and $u = \frac{v \cdot CA}{CP}$. Therefore

fore

Rotation. fore $\frac{V \cdot CA}{CP} = \frac{n(V-v)CP \cdot CA}{\int \rho r^2}$. From this we deduce

$v = \frac{n \cdot V \cdot CP^2}{\int \rho r^2 + n \cdot CP^2}$, and thus we have obtained the value of v in known quantities; for n was given, or supposed known; so also was V : and since the direction FA was given, its distance CP from the axis is given; and the form of the body being known, we can find the value of $\int \rho r^2$. Now we have seen that v is also the velocity of the point P ; therefore we know the absolute velocity of a given point of the body or machine, and consequently the whole rotatory motion.

73 We have the angular velocity $= \frac{n \cdot V \cdot CP}{\int \rho r^2 + n \cdot CP^2}$: we shall find this a maximum when $\int \rho r^2 = n \cdot CP^2$; and in this case $CP = \sqrt{\frac{\int \rho r^2}{n}}$, and $v = \frac{1}{2}V$. So that the greatest velocity of rotation will be produced when the striking body loses $\frac{1}{2}$ of its velocity.

74 Authors treating of the application of that theory recommended. What we have now delivered is sufficient for explaining all the motions of bodies turning round fixed axes; and we presume it to be agreeable to our readers, that we have given the investigation of the centres of gyration, oscillation, and percussion. The curious reader will find the application of these theorems to the theory of machines in two very valuable dissertations by Mr Euler in the Memoirs of the Academy of Berlin, vols viii. and x. and occasionally by other authors who have treated mechanics in a scientific and useful manner, going beyond the school-boy elements of equilibrium.

75 Of the rotation of free bodies. There remains a very important case of the rotation of bodies, without which the knowledge of the motion of solid bodies is incomplete; namely, the rotation of free bodies, that is, of bodies unconnected with any fixed points. We hardly see an instance of motion of a free body without some rotation. A stone thrown from the hand, a ball from a cannon, the planets themselves, are observed not only to advance, but also to whirl round. The famous problem of the precession of the equinoxes depends for its solution on this doctrine; and the theory of the working of ships has the same foundation. We can only touch on the leading propositions.

76 We need not begin by demonstrating, that when the direction of the external force passes through the centre of the body, the body will advance without any rotation. This we consider as familiarly known to every person versant in mechanics; nor is it necessary to demonstrate, that when the direction of the moving force does not pass through the centre of gravity, this centre will still advance in a direction parallel to that of the moving force, and with the same velocity as if the direction of the moving force had passed through it. This is the immediate consequence of the equality of action and reaction observed in all the mechanical phenomena of the universe.

But it is incumbent on us to demonstrate, that when the direction of the moving force does not pass through the centre of gravity, the body will not only advance in the direction of the moving force, but will also turn round an axis, and we must determine the position of this axis, and the relation subsisting between the progressive and rotatory motions.

Rotation. The celebrated John Bernoulli was the first who considered this subject; and, in his *Disquisitiones Mechanico-dynamicae*, he has demonstrated several propositions concerning the spontaneous axis of conversion, and the motions arising from eccentric external forces: and although he assumed for the leading principle a proposition which is true only in a great number of cases, he has determined the rotation of spherical bodies with great accuracy.

This combination of motions will be palpable in some simple cases, such as the following: Let two equal bodies A and B (fig. 9.) be connected by an inflexible rod (of which we may neglect the inertia for the present). Let G be the middle point, and therefore the centre of gravity. Let an external force act on the point P in the direction FP perpendicular to AB , and let AP be double of PB . Also let the force be such, that it would have caused the system to have moved from the situation AB to the situation ab , in an indefinitely small moment of time, had it acted immediately on the centre G . G would in this case have described Gg , A would have described Aa , and B would have described Bb , and ab would have been parallel to AB : for the force impressed on A would have been equal to the force impressed on B ; but because the force acts on P , the force impressed on A is but one half of that impressed on B by the property of the lever: therefore the initial motion or acceleration of A will be only half of the initial motion of B ; yet the centre G must still be at g . We shall therefore ascertain the initial motion of the system, by drawing through g a line $ag\beta$, so that Aa shall be $\frac{1}{2}$ of $B\beta$. This we shall do by making $AC=AB$, and drawing $Cag\beta$. Then $a\beta$ will be the position of the system at the end of the moment of time. Thus we see that the body must have a motion of rotation combined with its progressive motion.

78 How motion is performed in these cases. And we deduce immediately from the premises that this rotation is performed round an axis passing through the centre of gravity G : for since the centre describes a straight line, it is never either above or below the axis of rotation, and is therefore always in it. This is a fundamental theorem, and our subsequent investigation is by this means greatly simplified, being thus reduced to two problems: 1. To determine in what direction the axis passes through the centre of gravity. 2. To determine the angular velocity of the rotation, or how far the centre must advance while the body makes one turn round the axis. This establishes the relation between the progressive and rotatory motions. It will contribute to our better conception of both these problems to see the result in the present simple case.

79 It is evident, in the first place, that the impressions made on A and B are in lines Aa , Bb parallel to FP and Gg ; and therefore the motions of the points A , G , and B , are made in one plane, viz. the plane FPG . The axis of rotation therefore must be a line drawn through G , perpendicular to this plane. If we give it any other position, one of the points A , B , or both of them, must quit this plane.

In the next place, in ba produced take $bc=BC$. Then supposing AC to be a rigid line connected with the system, it is evident that if there had been no rotation, the line BC would have kept parallel to its first position, and that at the end of the moment of time C

Rotation. would have been at *c*. The point *C* therefore has had, by the rotation, a backward motion *cC*, relative to the centre *G* or *g*, and this motion is equal to the progressive motion *Gg* of the centre; therefore if we make *Gγ* equal to the circumference of a circle whose radius is *CG*, the body will make one rotation round the centre of gravity, while this centre moves along *Gγ*; and thus the relation is established between the two motions.

80 But farther, the point *C* has, in fact, not moved out of its place. The incipient motion has therefore been such, that *C* has become a spontaneous centre of conversion. It is easy to see that this must always be the case, whatever may be the form of the rigid body or system of particles connected by inflexible and inextensible lines. Since the system both advances and turns round an axis passing through its centre of gravity, there must be some point in the system, or which may be conceived as connected with it by an inflexible line, which moves backward, by the rotation, as fast as the centre advances forward. A line drawn through this point parallel to the axis must in this instant be at rest, and therefore must be a spontaneous axis of conversion. And, in this instant, the combined motions of rotation round an axis passing through the centre of gravity and the motion of progression, are equivalent to, and actually constitute, an incipient simple motion of rotation round another axis parallel to the former, whose position may be ascertained. But it is necessary to establish this proposition and its converse on clearer evidence.

81
Fig. 10.

Therefore let *G* (fig. 10.) be the centre of gravity of a rigid system of particles of matter, such as we suppose a solid body to be. Let this system be supposed to turn round the axis *Gg*, while the axis itself is moving forward in the direction and with the velocity *GI*. Let the rotation be such, that a particle *A* has the direction and velocity *Ah*. Let us first suppose the progressive motion *GI* to be perpendicular to the axis *Gg*. It will therefore be parallel to the planes of the circles described round the axis by the different particles. Let *CGg* be a plane perpendicular to *GI*. It will cut the plane of the circle described by *A* in a straight line *cg*, and *g* will be the centre round which *A* is turning. Therefore *Ag* will be the radius vector of *A*, and *Ah* is perpendicular to *Ag*. Let *Ad* be perpendicular to *cg*, and in *Ad* take *Ae* equal to *GI* or *gi*. It is evident, that the absolute motion of *A* is compounded of the motions *Ae* and *Ah*, and is the diagonal *Af* of the parallelogram *Aefh*. In the line *gc*, which is perpendicular to *Gg*, take *gc* to *gA*, as *Ae* to *Ah*, and draw *cC* parallel to *gG*, and produce *hA* till it cut *cg* in *n*. We say that *Cc* is in this moment a spontaneous axis of conversion; for, because *An* is perpendicular to *Ag* and *Ad* to *Cg*, the angle *cgA* is equal to *dAn*, or *fhA*. Therefore, since *cg : gA = fh : hA*, the triangles *cgA* and *fhA* are similar, and the angle *gAc* is equal to *hAf*. Take away the common angle *gAf*, and the remaining angle *cAf* is equal to the remaining angle *hAg*, and *Af* is perpendicular to *Ac*, and the incipient motion of *A* is the same in respect of direction as if it were turning round the axis *cC*. Moreover, *Af* is to *fh* or *gi* as *Ac* to *cg*. Therefore, both the direction and velocity of the absolute motion of *A* is the same as if the body were turning round the fixed axis *cC*; and the combined motion *Ae* of progres-

sion, and the motion *Ah* of rotation round *Gg*, are equivalent to, and really constitute, a momentary simple motion of rotation round the axis *Cc* given in position, that is, determinable by the ratio of *Ae* to *Ah*.

82 On the other hand, the converse proposition is, that a simple motion of rotation round a fixed axis *Cc*, such that the centre *G* has the velocity and direction *GI* perpendicular to *CG*, is equivalent to, and produces a motion of rotation round an axis *Gg*, along with the progressive motion *GI* of this axis. This proposition is demonstrated in the very same way, from the consideration that, by the rotation round *Cc*, we have *cA : cg = Af : gi*. From this we deduce, that *Ah* is perpendicular to *Ag*, and that *fh : Ah = cg : gA*; and thus we resolve the motion *Af* into a motion *Ah* of rotation round *Gg*, and a motion *Ae* of progression common to the whole body.

83 But let us not confine the progressive motion to the direction perpendicular to the axis *Gg*. Let us suppose that the whole body, while turning round *Gg*, is carried forward in the direction and with the velocity *GK*. We can always conceive a plane *LGC*, which is perpendicular to the plane in which the axis *Gg* and the direction *GK* of the progressive motion are situated.—And the motion *GK* may be conceived as compounded of a motion *GI* perpendicular to this plane and to the axis; and a motion of translation *GL*, by which the axis slides along in its own direction. It is evident, that in consequence of the first motion *GI*, there arises a motion of rotation round *Cc*. It is also evident, that if, while the body is turning for a moment round *Cc*, this line be slid along itself in the direction *cC*, a motion equal to *GL* will be induced on every particle *A*, and compounded with its motion of rotation *Af*, and that if *fφ* be drawn equal and parallel to *GL*, *φ* will be the situation of the particle *A* when *G* is in *K*.

84 And thus it appears, that when the progressive motion is perpendicular to the axis of rotation passing through the centre of gravity, the two motions progressive and rotatory are equivalent to a momentary simple motion of rotation round a spontaneous axis of conversion, which is at rest: but when the progressive motion is inclined to the axis passing through the centre, the spontaneous axis of conversion is sliding in its own direction.

85 We may conceive the whole of this very distinctly exemplified and accurately by attending to the motion of a garden roller. We may suppose it six feet in circumference, and that it is dragged along at the rate of three feet in a second from east to west, the axis of the roller lying north and south. Suppose a chalk line drawn on the surface of the roller parallel to its axis. The roller will turn once round in two seconds, and this line will be in contact with the ground at the intervals of every six feet. In that instant the line on the roller now spoken of is at rest, and the motion is the same as if it were fixed, and the roller really turning round it. In short, it is then a spontaneous axis of conversion.

Now, suppose the roller dragged in the same manner and in the same direction along a sheet of ice, while the ice is floating to the south at the rate of four feet in a second. It is now plain that the roller is turning round an axis through its centre of gravity, while the centre is carried in the direction $\int 36^{\circ} 52' W.$ at the rate of five

Rotation. five feet per second. It is also plain, that when the line drawn on the surface of the stone is applied to the ice, its only motion is that which the ice itself has to the southward, The motion is now a motion of rotation round this spontaneous axis of conversion, compounded with the motion of four feet per second in the direction of this axis. And thus we see that any complication of motion of rotation round an axis passing through the centre of gravity, and a motion of progression of that centre, may always be reduced to a momentary or incipient motion of rotation round another axis parallel to the former, compounded with a motion of that axis in its own direction.

The demonstration which we have given of these two propositions points out the method of finding the axis Cc , the incipient rotation round which is equivalent to the combined progressive motion of the body, and the rotation round the axis Gg . We have only to note the rotatory velocity Ah of some particle A , and its distance Ag from the axis, and the progressive velocity GI of the whole body, and then to make GC a fourth proportional to Ah , GI , and gA , and to place GC in a plane perpendicular to GI , which is perpendicular to Gg , and to place C on that side of Gg which is moving in the opposite direction to the axis.

86 In the simple case of this problem, which we exhibited in order to give us easy and familiar notions of the subject, it appeared that the retrograde velocity of rotation of the point C was equal to the progressive velocity of the centre. This must be the case in every point of the circumference of the circle of which CG , fig. 9. is the radius. Therefore, as the body advances, and turns round G , this circle will apply itself in succession to the line CK parallel to Gg ; and any individual point of it, such as C , will describe a cycloid of which this circle is the generating circle, CK the base, and CG half the altitude. The other points of the body will describe trochoids, elongated or contracted according as the describing points are nearer to or more remote from G than the point C is.

87 The application made to more complex cases.

It is now evident that all this must obtain in every case, as well as in this simple one. And when we have ascertained the distance GC between the axis of rotation passing through the centre, and the momentary spontaneous axis of conversion passing through C , we can then ascertain the relation between the motions of rotation and progression. We then know that the body will make one rotation round its central axis, while its centre moves over a space equal to the circumference of a circle of a known diameter.

We must therefore proceed to the methods for determining the position of the point C . This must depend on the proportion between the velocity of the general progressive motion, that is, the velocity of the centre, and the velocity of some point of the body.— This must be ascertained by observation. In most cases which are interesting, we learn the position of the axis, the place of its poles, the comparative progressive velocity of the centre, and the velocity of rotation of the different points, in a variety of ways; and it would not much increase our knowledge to detail the rules which may be followed for this purpose. The circumstance which chiefly interests us at present is to know how these motions may be produced; what force is necessary, and how it must be applied, in order to produce a

Rotation. given motion of rotation and progression; or what will be the motion which a given force, applied in a given manner, will produce.

We have already given the principles on which we may proceed in this investigation. We have shown the circumstances which determine the place of the centre of percussion of a body turning round a given fixed axis. This centre of percussion is the point of the body where all the inherent forces of the whirling body precisely balance each other, or rather where they unite and compose one accumulated progressive force, which may then be opposed by an equal and opposite external force. If, therefore, the body is not whirling, but at rest on this fixed axis, and if this external force be applied at the centre of percussion, now become a *point of impulsion*, a rotation will commence round the fixed axis precisely equal to what had been stopped by this external force, but in the opposite direction; or, if the external force be applied in the direction in which the centre of percussion of the whirling body was moving at the instant of stoppage, the rotation produced by this impulse will be the same in every respect. And we found that in the instant of application of this external force, either to stop or to begin the motion, no pressure whatever was excited on the supports of the axis, and that the axis was, in this instant, a spontaneous axis of conversion.

Moreover, we have shown, art. 84, that a rotation round any axis, whether fixed or spontaneous, is equivalent to, or compounded of, a rotation round another axis *parallel to it*, and passing through the centre of gravity, and a progressive motion in the direction of the centre's motion at the instant of impulse.

Now, as the position of the fixed axis, and the known disposition of all the particles of the body with respect to this axis, determines the place of the centre of percussion, and furnishes all the mathematical conditions which must be implemented in its determination, and the direction and magnitude of the force which is produced and exerted at the centre of percussion; so, on the other hand, the knowledge of the magnitude and direction of an external force which is exerted on the point of impulsion of a body not connected with any fixed axis, and of the disposition of all the parts of this body with respect to this point of impulsion, will furnish us with the mathematical circumstances which determine the position of the spontaneous axis of conversion, and therefore determine the position of the axis through the centre (parallel to the spontaneous axis of conversion), round which the body will whirl, while its centre proceeds in the direction of the external force.

89 The process, therefore, for determining the axis of progressive rotation is just the converse of the process of determining the centre of percussion. Mode of determining the axis of progressive rotation the converse of that for determining the centre of percussion.

John Bernoulli was the first who considered the motion of free bodies impelled by forces whose line of direction did not pass through their centre of gravity; and he takes it for granted, that since the body both advances and turns round an axis passing through the centre of gravity, this axis is perpendicular to the plane passing through the direction of the force, and through the point of impulsion and the centre of gravity. Other authors of the first name, such as Huyghens, Leibnitz, Roberval, &c. have thought themselves obliged to demonstrate this. Their demonstration is as follows:

Let

Rotation.
Fig. 11.

Let a body whose centre of gravity is G (fig. 11.) be impelled at the point P by a force acting in the direction PQ not passing through the centre. The inertia of the whole body will resist in the same manner as if the whole matter were collected in G, and therefore the resistance will be propagated to the point P in the direction GP. The particle P, therefore, is impelled in the direction PQ, and resisted in the direction PA, and must therefore begin to move in some direction PB, which makes the diagonal of a parallelogram of which the sides have the directions PQ and PA. The diagonal and sides of a parallelogram are in one plane. P is therefore moving in the plane APQB or GPQ, and it is turning round an axis which passes through G.—Therefore this axis *must* be perpendicular to the plane GPQ.

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It would require a series of difficult propositions to show the fallacy of this reasoning in general terms, and to determine the position of the axis through G. We shall content ourselves with a very simple case, where there can be no hesitation. Let A and B (fig. 12.) be two equal balls connected with the axis *ab* by inflexible lines *Aa*, *Bb*, perpendicular to *ab*. Let *Aa* be 1, and *Bb* 2. The centre of gravity G will evidently be in the line *cG* parallel to *Aa* and *Bb*, and in the middle of *ab*, and *cG* is $1\frac{1}{2}$. Let O be the centre of

Fig. 12.

oscillation. cO is = $\frac{A \cdot Aa + B \cdot Bb}{A + B} = \frac{1 \cdot 1 + 2 \cdot 2}{1 + 2} = \frac{5}{3}$.

Draw *Am*, *Bn* perpendicular to *cG*, and suppose the balls transferred to *m* and *n*. Their centre of oscillation will be still at O; and we see that if the system in this form were stopped at O, all would be in equilibrium. For the force with which the ball A arrives (by swinging round the axis) at *m*, is as its quantity of matter and velocity jointly, that is, $A \cdot Aa$, or 1. That of B arriving at *n* is $B \cdot Bb$, or 2. The arm *mO* of the lever turning round O is $\frac{2}{3}$, and the arm *nO* is $\frac{1}{3}$. The forces, therefore, are reciprocally as the arms of the lever on which they act, and their momenta, or powers to turn the line *mn* round O, are equal and opposite, and therefore balance each other; and therefore, at the instant of stopping, no pressure is exerted at *c*. Therefore, if any impulse is made at O, the balls at *m* and *n* will be put in motion with velocities 1 and 2, and *c* will be a spontaneous centre of conversion. Let us see whether this will be the case when the balls are in their natural places A and B, or whether there will be any tendency to a rotation round the axis *cO*. The momentum of A, by which it tends to produce a rotation round *cO* is $A \cdot Aa \cdot Am$, = $1 \times 1 \times \frac{2}{3}$. That of B is $B \cdot Bb \cdot Bn$, = $2 \times 2 \times \frac{1}{3}$. *Am* and *Bn* are equal, and therefore the momentum of B is double that of A, and there is a tendency of the system to turn round *cC*; and if, at the instant of stoppage, the supports of the axis *ab* were removed, this rotation round *cO* would take place, and the point *b* would advance, and *a* would recede, *c* only remaining at rest. Therefore, if an impulse were made at O, *ab* would not become a spontaneous momentary axis of conversion, and O is not the centre of percussion. This centre must be somewhere in the line OP parallel to *ab*, as at P, and so situated that the momenta $A \cdot Aa \cdot Aa$ and $B \cdot Bb \cdot Bb$ may be equal, or that Aa may be double of Bb , or *a* double of *b*. If an impulse be now made at P, the balls AB will be urged by forces as 1 and 2, and

therefore will move as if round the axis *ab*, and there will be no pressures produced at *a* and *b*, and *ab* will really become a momentary spontaneous axis of conversion.

Rotation.

Now join G and P. Here then it is evident, that a body or system A, B, receiving an impulse at P perpendicular to the plane *acG*, acquires to itself a spontaneous axis of conversion which is not perpendicular to the line joining the point of impulsion and the centre of gravity. And we have shown, in art. 84. that this motion round *ab* is compounded of a progressive motion of the whole body in the direction of the centre, and a rotation round an axis passing through the centre parallel to *ab*. Therefore, in this system of free bodies, the axis of rotation is not perpendicular to the plane passing through the centre of gravity in the direction of the impelling force.

As we have already observed, it would be a laborious task to ascertain in general terms the position of the progressive axis of rotation. Although the process is the inverse of that for determining the centre of percussion when the axis of rotation is given, it is a most intricate business to convert the steps of this process. The general method is this: The momentum of a particle A (fig. 5.) by which it tends to change the position of the axis *Dd*, has for its factors Aa , Aa , and Aa , which are its distances from three planes *Dd*, *ΔΔ*, *DCOn*, and *Cggn*, given in position. The sum of all these must be equal to nothing, by the compensation of positive and negative quantities. We must find three other planes (of which only one is in some measure determined in position, being perpendicular to *DCOn*), so situated that the sums of similar products of the distances of the particles from them may in like manner be equal to nothing. This is a very intricate problem; so intricate, that mathematicians have long doubted and disputed about the certainty of the solutions. Euler, d'Alembert, Frisi, Landen, and others, have at last proved, that every body, however irregular its shape, has at least three axes passing through its centre of gravity, round which it will continue to revolve while proceeding forward, and that these are at right angles to each other; and they have given the conditions which must be implemented in the determination of these axes. But they still leave us exceedingly at a loss for means to discover the positions of the axes of a given body which have these conditions.

Difficulty of ascertaining its position in general terms.

To solve this problem therefore in general terms, would lead to a disquisition altogether disproportioned to our work. We must restrict ourselves to those forms of body and situations of the point of impulsion which admit of the coincidence of the centres of oscillation and percussion; and we must leave out the cases where the axis has a motion in the direction of its length; that is, we shall always suppose the spontaneous axis of conversion to have no motion. Thus we shall comprehend the phenomena of the planetary motions, similar to the precession of our equinoctial points, and all the interesting cases of practical mechanics. The speculative mathematical reader will fill up the blanks of this investigation by consulting the writings of Euler and d'Alembert in the Berlin Memoirs, Frisi's Cosmographia, and the papers of Mr Landen, Mr Milner, and Mr Vince, in the Philosophical Transactions. But we hope, by means of a beautiful proposition on the com-

Rotation.

Rotation.

position of rotatory motions, to enable every reader to discover the position of the axis of progressive rotation in every case which may interest him, without the previous solution of the intricate problem mentioned above.

the centre G; but when it is in the opposite point C, its retrograde velocity being equal to the progressive velocity of the centre, it must be at rest. In every position of the body, therefore, that point of the accompanying circumference which is at this extremity of the perpendicular drawn through the centre on the line of direction of the impelling force is at rest. It is at that instant a spontaneous centre of conversion, and the straight line drawn through it perpendicular to the plane of the figure is then a spontaneous axis of conversion, and every particle is in a momentary state of rotation round this axis, in directions perpendicular to the lines drawn to the axis at right angles, and with velocities proportional to these distances; and lastly, the body advances in the direction GI through a space equal to the circumference BCD, while it makes one turn round G.

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Mode of ascertaining it in most interesting cases.

Fig. 13.

Let $ABPC\beta bA$ (fig. 13.) be a section of a body through its centre of gravity G, so formed, that the part $ABPC$ is similar, and similarly placed with the part $A\beta bC$, so that the plane AC would divide it equally. Let this body be impelled at P in the direction HP, perpendicular to the plane AC. The axis round which it will turn will be perpendicular to $G\pi$. Suppose it at A. Then drawing AB and Ab to similar points, it is plain that $B\beta, b\beta$ are equal and opposite; these represent the forces which would raise or lower one end of the axis, as has been already observed. The axis therefore will remain perpendicular to $G\pi$.

Let A be one of the particles in the plane of the figure. Join AC, AG, AP. Draw Ab, Ac, Ad perpendicular to CP, CA, GA. The absolute motion Ac of A is compounded of the progressive motion Ab common to the whole body and equal to GI, and the motion Ad of rotation round the centre of gravity G. Therefore since Ab is equal to v, and Ac is the diagonal of a parallelogram given both in species and magnitude, it is also given, and (as appears also from the reasoning in art. 85.) it is to GI as CA to CG.

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Let the body be so shaped, that if the parts to the right and left of the point of impulse π (the impulse is here supposed not perpendicular to the plane AC, but in this plane) are equal and similarly placed; then the momenta round AC must balance each other, and the axis EF will have no tendency to go out of the plane ABCbA perpendicular to the impulse.

By the application of the force mv in the direction FP, every particle of the body is dragged out of its place, and exerts a resistance equal to the motion which it acquires. A part of this force, which we may call m \dot{v} , is employed in communicating the motion Ac to A. And, from what has been lately shown, $CG : CA = GI : Ac = v : Ac$, and therefore $Ac = \frac{v \cdot CA}{CG}$.

Any body whose shape has these two properties will turn round an axis perpendicular to the plane which passes through the centre of gravity in the direction of the impelling force. This condition is always found in the planets when disturbed by the gravitation to a distant planet: for they are all figures of revolution. The direction of the disturbing or impelling force is always in a plane passing through the axis and the disturbing body.

But farther (agreeably to what was demonstrated in art. 16.) we have $CP : CA = Ac : m\dot{v} = \frac{v \cdot CA}{CG} : m\dot{v}$, and therefore $m\dot{v} = \frac{v \cdot CA^2}{CG \cdot CP}$. Therefore the whole force employed in communicating to each particle the motion it really acquires, or m \dot{v} , is equal to the fluent of the quantity $\frac{v \cdot CA^2}{CP \cdot CG}$ or $m\dot{v} = \frac{v \cdot f \cdot CA^2}{CP \cdot CG}$, and $m \cdot CP \cdot CG = f \cdot CA^2$, which by art. 23. is equal to $f \cdot GA^2 + m \cdot CG^2$. Therefore we have $m \cdot CP \cdot CG = m \cdot CG = CG = f \cdot GA^2$, or $m \cdot GP \cdot CG = f \cdot GA^2$, and finally, $CG = \frac{f \cdot GA^2}{m \cdot GP}$.

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Fig. 14.

Let G (fig. 14.) be the centre of gravity of a body in free space, which is impelled by an external force f, acting in the line FP, which does not pass through the centre. Let m be the number of equal particles in the body, or its quantity of matter. Let the force f be such, that it would communicate to the body the velocity v; that is, would cause the centre to move with the velocity v. It may be expressed by the quantity of motion which it produces, that is, by mv, and it would produce the velocity mv on one particle. It is required to determine the whole motion, progressive and rotatory, which it will produce, and the space which it will describe during one turn round its axis.

Now the form of the body gives us $f \cdot GA^2$, and the position of the impelling force gives us $m \cdot GP$. Therefore we can compute the value of CG; and if π be the periphery of a circle whose radius is unity, we have $\pi \cdot CG$ equal to the space which the body must describe in the direction GI, while it makes one rotation round its axis.

Draw GI parallel and PGC perpendicular to FP, and let GI be taken for the measure of the progressive velocity v.

It has been demonstrated that the centre G will proceed in the direction GI with the velocity v, and that the body will at the same time turn round an axis passing through G, perpendicular to the plane of the figure, every particle describing circles in parallel planes round this axis, and with velocities of rotation proportional to their distances from it. There is therefore a certain distance GB, such that the velocity with which a particle describes its circumference is equal to the progressive velocity v. Let BCD be this circumference. When the particle describing this circumference is in the line CGP, and in that part of it which lies beyond P from G, its absolute velocity must be double that of

Cor. 1. The angular velocity, that is, the number of turns or the number of degrees which one of the radii will make in a given time, is proportional to the impelling force: for the length of CG depends only on the form of the body and the situation of the point of impulsion; while the time of describing π times this length is inversely as the force.

2. The angular velocity with any given force is as $\frac{GP}{CG}$.

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Rotation. GP: for CG, and consequently the circumference $\pi \cdot CG$, described during one turn, is inversely as GP.

99 3. PC is equal to $\frac{\int PA^2}{m \cdot GP}$: for we have $\int PA^2 = \int GA^2 + m \cdot GP^2$. Therefore $\frac{\int PA^2}{m \cdot GP} = \frac{\int GA^2}{m \cdot GP} + \frac{m \cdot GP^2}{m \cdot GP} = CG + GP, = CP$.

100 4. If the point C is the centre of impulsion of the same body, P will be a spontaneous centre of conversion (see art. 41.).

101 5. A force equal and opposite to mv , or to f , applied at G, will stop the progressive motion, but will make no change in the rotation; but if it be applied at P, it will stop all motion both progressive and rotatory. If applied between P and G, it will stop the progressive motion, but will leave some motion of rotation. If applied beyond P it will leave a rotation in the opposite direction. If applied beyond G, or between G and C, it will increase the rotation. All this will be easily conceived by reflecting on its effect on the body at rest.

102 6. A whirling body which has no progressive motion cannot have been brought into this state by the action of a single force. It may have been put into this condition by the simultaneous operation of two equal and opposite forces. The equality and opposition of the forces is necessary for stopping all progressive motion. If one of them has acted at the centre, the rotatory motion has been the effect of the other only. If they have acted on opposite sides, they conspired with each other in producing the rotation; but have opposed each other if they acted on opposite sides.

In like manner, it is plain that a motion of rotation, together with a progressive motion of the centre in the direction of the axis, could not have been produced by the action of a single force.

103 7. When the space S which a body describes during one rotation has been observed, we can discover the point of impulse by which a single force may have acted in producing both the motions of progression and rotation: for $CG = \frac{S}{\pi}$, and $GP = \frac{\int GA^2}{m \cdot CG} = \frac{\pi \int GA^2}{m \cdot S}$.

104 Application of this doctrine to the heavenly motions. In this manner we can tell the distances from the centre at which the sun and planets may have received the single impulses which gave them both their motions of revolution in their orbits and rotation round their axes.

It was found (art. 40. f) that the distance OG of the centre of oscillation or percussion of a sphere swinging round the fixed point C from its centre G, is $\frac{2}{3}$ of the third proportional to CG, and the radius of the sphere, or that $OG = \frac{2}{3} \frac{RC^2}{CG}$. Supposing the planets to be homogeneous and spherical, and calling the radius of the planet r , and the radius of its orbit R, the time of a rotation round its axis t , and the time of a revolution in its orbit T, and making $1 : \pi$ the ratio of radius to the periphery of a circle, we shall have πR for the circumference of the orbit, and $\pi R \frac{t}{T}$ for

the arch of this circumference described during one rotation round the axis. This is S in the above-mentioned formula. Then, diminishing this in the ratio of the circumference to radius, we obtain $CG = R \frac{t}{T}$,

and $OG = \frac{2}{3} \frac{r^3}{CG} = \frac{2}{3} \frac{T r^3}{t R}$. This is equivalent to $\frac{\pi \int GA^2}{m \cdot S}$, and easier obtained.

This gives us G v

For the Earth =	$\frac{r}{157}$	} nearly.
Moon	$\frac{r}{555}$	
Mars	$\frac{r}{195}$	
Jupiter	$\frac{r}{2.8125}$	
Saturn	$\frac{r}{2.588}$	

105

We have not data for determining this for the sun. But the very circumstance of his having a rotation in 27 d. 7 h. 47 m. makes it very probable that he, with all his attending planets, is also moving forward in the celestial spaces, perhaps round some centre of still more general and extensive gravitation: for the perfect opposition and equality of two forces, necessary for giving a rotation without a progressive motion, has the odds against it of infinity to unity. This corroborates the conjectures of philosophers, and the observations of Herschel and other astronomers, who think that the solar system is approaching to that quarter of the heavens in which the constellation Aquila is situated.

8. As in the communication of progressive motion among bodies, the same quantity of motion is preserved before and after collision, so in the communication of rotation among whirling bodies the quantity of rotatory momentum is preserved. This appears from the general tenor of our formulæ: for if we suppose a body turning round an axis passing through its centre, without any progressive motion, we must suppose that the force mv , which put it in motion, has been opposed by an equal and opposite force. Let this be supposed to have acted on the centre. Then the whole rotation has been the effect of the other acting at some distance GP from the centre. Its momentum is $mv \cdot GP$. Had it acted alone, it would have produced a rotation compounded with a progressive motion of the centre with the velocity v ; and the body acquires a momentary spontaneous axis of conversion at the distance GC from the centre of gravity. The absolute velocity AC of

any particle is $\frac{v \cdot AC}{CG}$; its momentum is $\frac{v \cdot AC^2}{GC}$, and the sum of all the momenta is $\frac{\int v \cdot AC^2}{CG}$, or $\frac{v \int AC^2}{CG}$, and this is equal to $mv \cdot GP$. But when the

progressive motion is stopped, Ab , which was a constituent of the absolute motion of A, is annihilated, and nothing remains but the motion Ad of rotation round G. But the triangles dAc and GAc were demonstrated

Rotation. frated (n^o 81.) to be similar; and therefore AC: Ad = CA: GA. Therefore the absolute velocity of the particle, while turning round the quiescent centre of gravity G, is $\frac{v \cdot GA}{GC}$; its momentum is $\frac{v \cdot GA^2}{GC}$; the

sum of all the momenta is $\frac{v \cdot GA}{GC}$; and this is still equal to mv . Observe, that now GC is not the distance of the centre of conversion from the centre of gravity, because there is now no such thing as the spontaneous axis of conversion, or rather it coincides with the axis of rotation. GC is the distance from the centre of a particle whose velocity of rotation is equal to v .

Now let the body be changed, either by a new distribution of its parts, or by an addition or abstraction of matter, or by both; and let the same force mv act at the same distance GP from the centre. We shall still have $mv \cdot GP = \frac{v \cdot GA^2}{GC}$; and therefore the sum

of the momenta of the particles of the whirling body is still the same, viz. equal to the momentum of the force mv acting by the lever GP. If therefore a free body has been turning round its centre of gravity, and has the distribution of its parts suddenly changed (the centre however remaining in the same place), or has a quantity of matter suddenly added or taken away, it will turn with such an angular velocity that the sum of the momenta is the same as before.

107
Application to the problem of the precession of the equinoxes.

We have been so particular on this subject, because it affects the celebrated problem of the precession of the equinoxes; and Sir Isaac Newton's solution of it is erroneous on account of his mistake in this particular. He computes the velocity with which a quantity of matter equal to the excess of the terrestrial spheroid over the inscribed sphere would perform its librations, if detached from the spherical nucleus. He then supposes it suddenly to adhere to the sphere, and to drag it into the same libratory motion; and he computes the libration of the whole mass, upon the supposition that the quantity of motion in the libratory spheroid is the same with the previous quantity of motion of the librating redundant ring or shell; whereas he should have computed it on the supposition that it was the quantity of momenta that remained unchanged.

The same thing obtains in rotations round fixed axes, as appears by the perfect sameness of the formulæ for both classes of motions.

This law, which, in imitation of the Leibnitzians, we might call the *conservatio momentorum*, makes it of importance to have expressions of the value of the accumulated momenta in such cases as most frequently occur. The most frequent is that of a sphere or spheroid in rotation round an axis or an equatorial diameter; and a knowledge of it is necessary for the solution of the problem of the precession of the equinoxes. See PRECESSION, n^o 33.

108
Fig. 15.

Let AP ap (fig. 15.) be a sphere turning round the diameter Pp, and let DD', dd' be two circles parallel to the equator Aa, very near each other, comprehending between them an elementary slice of the sphere. Let CA be = a , CB = x , and BD = y , and let π be the circumference of a circle whose radius is 1. Lastly, let the velocity of the point A be v . Then

$\frac{v \cdot y}{a}$ is the velocity at the distance y from the axis, πy Rotation.

is the quantity of matter in the circumference whose radius is y ; for it is the length of that circumference when expanded.

$\frac{v \pi y^2}{a}$, or $\frac{v \cdot y}{a} \times \pi y$, is the quantity of motion in this circumference turning round the axis Pp.

$\frac{v \pi y^3}{a}$ is the momentum of the same circumference.

$\frac{v \pi y^3 \dot{y}}{a}$ is the fluxion of the momentum of the circle whose radius is y , turning in its own plane round the axis.

$\frac{v \pi y^4}{4 \cdot a}$ is the fluent, or the momentum of the whole circle; and therefore it is the momentum of the circle DD'.

$\frac{v \pi y^4 \dot{x}}{4a}$ is the fluxion of the momentum of the hemisphere; for Bb = \dot{x} , and this fraction is the momentum of the slice d DD' d'.

$y^3 = a^3 - x^3$, and $y^4 = a^4 - 2a^2 x^2 + x^4$. Therefore $\frac{v \pi}{2a} \times (a^4 \dot{x} - 2a^2 x^2 \dot{x} + x^4 \dot{x})$ is the fluxion of the momentum of the whole sphere. Of this the fluent for the segments whose heights are CB, or x , is $\frac{v \pi}{2a}$

$$(a^4 x - \frac{2a^2 x^3}{3} + \frac{x^5}{5}).$$

Let x become a , and we have for the momentum of the whole sphere $\frac{v \pi}{2a} (a^5 - \frac{2}{3} a^5 + \frac{1}{5} a^5) = v \pi (\frac{a^4}{2} - \frac{a^4}{3} + \frac{a^4}{10}) = v \pi \frac{4}{15} a^4$.

Let us suppose that this rotation has been produced by the action of a force mu ; that is, a force which would communicate the velocity u to the whole matter of the sphere, had it acted in a direction passing through its centre; and let us suppose that this force acted on the equatorial point A at right angles to AC: Its momentum is $mu a$, and this is equal to $v \pi \frac{4}{15} a^4$. Also, we know that $m = \frac{2}{3} \pi a^3$. Therefore we have $u \cdot \frac{2}{3} \pi a^4 = v \frac{4}{15} \pi a^4$, $\frac{2}{3} u = \frac{4}{15} v$, and $v = \frac{5}{2} u$.

Let EPQp be an oblate spheroid whose semi-axis PC is a , and equatorial radius EC is b , and let v be the velocity on the equator of the inscribed sphere. Then since the momentum of the whirling circle DD is $\frac{v \pi y^4}{4a}$, the momenta of the sphere and spheroid are in the quadruplicate ratio of their equatorial radii; and therefore that of the whole spheroid is $\frac{4}{15} \pi b^4 v$. And if w be the velocity at E corresponding to the velocity v at A, so that $w = \frac{b}{a} v$, we have the momentum of the spheroid, expressed in terms of the equatorial velocity at the surface, $\frac{4}{15} b^3 a w$.

If the same force mu be made to act in the same manner

Rotation. manner at E, its momentum mub is $= \frac{4}{15} b^3 a w$, and $w = \frac{15 mu}{4 \pi b^2 a}$. Therefore the angular velocities $\frac{v}{a}, \frac{w}{b}$, which the same force mu acting at A or E will produce in the sphere and the spheroid, are as $\frac{15 mu}{4 \pi a^4}$ and $\frac{15 mu}{4 b^3 a}$, that is, in the triplicate ratio of the equatorial diameter b to the polar axis a .

112 Lastly, if the oblate spheroid is made to turn round an equatorial diameter passing through C perpendicular to the plane of the figure, it is plain that every section parallel to the meridian EPQ ρ is an ellipse similar to this meridian. If this ellipse differs very little from the inscribed circle, as is the case of the earth in the problem of the precession of the equinoxes, the momentum of each ellipse may be considered as equal to that of a circle of the same area, or whose diameter is a mean proportional between the equatorial and polar diameters of the spheroid. This radius is to the radius of the circumscribed circle as \sqrt{ba} to b . Therefore the momenta of the section of the spheroid and of the circumscribed sphere are in the constant ratio of $b^3 a^2$ to b^4 , or of a^2 to b^2 . And if the velocity in the equator of this circumscribed sphere be called w , the momentum of the sphere is $\frac{4}{15} \pi b^4 w$; and therefore that of the spheroid is $\frac{4}{15} \pi b^4 w$, agreeably to what was assumed in the article PRECESSION, n^o 33.

This value of the momentum of a spheroid round an equatorial diameter is only a very easy approximation; an exact value may be obtained by an infinite series. The whole matter of the spheroid may be considered as uniformly distributed on the surface of a similar spheroid whose diameter is $= \sqrt{\frac{1}{3}}$ of the diameter of the spheroid. It will have the same momentum, because a triangle in one of the ellipses, having an elementary arch of the circumference for its base, and the centre of the ellipse for its vertex, has its centre of gyration distant from the vertex $\sqrt{\frac{1}{3}}$ the length of the radius of the ellipse, and the problem is reduced to the finding the sum of all these lines. But even when the series for this sum involves the 3d power of the eccentricity, it is not more exact than the above approximation.

A similar proposition may be obtained for a prolate spheroid vibrating round an equatorial diameter, and applied to the conjectural shape of the moon, for explaining her oscillations.

113 All rotatory motions accompanied by centrifugal forces.

The reader must have observed that the preceding disquisitions refer to those motions only which result from the action of external forces and to the state of incipient motion. All circular motions, such as those of rotation, are accompanied by centrifugal forces. A central force is necessary for retaining every particle in its circular path; such forces must therefore be excited in the body, and can arise only from the forces of cohesion by which its particles are held together. These forces are mutual, equal, and opposite; and as much as a particle A (fig. 5.) is retained by a force in the direction A a of the line which connects it with the fixed axis D d , or in the direction AG (fig. 10.), which connects it with the progressive axis; so much must the point a of the axis D d be urged in the opposite direction a A, or so much must the whole body be urged in the direction GA. Every point therefore of the axis

Rotation. D d , or of the axis through G in fig. 10. is carried in a variety of directions perpendicular to itself. These forces may or may not balance each other. If this balance obtains with respect to the fixed axis, its supports will sustain no pressure but what arises from the external force; if not, one support will be more pressed than the other; and if both were removed, the axis would change its position. The same must be affirmed of the axis through G in fig. 10. This, having no support, must change its position.

114 And thus it may happen, that the axis of rotation passing through G which has been determined by the preceding disquisitions, is not permanent either in respect of the body, or in respect of absolute space. These two rotations are essentially different. The way to conceive both is this. Suppose a spherical surface described round the body, having its centre in the centre of gravity; and suppose this surface to revolve and to proceed forward along with the body: in short, let it be conceived as an immaterial surface attached to the body. The axis of rotation will pass through this surface in two points which we shall call its poles. Now, we say that the axis is permanent with respect to the body when it has always the same poles in this spherical surface. Suppose another spherical surface described round the same centre, and that this surface also accompanies the body in all its progressive motion, but does not turn with it. The axis is permanent with respect to absolute space when it has always the same poles in this surface: it is evident that these two facts are not inseparable. A boy's top spins on the same point and the same corporeal axis, while, towards the end of its motion, we observe it directing this round and round to different quarters of the room. And when we make an egg or a lemon spin with great rapidity on its side on a level table, we see it gradually rise up, till it stand quite on end, spinning all the while round an axis pointing to the zenith.

115 Fig. 16. This change in the position of the axis is produced by the unbalanced actions of the centrifugal forces exerted by the particles. Suppose two equal balls A and B (fig. 16.) connected by an inflexible rod whose middle point is G, the centre of gravity of the balls. This system may be made to turn round the material axis D d , A describing the circle AEFA, and B describing the circle BHKB. The rod AB may also be conceived as moveable round the point G by means of a pin at right angles to the axis. Suppose the balls passing through the situations A and B; their centrifugal forces urge them at the same time in the directions CA and OB, which impulsions conspire to make the connecting rod recede from both ends of the axis D d . And thus the balls, instead of describing parallel circles round this axis, will describe parallel spirals, gradually opening the angles DGA, d GB more and more, till the balls acquire the position $\alpha\beta$ at right angles to the axis. They will not stop there, for each came into that position with an oblique motion. They will pass it; and were it not for the resistance of the air and the friction of the joint at G, they would go on till the ball A came to describe the circle BHK, and the ball B to describe the circle AEF. The centrifugal forces will now have exhausted by opposition all the motions which they had acquired during their passage from the position AB to the position $\alpha\beta$; and now they will again describe spirals

Rotation. rals gradually opening, and then contracting, till the balls arrive at their original position AB, when the process will begin again. Thus they will continue a kind of oscillating rotation.

216 Thus the axis is continually changing with respect to the system of balls; but it is fixed in respect to absolute space, because the axis Dd is supported. It does not yet appear that it has any tendency to change its position, because the centrifugal tendency of the balls is completely yielded to by the joint at G . The material axis has indeed sustained no change; but the real axis, or mathematical line round which the rotation was going on every moment, has been continually shifting its place. This is not so obvious, and requires a more attentive consideration. To show accurately the gradual change of position of the real axis of rotation would require a long discussion. We shall content ourselves with exhibiting a case where the position of the momentary axis is unquestionably different from Dd , which we may suppose horizontal.

Take the balls in the position $\alpha\beta$. They came into this position with a spiral motion, and therefore each of them was moving obliquely to the tangents $\alpha\phi, \beta\gamma$ to the circle $\alpha\delta\beta\epsilon$, suppose in the directions $\alpha\theta, \beta\lambda$. They are therefore moving round the centre G in a plane $\theta\alpha\beta\lambda$, inclined to the plane $\phi\alpha\beta\gamma$ of the circle $\alpha\delta\beta\epsilon$. The momentary axis of rotation is therefore perpendicular to this oblique plane, and therefore does not coincide with Dd .

117 Of the evagation of the axis. We cannot enter upon the investigation of this evagation of the axis, although the subject is both curious and important to the speculative mathematicians. A knowledge of it is absolutely necessary to a complete solution of the great problem of the precession. But when treating that article, we contented ourselves with showing that the evagation which obtains in this natural phenomenon is so exceedingly minute, that although multiplied many thousands of times, it would escape the nicest observations of modern astronomers; and that it is a thing which does not accumulate beyond a certain limit, much too small for observation, and then diminishes again, and is periodical. Euler, D'Alembert, Frisi, and De la Grange, have shown the momentary position of the real variable axis corresponding to any given time; and Landen has with great ingenuity and elegance connected these momentary positions, and given the whole paths of evagation. Mr Segnor was, we believe, the first who showed (in a Dissertation *De Motu Turbinum*, Halle, 1755), that in every body there were at least three lines passing through the centre of gravity at right angles to each other, forming the solid angle of a cube, round which the centrifugal forces were accurately balanced, and therefore a rotation begun round either of these three lines would be continued, and they are permanent axes of rotation. Albert Euler gave the first demonstration in 1760, and since that time the investigation of these axes has been extended and improved by the different authors already named. It is an exceedingly difficult subject; and we recommend the synthetical investigation by Frisi in his *Cosmographia* as the fittest for instructing a curious reader to whom the subject is new. We shall conclude this dissertation with a beautiful theorem, the enunciation of which we owe to P. Frisi, which has amazingly improved the whole theory, and gives easy and elegant

solutions of the most difficult problems. It is analogous to the great theorem of the composition of motions and forces. **Rotation.**

118 If a body turn round an axis AGa (fig. 17.) passing through its centre of gravity G with the angular velocity a , while this axis is carried round another axis BGb with the angular velocity b , and if GD be taken to GK as a to b (the points B and E being taken on that side of the centre where they are moving towards the same side of the plane of the figure), and the line DE be drawn, then the whole and every particle of the body will be in a state of rotation round a third axis CGc , lying in the plane of the other two, and parallel to DE , and the angular velocity c round this axis will be to a and to b as DE is to GD and to GE .

For, let P be any particle of the body, and suppose a spherical surface to be described round G passing through P . Draw PR perpendicular to the plane of the figure. It is evident that PR is the common section of the circle of rotation IPi round the axis Aa , and the circle KPk of rotation round the axis Bb . Let Ii, Kk be the diameters of these circles of rotation, F and G their centres. Draw the radii PF and PO , and the tangents PM and PN . These tangents are in a plane MPN which touches the sphere in P , and cuts the plane of the axis in a line MN , to which a line drawn from the centre G of the sphere through the point R is perpendicular. Let PN represent the velocity of rotation of the point P round the axis Bb , and Pf its velocity of rotation round Aa . Complete the parallelogram $PNtf$. Then Pt is the direction and velocity of motion resulting from the composition of PN and Pf . Pt is in the plane MPN , because the diagonal of a parallelogram is in the plane of its sides PN and Pf .

Let perpendiculars fF, tT , be drawn to the plane of the axes, and the parallelogram $PNtf$ will be orthographically projected on that plane, its projection being a parallelogram $RNTF$. (F here falls on the centre by accident). Draw the diagonal RT . It is evident that the plane $PRtT$ is perpendicular to the plane of the two axes, because PR is so. Therefore the compound motion Pt is in the plane of a circle of revolution round some axis situated in the plane of the other two. Therefore produce TR , and draw GC cutting it at right angles in H , and let LPi be the circle, and PH a radius. Pt is therefore a tangent, and perpendicular to PH , and will meet RT in some point Q of the line MN . The particle P is in a state of rotation round the axis CGc , and its velocity is to the velocities round Aa or Bb as Pt to Pf or PN . The triangles PRN and OPN are similar. For PN the tangent is perpendicular to the radius OP , and PR is perpendicular to ON .

Therefore $OP : PN = PR : RN$, and $RN = \frac{PR \cdot PN}{OP}$.
 But the velocity of P round the axis Bb is $OP \cdot b$. Therefore $RN = \frac{PR \cdot OP \cdot b}{OP} = PR \cdot b$. In like manner $RF = PR \cdot a$. Therefore $RF : RN = a : b = GD : GE$.
 But $NT : RN = \text{fine } NRT : \text{fine } NTR$, and $GD : GE = \text{fine } GED : \text{fine } GDE$. Therefore $\text{fine } NRT : \text{fine } NTR = \text{fine } GED : \text{fine } GDE$. But $RNT = EGD$, for NR is perpendicular to EG and NT (being parallel

Rotation.

to IF) is perpendicular to DG. Therefore TR is perpendicular to ED, and Cc is parallel to ED, and the rotation of the particle P is round an axis parallel to ED.

And since RN, RF, RT, are as the velocities b , a , c , round these different axes, and are proportional to EG, DG, DE, we have c to a or to b as ED to GD or GE, and the proposition is demonstrated.

This theorem may be thus expressed in general terms.

119
Expressed
in general
terms.

If a body revolves round an axis passing through its centre of gravity with the angular velocity a , while this axis is carried round another axis, also passing through its centre of gravity, with the angular velocity b , these two motions compose a motion of every particle of the body round a third axis, lying in the plane of the other two, and inclined to each of the former axes in angles whose sines are inversely as the angular velocities round them; and the angular velocity round this new axis is to that round one of the primitive axes as the sine of inclination of the two primitive axes is to the sine of the inclination of the new axis to the other primitive axis.

When we say that we owe the enunciation of this theorem to P. Frisi, we grant at the same time that something like it has been supposed or assumed by other authors. Newton seems to have considered it as true, and even evident, in homogeneous spheres; and this has been tacitly acquiesced in by the authors who followed him in the problem of the precession. Inferior writers have carelessly assumed it as a truth. Thus Nollet, Gravefande, and others, in their contrivances for exhibiting experiments for illustrating the composition of vortices, proceeded on this assumption. Even authors of more scrupulous research have satisfied themselves with a very imperfect proof. Thus Mr Landen, in his excellent dissertation on rotatory motion, Philosophical Transactions, Vol. lxxvii. contents himself with showing, that, by the equality and opposite directions of the motions round the axes Aa and Bb , the point C will be at rest, and from thence concludes that CG c will be the new axis of rotation. But this is exceedingly hasty (note also, that this dissertation was many years posterior to that of P. Frisi): For although the separate motions of the point C may be equal and opposite, it is by no means either a mathematical or a mechanical consequence that the body will turn round the axis Cc. In order that the point C may remain at rest, it is necessary that all tendencies to motion be annihilated: this is not even thought of in making the assumption. Frisi has shown, that in the motion of every particle round the axis Cc, there is involved a motion round the two axes Aa and Bb , with the velocities a and b ; and it is a consequence of this, and of this only, that the impulses which would separately produce the rotations of every particle round Aa and Bb will, either in succession or in conjunction, produce a rotation round Cc. Moreover, Mr Landen's not having attended to this, has led him, as we imagine, into a mistake respecting the velocity with which the axis changes its position; and though his process exhibits the path of evagation with accuracy, we apprehend that it does not assign the true times of the axes arriving at particular points of this path.

120
Conclusions
deduced
from this
proposition.

It follows from this proposition, that if every particle of a body, whether solid or fluid, receives in one instant a separate impulse, competent to the production of a motion of the particle round an axis with a cer-

tain angular velocity, and another impulse competent to the production of a motion round another axis with a certain velocity, the combined effect of all these impulses will be a motion of the whole system round a third axis given in position, with an angular velocity which is also given: and this motion will obtain without any separation or disunion of parts; for we see that a motion round two axes constitutes a motion round a third axis in every particle, and no separation would take place although the system were incoherent like a mass of sand, except by the action of the centrifugal forces arising from rotation. Mr Simpson therefore erred in his solution of the problem of the precession, by supposing another force necessary for enabling the particles of the fluid spheroid to accompany the equator when displaced from its former situation. The very force which makes the displacement produces the accompaniment, as far as it obtains, which we shall see presently is not to the extent that Mr Simpson and other authors who treat this problem have supposed.

For the same reason, if a body be turning round any axis, and every particle in one instant get an impulse precisely such as is competent to produce a given angular velocity round another axis, the body will turn round a third axis given in position, with a given angular velocity: for it is indifferent (as it is in the ordinary composition of motion) whether the forces act on a particle at once or in succession. The final motion is the same both in respect of direction and velocity.

Lastly, when a rigid body acquires a rotation round an axis by the action of an impulse on one part of it, and at the same time, or afterwards, gets an impulse on any part which, alone, would have produced a certain rotation round another axis, the effect of the combined actions will be a rotation round a third axis, in terms of this proposition; for when a rigid body acquires a motion round an axis, not by the simultaneous impulse of the precisely competent force on each particle, but by an impulse on one part, *there has been propagated to every particle* (by means of the connecting forces) an impulse precisely competent to produce the motion which the particle really acquires; and when a rigid body, already turning round an axis Aa (fig. 17.), receives an impulse which makes it actually turn round another axis Cc , *there has been propagated to each particle* a force precisely competent to produce, not the motion, but the *change* of motion which takes place in that particle, that is, a force which, when compounded with the inherent force of its primitive motion, produces the new motion; that is (by this theorem), a force which alone would have caused it to turn round a third axis Bb , with a rotation making the other constituent of the actual rotation round Cc.

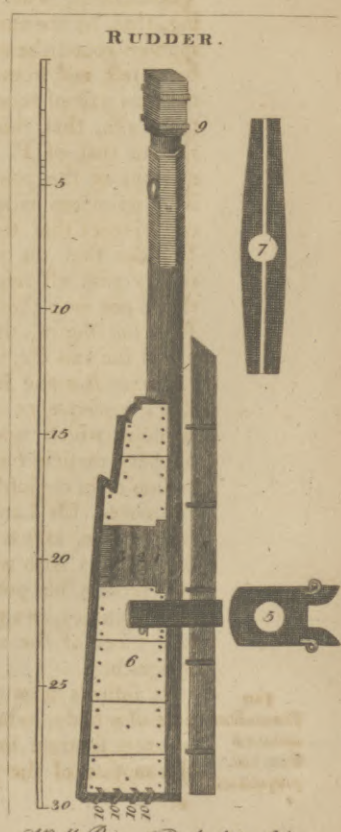
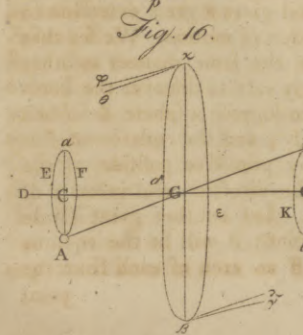
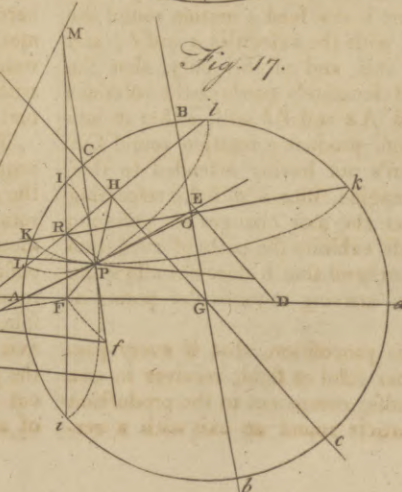
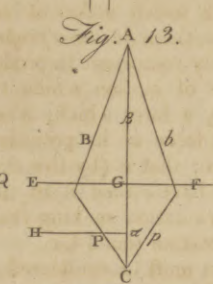
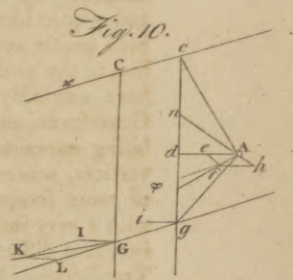
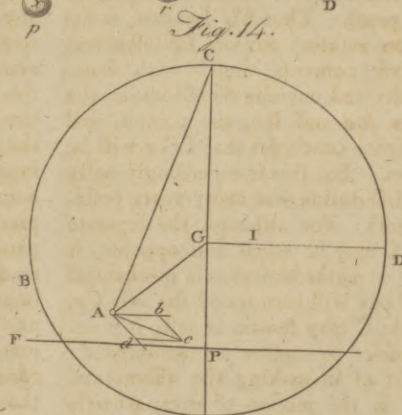
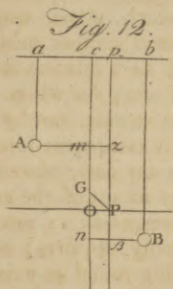
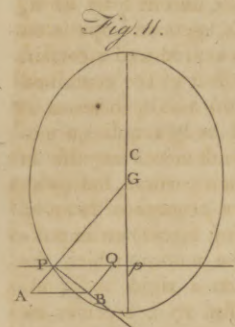
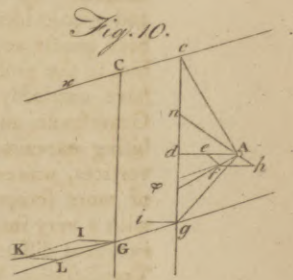
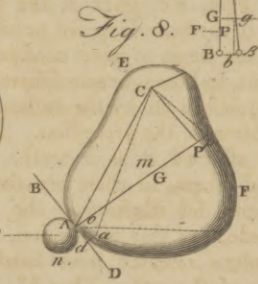
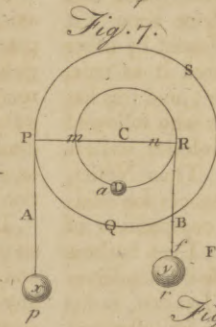
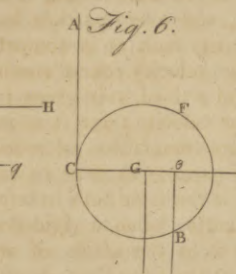
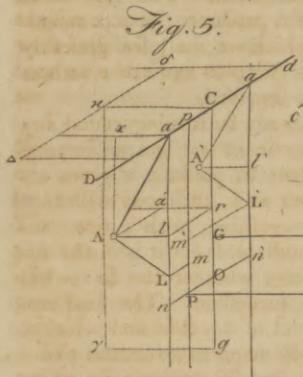
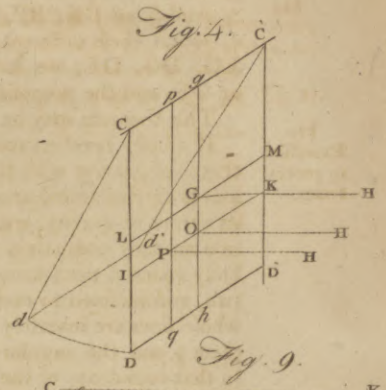
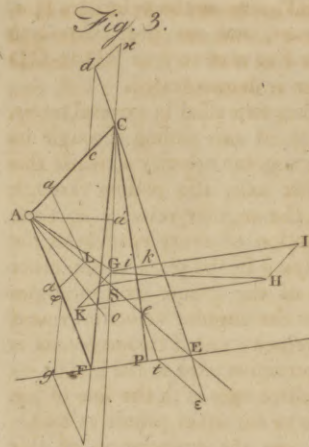
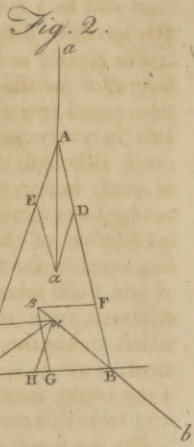
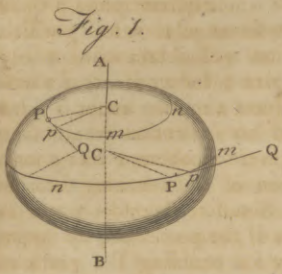
This must be considered as one of the most important propositions in dynamics, and gives a great extension to the doctrine of the composition of motion. We see that rotations are compounded in the same manner as other motions, and it is extremely easy to discover the composition. We have only to suppose a sphere described round the centre of the body; and the equator of this sphere corresponding to any primitive position of the axis of rotation gives us the direction and velocity of the particles situated in it. Let another great circle cut this equator in any point; it will be the equator of another rotation. Set off an arch of each from the point

Rotation.

121

122

123



Atwell Pin. Mad. Sculptor fecit.

Rotation. point of intersection, proportional to the angular velocity of each rotation, and complete the spherical parallelogram. The great circle, which is the diagonal of this parallelogram, will be the equator of the rotation, which is actually compounded of the other two.

124 And thus may any two rotations be compounded. We have given an instance of this in the solution of the problem of the *PRECESSION of the Equinoxes*.

125 It appears plainly in the demonstration of this theorem that the axis *Cc* is a new line in the body. The change of rotation is not accomplished by a transference of the poles and equator of the former rotation to a new situation, in which they are again the poles and equator of the rotation; for we see that in the rotation round the axis *Cc*, the particle of the body which was formerly the pole *A* is describing a circle round the axis *Cc*. Not knowing this composition of rotations, Newton, Walmely, Simpson, and other celebrated mathematicians, imagined, that the axis of the earth's rotation remained the same, but changed its position. In this they were confirmed by the constancy of the observed latitudes of places on the surface of the earth. But the axis of the earth's rotation really changes its place, and the poles shift through different points of its surface; but these different points are too near each other to make the change sensible to the nicest observation.

126 Respecting the position of the axis of rotation. It would seem to result from these observations, that it is impossible that the axis of rotation can change its position in absolute space without changing its position in the body, contrary to what we experience in a thousand familiar instances; and indeed this is impossible by any one change. We cannot by the impulse of any one force make a body which is turning round the axis *Aa* change its position and turn round the same material axis brought into the position *Cc*. In the same way that a body must pass through a series of intermediate points, in going from one end of a line to the other, so it must acquire an infinite series of intermediate rotations (each of them momentary) before the same material axis passes into another position, so as to become an axis of rotation. A momentary impulse may make a great change of the position of the axis of rotation, as it may make in the velocity of a rectilinear motion. Thus although the rotation round *Aa* be indefinitely small, if another equally small rotation be impressed round an axis *Bb* perpendicular to *Aa*, the axis will at once shift to *Cc* half way between them; but a succession of rotations is necessary for carrying the primitive material axis into a new position, where it is again an axis. This transference, however, is possible, but gradual, and must be accomplished by a continuation of impulses totally different from what we would at first suppose. In order that *A* may pass from *A* to *C*, it is not enough that it gets an impulse in the direction *AC*. Such an impulse would carry it thither, if the body had not been whirling round *Aa* by the mere perseverance of matter in its state of motion; but when the body is already whirling round *Aa*, the particles in the circle *IPi* are moving in the circumference of that circle; and since that circle also partakes of the motion given to *A*, every particle in it must be incessantly deflected from the path in which it is moving. The continual agency of a force is therefore necessary for this purpose; and if this force be discontinued, the point

A will immediately quit the plane of the arch *AC*, along which we are endeavouring to move it, and will start up. This is the theorem which we formerly said would enable us to overcome the difficulties in the investigation of the axis of rotation.

127 Thus we can discover what Mr Landen calls the evagations of the poles of rotation by the action of centrifugal forces: For in fig. 16. the known velocity of the ball *A* and the radius *AC* of its circle of rotation will give us the centrifugal force by which the balls of centrifugal forces, tend to turn in the plane *DA*/*BD*. This gives the axis *Dd* a tendency to move in a plane perpendicular to the plane of the figure; and its separation from the poles *D* and *d* does not depend on the separation of the connecting rod *AB* from its present inclination to *Dd*, but on the angle which the spiral path of the ball makes with the plane of a circle of rotation round *Dd*. The distance of the new poles from *D* and *d* is an arch of a circle which measures the angle made by the spiral with the circle of rotation round the primitive axis. This will gradually increase, and the mathematical axis of rotation will be describing a spiral round *D* and *d*, gradually separating from these points, and again approaching them, and coinciding with them again, at the time that the balls themselves are most of all removed from their primitive situation, namely, when *A* is in the place of *B*.

128 The same theorem also enables us to find the incipient axis of rotation in the complicated cases which are almost inaccessible by means of the elementary principles of rotation.

129 Thus, when the centres of oscillation and percussion do not coincide, as we supposed in fig. 5. and 12. Suppose, first, that they do coincide, and find the position of the axis *ab*, and the angular velocity of the rotation. Then find the centre of percussion, the axis *Pp*, and the momentum round it, and the angular velocity which this momentum would produce. Thus we have obtained two rotations round given axes, and with given angular velocities. Compound these rotations by this theorem, and we obtain the required position of the true incipient axis of rotation, and the angular velocity, without the intricate process which would otherwise have been necessary.

130 If the body is of such a shape, that the forces in the plane *DCG* do not balance each other, we shall then discover a momentum round an axis perpendicular to this plane. Compound this rotation in the same manner with the rotation round *Dd*.

131 And from this simple view of the matter we learn (what would be difficult to discover in the other way), that when the centre of percussion does not coincide with that of rotation, the axis is in the plane *DGC*, though not perpendicular to *PG*. But when there is a momentum round an axis perpendicular to this plane, the incipient axis of rotation is neither perpendicular to *PC*, nor in a plane perpendicular to that passing through the centre in the direction of the impelling force.

132 We must content ourselves with merely pointing out these tracks of investigation to the curious reader, and recommending the cultivation of this most fruitful theorem of Father Frisi.

133 These are by no means speculations of mere curiosity, interesting to none but mathematicians: the noblest art which

Rotation. 127

128 The evagations of the poles of rotation by the action of centrifugal forces,

129 the incipient axis in complicated cases,

130

131

132 Position of the axis when the centres of percussion and rotation do not coincide.

133 Concluding remarks on seamanship.

Rotation
||
Rothsay.

which is practised by man must receive great improvement from a complete knowledge of this subject. We mean the art of SEAMANSHIP. A ship, the most admirable of machines, must be considered as a body in free space, impelled by the winds and waters, and continually moved round spontaneous axes of conversion, and incessantly checked in these movements. The trimming of the sails, the action of the rudder, the very disposition of the loading, all affect her versatility. An experienced seaman knows by habit how to produce and facilitate these motions, and to check or stop such as are inconvenient. Experience, without any reflection or knowledge how and why, informs him what position of the rudder produces a deviation from the course. A sort of common sense tells him, that, in order to make the ship turn her head away from the wind, he must increase the surface or the obliquity of the head sails, and diminish the power of the sails near the stern. A few other operations are dictated to him by this kind of common sense; but few, even of old seamen, can tell why a ship has such a tendency to bring her head up in the wind, and why it is so necessary to crowd the fore part of the ship with sails; fewer still know that a certain shifting of the loading will facilitate some motions in different cases; that the crew of a great ship running suddenly to a particular place shall enable the ship to accomplish a movement in a stormy sea which could not be done otherwise; and perhaps not one in ten thousand can tell why this procedure will be successful. But the mathematical inquirer will see all this; and it would be a most valuable acquisition to the public, to have a manual of such propositions, deduced from a careful and judicious consideration of the circumstances, and freed from that great complication and intricacy which only the learned can unravel, and expressed in a familiar manner, clothed with such reasoning as will be intelligible to the unlearned; and though not accurate, yet persuasive. Mr Bouguer, in his *Traité du Navire*, and in his *Manceuvre des Vaisseaux*, has delivered a great deal of useful information on this subject; and Mr Bezout has made a very useful abstract of these works in his *Cours de Mathématique*. But the subject is left by them in a form far too abstruse to be of any general use: and it is unfortunately so combined with or founded on a false theory of the action and resistance of fluids, that many of the propositions are totally inconsistent with experience, and many maxims of seamanship are false. This has occasioned these doctrines to be neglected altogether. Few of our professional seamen have the preparatory knowledge necessary for improving the science; but it would be a work of immense utility, and would acquire great reputation to the person who successfully prosecutes it.

We shall mention under the article SEAMANSHIP the chief problems, and point out the mechanical principles by which they may be solved.

ROTHERAM, a town in the west riding of Yorkshire, seated on the river Don, near which there is a handsome stone-bridge. It is a well-built place, and the market is large for provisions. W. Long. 1. 10. N. Lat. 53. 25.

ROTHSAY, a town in the isle and county of Bute, in Scotland. It is the capital of the county, is a well-built town of small houses, and is within these few years much improved. It has a good pier, and is seated at

the bottom of a fine bay, whose mouth lies exactly opposite to Loch Steven in Cowal. Here is a fine depth of water, a secure retreat, and a ready navigation down the frith for an export trade. Magazines of goods for foreign parts might be most advantageously erected here. The spinning of yarn has been long carried on in Rothsay, and lately the cotton manufacture has been introduced. The herring fishery has been also long a great source of trade in this place. W. Long. 5. 0. N. Lat. 55. 50.

Rothsay gives the title of duke to the prince of Scotland, a title which was formerly accompanied with suitable revenues, powers, and privileges. Of the origin of this title the following account is given. Some time between the 16th of March and the 26th of October 1398, John of Gaunt, who is styled John duke of Aquitaine and Lancaister, uncle to the king of England, and David, who is styled earl of Carrick, eldest son of the king of Scotland, met for the purpose of settling the borders, and terminating all matters in dispute. At a subsequent interview between the same parties, David is styled Duke of Rothsay. "This innovation, it is said, probably proceeded on an idea, to which the interview of the two princes might naturally give rise, that it was unsuitable, and unworthy of the Scottish national dignity, that the princes of England should enjoy a title of nobility, which was esteemed to be of higher rank than that possessed by the hereditary prince of Scotland." In this way it is supposed the title of Duke was introduced into Scotland.

ROTTBOELLIA, a genus of plants belonging to the triandria class. See BOTANY Index.

ROTONDO, or ROTUNDO, in *Architecture*, an appellation given to any building that is round both within and without; whether it be a church, a saloon, or the like. The most celebrated rotundo of the ancients is the pantheon at Rome. See PANTHEON.

ROTTEN-STONE, a mineral found in Derbyshire, and used by mechanics for all sorts of finer grinding and polishing, and sometimes for cutting of stones. According to Ferber, it is a tripoli mixed with calcareous earth.

ROTTENNESS. See PUTREFACTION.

ROTTERDAM, is a city in the province of Holland, in E. Long. 4. 20. N. Lat. 52. situated on the north bank of the river Maese, about 37 miles south of Amsterdam, nine south-east of the Hague, and 15 to the eastward of Briel. It is a large and populous city, of a triangular figure, handsomely built of brick, the streets wide and well paved. There are ten gates to the town, six of which are at the land side and four at the side of the Maese. It is supposed to take its name from the *Roter*, or *Rotter*, a little river that falls into the canals of this city, and from *Dam*, a dike. It is uncertain when it was first built; and though it is supposed to be very ancient, yet we find no mention made of it before the 13th century. In the year 1270 it was surrounded with ramparts, and honoured with several privileges; but 27 years after it was taken by the Flemings. In the year 1418, Brederode chief of the Haeks made himself master of it; since which time it has continued yearly to increase by means of the conveniency of its harbour. Its arms are vert, a pale argent, quarterly in a chief on the first and third, or, a lion spotted sable, on the second and fourth a lion spotted gules.

Rotterdam is not reckoned one of the principal cities

Rothsay
||
Rotterdam.

Rotterdam. ties of the province, because it has not been always in its present flourishing condition. The Dutch call it the first of the second rank, whereas it ought to be esteemed the second of the first, being, next to Amsterdam, the most trading town in the United Provinces. Its port is very commodious; for the canals, which run through most parts of the town, bring the ships, some of 200 or 300 tons, up to the merchant's door; a conveniency for loading and unloading which is not to be found in other places. The great ships go up into the middle of the town by the canal into which the Maese enters by the old head, as it comes out by the new. A stranger, upon his first entering this place, is astonished at the beautiful confusion of chimneys intermixed with tops of trees with which the canals are planted, and streamers of vessels; insomuch that he can hardly tell whether it be fleet, city, or forest. The Haring Vliet is a very fine street; most of the houses are new, and built of hewn stone; but the grandest as well as most agreeable street in Rotterdam is the Bomb Quay, which lies parallel with the Maese; on one side it is open to the river, and the other is ornamented with a grand facade of the best houses in the city, inhabited chiefly by the English; they are five or six stories high, massy and very clumsy: wherever there is any attempt at ornament, it is the worst that can be conceived. One sees no Grecian architecture, except Doric entablatures, stuck upon the top of the upper story, without pilasters; Ionic volutes, turned often the wrong way, and an attempt at Corinthian capitals, without any other part of the order. The doors are large, and stuck with great knobs and clumsy carving; you ascend to them, not in front, but by three or four steps going up on each side, and you are assisted by iron rails of a most immense thickness. These houses are almost all window; and the window shutters and frames being painted green, the glass has all a green cast, which is helped by the reflection from the trees that overshadow their houses, which, were it not for this circumstance, would be intolerably hot, from their vicinity to the canals. Most of the houses have looking-glasses placed on the out-sides of the windows, on both sides, in order that they may see every thing which passes up and down the street. The stair-cases are narrow, steep, and come down almost to the door. In general, the houses rise with enormous steep roofs, turning the gable end to the street, and leaning considerably forward, so that the top often projects near two feet beyond the perpendicular. The Bomb Quay is so broad, that there are distinct walks for carriages and foot-passengers, lined and shaded with a double row of trees.—You look over the river on some beautiful meadows, and a fine avenue of trees, which leads to the Pest-house: it seems to be an elegant building, and the trees round it are so disposed as to appear a thick wood. This street is at least half a mile in length, and extends from the old to the new head, the two places where the water enters to fill the canals of this extensive city. When water runs through a street, it then assumes the name of a canal, of which kind the Heeren fleet has the pre-eminence; the houses are of free-stone, and very lofty; the canal is spacious, and covered with ships: at one end stands the English church, a neat pretty building, of which the bishop of London is ordinary.

This port is much more frequented by the British

merchants than Amsterdam, insomuch that, after a frost, ^{Rotterdam} when the sea is open, sometimes 300 sail of British vessels sail out of the harbour at once. There is always a large number of British subjects who reside in this town, and live much in the same manner as in Great Britain. The reason of the great traffic between this place and England, is because the ships can generally load and unload, and return to England from Rotterdam, before a ship can get clear from Amsterdam and the Texel. Hence the English merchants find it cheaper and more commodious, after their goods are arrived at Rotterdam, to send them in boats over the canals to Amsterdam. Another great advantage they have here for commerce is, that the Maese is open, and the passage free from ice, much sooner in the spring than in the Y and Zuyder-sea, which lead to Amsterdam.

The glass-house here is one of the best in the seven provinces; it makes abundance of glass-toys and enamelled bowls, which are sent to India, and exchanged for china-ware, and other oriental commodities.

The college of admiralty here is called the *college of the Maese*, the chief of all Holland and the United Provinces. The lieutenant-general, admiral of Holland, is obliged to go on board of a Rotterdam ship in the Maese when he goes to sea, and then he commands the squadron of the Maese.

On the east side of the city there is a large basin and dock, where ship-carpenters are continually employed for the use of the admiralty, or of the East India company. But the largest ships belonging to the admiralty of Rotterdam are kept at Helvoetsluys, as the most commodious station, that place being situated on the ocean; for it requires both time and trouble to work a large ship from the dock of Rotterdam to the sea.

Rotterdam has four Dutch churches for the established religion. There is one thing very remarkable in respect to the great church, that the tower which leaned on one side was set up straight in the year 1655, as appears by the inscription engraved on brass at the bottom of the tower within-side. In the choir of this church are celebrated, with no small solemnity, the promotions made in the Latin schools. Besides, there are two English churches, one for those of the church of England and the other for the Presbyterians; and one Scotch church; as likewise one Lutheran, two Arminian, two Anabaptist, four Roman Catholic chapels, and one Jewish synagogue.

Though the public buildings here are not so stately as those of Amsterdam and some other cities, yet there are several of them well worth seeing. The great church of St Laurence is a good old building, where are many stately monuments of their old admirals. From the top of this church one may see the Hague, Delft, Leyden, Dort, and most of the towns of South Holland. There are several fine market-places, as three fish-markets, the great-market, the new-market, and the hogs-market. The stadthouse is an old building, but the chambers large and finely adorned. The magazines for fitting out their ships are very good structures. The exchange is a noble building, begun in the year 1720, and finished in 1736. Upon the great bridge in the market-place there is a fine brass statue erected to the great Erasmus, who was born in this city in 1467, and died at Basil in Switzerland. He is represented

Rotterdam
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Rovere.

presented in a furred gown, and a round cap, with a book in his hand. The statue is on a pedestal of marble, surrounded with rails of iron. Just by, one may see the house where this great man was born, which is a very small one, and has the following distich written on the door:

*Ædibus his ortus, mundum decoravit, Erasmus,
Artibus, ingenio, religione, fide.*

Rotterdam and the whole of the United Provinces are now in the possession of the French, and form nominally a separate kingdom.

ROTULA, in *Anatomy*, the small bone of the knee, called also *patella*. See *ANATOMY*.

ROTUNDUS, in *Anatomy*, a name given to several muscles otherwise called *teres*.

ROUAD. See *ARADUS*.

ROUANE, or ROANE, an ancient and considerable town in France, in Lower Forez, with the title of a duchy; seated on the river Loire, at the place where it begins to be navigable for boats. E. Long. 4. 9. N. Lat. 46. 2.

ROUCOU, in *Dyeing*, the same with ANOTTA and BIXA. See *DYEING*.

ROUEN, a city of France, and capital of Normandy, had an archbishop's see, a parliament, a mint, a handsome college, an academy, two abbeys, and an old castle. It is seven miles in circumference, and surrounded with six suburbs; and contained before the revolution 35 parishes, and 24 convents for men and women. The metropolitan church has a very handsome front, on which are two lofty steeples, whence there is a fine view of the town and country. The great bell is 13 feet high and 11 in diameter. The church of the Benedictine abbey is much admired by travellers. The parliament-house is adorned with beautiful tapestry and fine pictures. There is a great number of fountains, though the houses are ordinary; but the walk upon the quay is very pleasant, and there are 13 gates from thence into the city. The number of the inhabitants is about 60,000, and they have several woolen manufactures. It is seated on the river Seine; and the tide rises so high, that vessels of 200 tons may come up to the quay: but one of the greatest curiosities is the bridge, of 270 paces in length, supported by boats, and consequently is higher or lower according to the tide. It is paved, and there are ways for foot-passengers on each side, with benches to sit upon; and coaches may pass over it at any hour of the day or night. It is often called *Roan* by English historians; and is 50 miles south-west of Amiens, and 70 north-west of Paris.

Though large, and enriched by commerce, Rouen is not an elegant place. The streets are almost all narrow, crooked, and dirty; the buildings old and irregular. It was fortified by St Louis in 1253, but the walls are now demolished. The environs, more particularly the hills which overlook the Seine, are wonderfully agreeable, and covered with magnificent villas. E. Long. 1. 10. N. Lat. 49. 26.

ROVERE, or ROVEREDO, a strong town of the Tyrol, on the confines of the republic of Venice; seated on the river Adige, at the foot of a mountain, and on the side of a stream, over which there is a bridge, defended by two large towers and a strong castle, 10 miles

south of Trent. The town is tolerably well built, and governed by a chief magistrate, styled a *podeslat*. There are several churches and convents, that contain nothing worthy of notice. The most remarkable thing, and what they call the great wonder of Roveredo, is its spinning-house for a manufacture of silk, in which they have a great trade here to the fairs of Bolzano. They have also a very good trade in wine. Between Trent and Roveredo is the strong fort of Belem, belonging to the house of Austria. It is situated on a rock, and commands the roads at the foot of the mountain. E. Long. 11. 1. N. Lat. 46. 12.

ROUERGUE, a province of France, in the government of Guienne; bounded on the east by the Cevennes and Gevaudan, on the west by Querci, on the north by the same and Auvergne, and on the south by Languedoc. It is 75 miles in length, and 50 in breadth; not very fertile, but feeds a number of cattle, and has mines of copper, iron, alum, vitriol, and sulphur. It is divided into a county, and the upper and lower marche. It now forms the department of Aveyron. Rhodéz is the capital town.

ROVIGNO, a populous town of Italy, in Istria, with two good harbours, and quarries of fine stone. It is seated in a territory which produces excellent wine, in a peninsula on the western coast. E. Long. 13. 53. N. Lat. 45. 14.

ROVIGO, is a town of Italy, in the territory of Venice, and capital of the Polesin di Rovigo, in E. Long. 12. 25. N. Lat. 45. 6. It is a small place, poorly inhabited, and encompassed with ruinous walls. Formerly it belonged to the duke of Ferrara, but has been subject to the Venetians since 1500, and is famous for being the birth-place of that learned man Cælius Rhodoginus. It was built upon the ruins of Adria, anciently a noble harbour one mile from Rovigo, that gave name to the gulf, but now a half-drowned village, inhabited by a few fishermen.

ROUNDELAY, or ROUND, a sort of ancient poem, deriving its name, according to Menage, from its form, and because it still turns back again to the first verse, and thus goes round. The common roundelay consists of 13 verses, eight of which are in one rhyme and five in another. It is divided into couplets; at the end of the second and third of which the beginning of the roundelay is repeated; and that, if possible, in an equivocal or punning sense. The roundelay is a popular poem in France, but is little known among us. Marot and Voiture have succeeded the best in it. Rapin remarks, that if the roundelay be not very exquisite, it is intolerably bad. In all the ancient ones, Menage observes, that the verse preceding has a less complete sense, and yet joins agreeably with that of the close without depending necessarily thereon. This rule, well observed, makes the roundelay more ingenious, and is one of the finesses of the poem. Some of the ancient writers speak of the roundelay or roundel as a kind of air appropriated to dancing; and in this sense the term seems to indicate little more than dancing in a circle with the hands joined.

ROUND-HOUSE, a kind of prison for the nightly watch in London to secure disorderly persons till they can be carried before a magistrate.

Round-House, in a ship, the uppermost room or cabin on the stern of a ship, where the master lies.

ROUNDS,

Rovere
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Round-
House.

Rounds;
Roussillon.

Roussau.

ROUNDS, in military matters, a detachment from the main-guard, of an officer or a non commissioned officer and six men, who go round the rampart of a garrison, to listen if any thing be stirring without the place, and to see that the centinels be diligent upon their duty, and all in order. In strict garrisons the rounds go every half-hour. The centinels are to challenge at a distance, and to rest their arms as the round passes. All guards turn out, challenge, exchange the parole, and rest their arms, &c.

ROUNDS are ordinary and extraordinary. The ordinary rounds are three; the town-major's round, the grand-round, and visiting-round.

Manner of going the ROUNDS. When the town-major goes his round, he comes to the main-guard, and demands a serjeant and four or six men to escort him to the next guard; and when it is dark, one of the men is to carry a light.

As soon as the sentry at the guard perceives the round coming, he shall give notice to the guard, that they may be ready to turn out when ordered; and when the round is advanced within about 20 or 30 paces of the guard, he is to challenge briskly; and when he is answered by the serjeant who attends the round, *Town-major's round*, he is to say, *Stand round!* and rest his arms; after which he is to call out immediately, *Serjeant, turn out the guard, town-major's round.* Upon the sentry calling, the serjeant is to turn out the guard immediately, drawing up the men in good order with shouldered arms, the officer placing himself at the head of it, with his arms in his hand. He then orders the serjeant and four or six men to advance towards the round, and challenge: the serjeant of the round is to answer, *Town-major's round*; upon which the serjeant of the guard replies, *Advance, serjeant with the parole!* at the same time ordering his men to rest their arms. The serjeant of the round advances alone, and gives the serjeant of the guard the parole in his ear, that none else may hear it; during which period the serjeant of the guard holds the spear of his halbert at the other's breast. The serjeant of the round then returns to his post, whilst the serjeant of the guard leaving his men to keep the round from advancing, gives the parole to his officer. This being found right, the officer orders his serjeant to return to his men; says, *Advance, town-major's round!* and orders the guard to rest their arms; upon which the serjeant of the guard orders his men to wheel back from the centre, and form a lane, through which the town-major is to pass (the escort remaining where they were), and go up to the officer and give him the parole, laying his mouth to his ear. The officer holds the spear of his esponton at the town-major's breast while he gives him the parole.

The design of rounds is not only to visit the guards, and keep the centinels alert; but likewise to discover what passes in the outworks, and beyond them.

ROUSSILLON, a province of France, in the Pyrenees, bounded on the east by the Mediterranean sea, on the west by Cerdagne, on the north by Lower Languedoc, and on the south by Catalonia, from which it is separated by the Pyrenees. It is a fertile country, about 50 miles in length, and 25 in breadth, and remarkable for its great number of olive-trees. Perpignan is the capital town.

VOL. XVIII. Part I.

ROUSSEAU, JAMES, an eminent painter, was born at Paris in the year 1630, and studied first under Swanvelt, who had married one of his relations; after which he improved himself by travelling into Italy, practising solely in perspective, architecture, and landscape. On his return home, he was employed at Marly. He distinguished himself very much in painting buildings, and by his knowledge of, and attention to the principles of perspective. Louis XIV. employed him to decorate his hall of devices at St Germain-en-Laie, where he represented the operas of Lulli. But being a Protestant, he quitted France on the persecution of his brethren, and retired to Swisserland. Louis invited him back; he refused, but sent his designs, and recommended a proper person to execute them. After a short stay in Swisserland, he went to Holland; whence he was invited to England by Ralph duke of Montague, to adorn his new house in Bloomsbury, where he painted much. Some of his pictures, both in landscape and architecture, are over doors at Hamptoncourt; and he etched some of his own designs. His perspectives having been most commonly applied to decorate courts or gardens, have suffered much from the weather. Such of them as remain are monuments of an excellent genius. The colours are durable and bright, and the choice of them most judicious. He died in Soho-square, about the year 1693, aged 63.

ROUSSEAU, John Baptist, a celebrated French poet, was born at Paris, in April 1671. His father, who was a shoemaker in good circumstances, made him study in the best colleges of Paris, where he distinguished himself by his abilities. He at length applied himself entirely to poetry, and soon made himself known by several short pieces, that were filled with lively and agreeable images, which made him sought for by persons of the first rank, and men of the brightest genius. He was admitted in quality of *élève*, or pupil, into the academy of Inscriptions and Belles Lettres, in 1701, and almost all the rest of his life attached himself to some great men. He attended Marshal Tallard into England, in quality of secretary, and here contracted a friendship with St Evremond. At his return to Paris, he was admitted into the politest company, lived among the courtiers, and seemed perfectly satisfied with his situation; when, in 1708, he was prosecuted for being the author of some couplets, in which the characters of several persons of wit and merit were blackened by the most atrocious calumnies. This prosecution made much noise; and Rousseau was banished in 1712 out of the kingdom, to which he was never more to return, by a decree of the parliament of Paris. However, he always steadily denied, and even on his death-bed, his being the author of these couplets.—From the date of this sentence he lived in foreign countries, where he found illustrious protectors. The count de Luc, ambassador of France, in Swisserland, took him into his family, and studied to render his life agreeable. He took him with him to the treaty of Baden in 1714, where he was one of the plenipotentiaries, and presented him to Prince Eugene, who entertaining a particular esteem for him, took him to Vienna, and introduced him to the emperor's court. Rousseau lived about three years with Prince Eugene; but having lost his favour by satirising one of his mistresses, he retired to Brussels, where he afterwards usually resided, and where

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Rousseau He met with much attention and much generosity, as we shall soon mention.—It was there that his disputes with Voltaire commenced, with whom he had become acquainted at the college of Louis the Great, who then much admired his turn for poetry. At that time Voltaire assiduously cultivated the acquaintance of Rousseau, and made him a present of all his works; and Rousseau, flattered by his respect, announced him as a man who would one day be a glory to the age. The author of the *Henriade* continued to consult him about his productions, and to lavish on him the highest encomiums, while their friendship daily increased. When they again met at Brussels, however, they harboured the blackest malice, against one another. The cause of this enmity, as Rousseau and his friends tell the story, was a lecture which he had composed from his *Epistle to Julia*, now *Urania*. This piece frightened Voltaire, as it plainly discovered his rage against him. The young man, vexed at these calumnies, understood the whole as thrown out against him. This is what Rousseau asserts. But his adversaries, and the friends of the poet whom he cried down, suspected him, perhaps rather rashly, of having employed sarcasms, because he thought that his own reputation was in danger of being eclipsed by that of his rival. What is very singular, these two celebrated characters endeavoured each of them to prepossess the public with a bad opinion of the other, which they themselves never entertained in reality, and to smother in their breast that esteem for each other which, in defiance of all their exertions, still held its place. Rousseau, from the period of this dispute, always represented Voltaire as a buffoon, as a writer possessing neither taste nor judgement, who owed all his success to a particular mode which he pursued. As a poet he considered him as inferior to Lucan, and little superior to Pradon. Voltaire treated him still worse. Rousseau, according to him, was nothing better than a plagiarist, who could make shift to rhyme, but could not make any reflections; that he had nothing but the talent of arranging words, and that he had even lost that in foreign countries. He thus addresses him, in a piece little known.

*Aussitôt le Dieu qui m'inspire
T'arracha le luth et la lyre
Qu'avoient déshonorés tes mains;
Tu n'es plus qu'un reptile immonde,
Rebut du Parnasse et du monde
Enfoueli dans tes venins.*

In consequence of the little esteem in which Rousseau was held at Brussels, he could never forget Paris. The grand-prior of Vendome, and the baron de Breteuil, solicited the regent duke of Orleans to allow him to return; which favour was obtained. But our poet, before he would make use of the *lettres de rappel* issued in his favour, demanded a review of his process, which he wished to be repealed, not as a matter of favour, but by a solemn judgement of court; but his petition was refused. He then came over, in 1721, to England, where he printed *A Collection of his Works*, in 2 vols 12mo, at London. This edition, published in 1723, brought him near 10,000 crowns, the whole of which he placed in the hands of the Osterd company. The affairs of this company, however, soon getting into confusion, all those who had any money in their hands lost the whole

of it, by which unfortunate event Rousseau, when arrived at that age when he stood most in need of the comforts of fortune, had nothing to depend upon but the generosity of some friends. Bouet, public notary in Paris, was peculiarly generous and attentive to him. He found a still greater asylum in the duke d'Arenberg, whose table was open to him at all times; who being obliged in 1733 to go into the army in Germany, settled on him a pension of 1500 livres. But unfortunately he soon lost his good opinion, having been imprudent enough to publish in a journal (of which Voltaire accused him), that the duke d'Arenberg was the author of those verses for which he himself had been banished France. He was therefore dismissed from his table, and his pride would not allow him to accept of the pension after this rupture. Brussels now became insupportable to him; and the count de Luc, and M. de Senozan, receiver-general of the church revenue, being informed of his disappointments, invited him to come privately to Paris, in the hopes of procuring a diminution of the period of his banishment. Some time previous to this Rousseau had published two new letters; one to P. Brumoy, on tragedy; the other to Rollin, on history. It is said, he expected from his letter to Brumoy to get the favour of all the Jesuits; and from the one to Rollin, the patronage of the Jansenists. He had likewise written an Ode, in praise of Cardinal de Fleury, on Peace, which met with a favourable reception, although it was not equal to some of his former pieces. He imagined his return to Paris would be found no difficult matter. He attempted it, and found he could not obtain a pais for a single year. Some say, that Rousseau had irritated some persons in power, by an allegory, called *The Judgement of Pluto*; in which piece he describes one of the principal judges, whose skin Pluto had caused to be taken off and stretched out on the seat in the bench. This satire, joined to the secret machinations of enemies, rendered all the attempts of his friends to procure his return abortive. After having staid three months at Paris, he returned to Brussels in February 1740, at which place he died March 17. 1741, strongly impressed with religious sentiments. Immediately before he received the viaticum, he protested he was not the author of those horrid verses which had so much embittered his life; and this declaration, in the opinion of the virtuous part of mankind, will be considered as a sufficient proof of his innocence. Some have said that Rousseau was profane, troublesome, capricious, forward, vindictive, envious, a flatterer, and a satirist. Others again represent him as a man full of candour and openness, a faithful and grateful friend, and as a Christian affected with a sense of religion.—Amidst such widely varied accounts it is difficult to form an opinion of his character. Such of our readers as wish to know more of this great poet may consult the Dictionary of M. Chaupepie, written with as much precision as impartiality, who endeavours to give a just idea of his character. From what he says, it does not appear that Rousseau can be cleared from the accusation brought against him of having attacked his benefactors. We believe he may be much more easily freed from the imputation brought against him by some of having disowned his father: for what occasion had Rousseau to conceal the obscurity of his birth? It exalted his own merit.

Rouffeau. M. Seguy, in concert with M. the prince of la Tour Tassis, has given a very beautiful edition of his works, agreeable to the poet's last corrections. It was published in 1743, at Paris, in 3 vols. 4to, and in 4 vols. 12mo, containing nothing but what was acknowledged by the author as his own. It contains, 1. Four Books of Odes, of which the first are sacred odes, taken from the Psalms. "Rouffeau (says Ferron) unites in himself Pindar, Horace, Anacreon, and Malherbe. What fire, what genius, what flights of imagination, what rapidity of description, what variety of affecting strokes, what a crowd of brilliant comparisons, what richness of rhymes, what happy versification; but especially what inimitable expression! His verses are finished in the highest style of perfection that French verse is capable of assuming." The lyric compositions of Rouffeau are, in general, above mediocrity. All his odes are not, however, of equal merit. The most beautiful are those which he has addressed to count de Luc, to Malherbe, to Prince Eugene, to Vendôme, to the Christian princes; his Odes on the death of the prince de Conti, on the battle of Peterwaradin; and the Ode to Fortune, although there are certainly some few weak stanzas to be met with in it. There is considerable neatness in the composition of the Ode to a Widow, in his stanzas to the Abbé de Chaulieu, in his addresses to Rossignol, in his Odes to count de Bonneval, to M. Ducho, and to count de Sinzindorf; and it is to be lamented that he wrote so few pieces of this kind, from which his genius seemed to lead him with difficulty. 2. Two Books of Epitiles, in verse. Although these do not want their beauties, yet there prevails too much of a misanthropic spirit in them, which takes away greatly from their excellence. He makes too frequent mention of his enemies and his misfortunes; he displays those principles which are supported less on the basis of truth than on those various passions which ruled his mind at the time. He puts forth his anger in paradoxes. If he be reckoned equal to Horace in his odes, he is far inferior in his epistles. There is much more philosophy in the Roman poet than in him. 3. *Cantatas*. He is the father of this species of poetry, in which he stands unrivalled. His pieces of this sort breathe that poetical expression, that picturesque style, those happy turns, and those easy graces, which constitute the true character of this kind of writing. He is as lively and impetuous as he is mild and affecting, adapting himself to the passions of those persons whom he makes to speak. "I confess (says M. de la Harpe) that I find the cantatas of Rouffeau more purely lyric than his odes, although he rises to greater heights in these. I see nothing in his cantatas but bold and agreeable images. He always addresses himself to the imagination, and he never becomes either too verbose or too prolix. On the contrary, in some of the best of his odes, we find some languishing stanzas, ideas too long delayed, and verses of inexcusable meanness." 4. *Allegories*, the most of which are happy, but some of them appear forced. 5. *Epigrams*, after the manner of Martial and Marot. He has taken care to leave out of this edition those pieces which licentiousness and debauchery inspired. They bear, indeed, as well as his other pieces, the marks of genius; but such productions are calculated only to dishonour their authors, and corrupt the heart of those who read them. 5. A Book of *Poems on Various Subjects*,

which sometimes want both ease and delicacy. The most distinguished are two eclogues, imitated from Virgil. 6. Four comedies in verse; the *Flatterer*, whose character is well supported; the *Imaginary Forefathers*, a piece which had much less success, although it affords sufficiently good sentiment; the *Capricious Man*, and the *Dupe of Himself*, pieces of very inconsiderable merit. 7. Three comedies in prose; the *Coffee house*, the *Magic Girdle*, and the *Madragore*, which are little better than his other theatrical pieces. The theatre was by no means his forte; he had a genius more suited for satire than comedy, more akin to Boileau's than Moliere's. 8. A *Collection of Letters*, in prose. In this edition he has selected the most interesting.—There is a larger collection in 5 volumes. This last has done at the same time both injury and honour to his memory. Rouffeau in it speaks both in favour of and against the very same persons. He appears too hasty in tearing to pieces the characters of those who displease him. We behold in them a man of a steady character and an elevated mind, who wishes to return to his native country only that he might be enabled completely to justify his reputation. We see him again corresponding with persons of great merit and uncommon integrity, with the Abbé d'Olivet, Racine the son, the poets La Fosse and Ducho, the celebrated Rollin, M. le Franc de Pompignan, &c. &c. We meet also with some anecdotes and exact judgements of several writers. A bookseller in Holland has published his port-folio, which does him no honour. There are, indeed, some pieces in this wretched collection which did come from the pen of Rouffeau; but he is less to be blamed for them than they are who have drawn these works from that oblivion to which our great poet had consigned them. A pretty good edition of his *Select Pieces* appeared at Paris in 1741, in a small 12mo volume. His portrait, engraved by the celebrated Aved, his old friend, made its appearance in 1778, with the following motto from Martial:

Certior in nostro carmine vultus erit.

ROUSSEAU, John-James, was born at Geneva, June 28. 1712. His father was by profession a clock and watch maker. At his birth, which, he says, was the first of his misfortunes, he endangered the life of his mother, and he himself was for a long time after in a very weak and languishing state of health; but as his bodily strength increased, his mental powers gradually opened, and afforded the happiest presages of future greatness. His father, who was a citizen of Geneva, was a well-informed tradesman; and in the place where he wrought he kept a Plutarch and a Tacitus, and these authors of course soon became familiar to his son. A rash juvenile step occasioned his leaving his father's house. "Finding himself a fugitive, in a strange country, and without money or friends, he changed (says he himself) his religion, in order to procure a subsistence." Bornex, bishop of Anneci, from whom he sought an asylum, committed the care of his education to Madame de Warrens, an ingenious and amiable lady, who had in 1726 left part of her wealth, and the Protestant religion, in order to throw herself into the bosom of the church. This generous lady served in the triple capacity of a mother, a friend, and a lover, to the new profelyte, whom she regarded as her son. The necessity of procuring for himself

Rousseau some settlement, however, or perhaps his unsettled disposition, obliged Rousseau often to leave this tender mother.

He possessed more than ordinary talents for music; and the Abbé Blanchard flattered his hopes with a place in the royal chapel, which he, however, failed in obtaining for him; he was therefore under the necessity of teaching music at Chamberi. He remained in this place till 1741, in which year he went to Paris, where he was long in very destitute circumstances. Writing to a friend in 1743, he thus expresses himself: "Every thing is dear here, but especially bread." What an expression; and to what may not genius be reduced! Meanwhile he now began to emerge from that obscurity in which he had hitherto been buried. His friends placed him with M. de Montaigne, ambassador from France to Venice. According to his own confession, a proud misanthropy and a peculiar contempt of the riches and pleasures of this world, constituted the chief traits in his character, and a misunderstanding soon took place between him and the ambassador. The place of depute, under M. Dupin, farmer-general, a man of considerable parts, gave him some temporary relief, and enabled him to be of some benefit to Madame de Warrens his former benefactress. The year 1750 was the commencement of his literary career. The academy of Dijon had proposed the following question: "Whether the revival of the arts and sciences has contributed to the refinement of manners?" Rousseau at first inclined to support the affirmative. "This is the *pons asinorum* (says a philosopher, at that time a friend of his), take the negative side of the question, and I'll promise you the greatest success."

His discourse against the sciences, accordingly, having been found to be the best written, and replete with the deepest reasoning, was publicly crowned with the approbation of that learned body. Never was a paradox supported with more eloquence: it was not however a new one; but he enriched it with all the advantages which either knowledge or genius could confer on it. Immediately after its appearance, he met with several opponents of his tenets, which he defended; and from one dispute to another, he found himself involved in a formidable train of correspondence, without having ever almost dreamed of such opposition. From that period he decreased in happiness as he increased in celebrity. His "Discourse on the Causes of Inequality among Mankind, and on the Origin of Social Compacts," a work full of almost unintelligible maxims and wild ideas, was written with a view to prove that mankind are equal; that they were born to live apart from each other; and that they have perverted the order of nature in forming societies. He bestows the highest praise on the state of nature, and deprecates the idea of every social compact. This discourse, and especially the dedication of it to the republic of Geneva, are the *chef-d'œuvres* of that kind of eloquence of which the ancients alone had given us any idea. By presenting this performance to the magistrates, he was received again into his native country, and reinstated in all the privileges and rights of a citizen, after having with much difficulty prevailed on himself to abjure the Catholic religion. He soon, however, returned to France, and lived for some time in Paris. He afterwards gave himself up to retirement, to escape the shafts of criticism,

and follow after the regimen which the strangury, with which he was tormented, demanded of him. This is an important epoch in the history of his life, as it is owing to this circumstance, perhaps, that we have the most elegant works that have come from his pen. His "Letter to M. d'Alembert" on the design of erecting a theatre at Geneva, written in his retirement, and published in 1757, contains, along with some paradoxes, some very important and well-handled truths. This letter first drew down upon him the envy of Voltaire, and was the cause of those indignities with which that author never ceased to load him. What is singular in him, is, that although so great an enemy to theatrical representations himself, he caused a comedy to be printed, and in 1752 gave to the theatre a pastoral (The Village Conjuror), of which he composed both the poetry and music, both of them abounding with sentiment and elegance, and full of innocent and rural simplicity. What renders the Village Conjuror highly delightful to persons of taste, is that perfect harmony of words and music which everywhere pervades it; that proper connection among the parties who compose it; and its being perfectly correct from beginning to end. The musician hath spoken, hath thought, and felt like a poet. Every thing in it is agreeable, interesting, and far superior to those common affected and insipid productions of our modern petit-dramas. His Dictionary of Music affords several excellent articles; some of them, however, are very inaccurate. "This work (says M. la Borde), in his Essay on Music, has need to be written over again, to save much trouble to those who wish to study it, and prevent them from falling into errors, which it is difficult to avoid, from the engaging manner in which Rousseau drags along his readers." The passages in it which have any reference to literature may be easily distinguished, as they are treated with the agreeableness of a man of wit and the exactness of a man of taste. Rousseau, soon after the rapid success of his Village Conjuror, published a Letter on French Music, or rather against French Music, written with as much freedom as liveliness. The exasperated partisans of French comedy treated him with as much fury as if he had conspired against the state. A crowd of insignificant enthusiasts spent their strength in outcries against him. He was insulted, menaced, and lampooned. Harmonic fanaticism went even to hang him up in effigy.

That interesting and tender style, which is so conspicuous throughout the Village Conjuror, animates several letters in the New Heloise, in six parts, published 1761, in 12mo. This epistolary romance, of which the plot is ill-managed, and the arrangement bad, like all other works of genius, has its beauties as well as its faults. More truth in his characters and more precision in his details were to have been wished. The characters, as well as their style, have too much sameness, and their language is too affected and exaggerated. Some of the letters are indeed admirable, from the force and warmth of expression, from an effervescence of sentiments, from the irregularity of ideas which always characterise a passion carried to its height. But why is so affecting a letter so often accompanied with an unimportant digression, an insipid criticism, or a self-contradicting paradox? Why, after having shone in all the energy of sentiment, does he on a sudden turn uninteresting? It is because none of the personages are truly interesting.

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Rouffeau. That of St Preux is weak, and often forced. Julia is an afsemblage of tendernels and pity, of elevation of foul and of coquetry, of natural parts and pedantry. Wolmar is a violent man, and almost beyond the limits of nature. In fine, when he wifhes to change his ftyle, and adopt that of the fpeaker, it may eafily be obferved that he does not long fupport it, and every attempt embarralles the author and cools the reader. In the Heloifa, Rouffeau's unlucky talent of rendering every thing problematical, appears very confpicuous; as in his arguments in favour of and againft duelling, which afford an apology for fuidicide, and a juft condemnation of it: in his facility in palliating the crime of adultery, and his very ftrong reafons to make it abhorred: on the one hand, in declamations againft focial happinefs; on the other, in transports in favour of humanity: here, in violent rhapsodies againft philofophers; there, by a rage for adopting their opinions: the exiftence of God attacked by fophiftry, and Atheifts confuted by the moft irrefragable arguments; the Chriftian religion combated by the moft fpecious objections, and celebrated with the moft fublime eulogies.

His Emilius afterwards made more noife than the new Heloifa. This moral romance, which was publifhed in 1762, in four vols 12mo, treats chiefly of education. Rouffeau wifhed to follow nature in every thing; and though his fystem in feveral places differs from received ideas, it deferves in many refpects to be put in practice, and with fome neceffary modifications it has been fo. His precepts are expreffed with the force and dignity of a mind full of the leading truths of morality. If he has not always been virtuous, no body at leaft has felt it more, or made it appear to more advantage. Every thing which he fays againft luxury fhows the vices and conceited opinions of his age, and is worthy at once of Plato or of Tacitus. His ftyle is peculiar to himfelf. He fometimes, however, appears, by a kind of affected rudenefs and afperity, to ape at the mode of Montaigne, of whom he is a great admirer, and whose fentiments and expreffions he often clothes in a new drefs. What is moft to be lamented is, that in wifhing to educate a young man as a Chriftian, he has filled his third volume with objections againft Chriftianity. He has, it muft be confeffed, given a very fublime eulogium on the gofpel, and an affecting portrait of its divine Author: but the miracles and the prophecies, which ferve to eftablifh his miffion, he attacks without the leaft referve. Admitting only natural religion, he weighs every thing in the balance of reafon; and this reafon being falfe, leads him into dilemmas very unfavourable to his own repofe and happinefs.

He dwelt from 1754 in a fmall houfe in the country near Montmorenci; a retreat which he owed to the generofity of a farmer-general. The caufe of his love for this retirement was, according to himfelf, "that invincible fpirit of liberty which nothing could conquer, and in competition with which honours, fortune, and reputation, could not ftand. It is true, this defire of liberty has occafioned lefs pride than lazinefs; but this indolence is inconceivable. Every thing ftartles it; the moft inconfiderable reciprocities of focial life are to it infupportable. A word to fpeak, a letter to write, a vifit to pay, things neceffary to be done, are to me punifhments. Hear my reafons. Although the ordinary

intercourse between mankind be odious to me, intimate friendfhip appears to me very dear; becaufe there are no mere ceremonies due to it; it agrees with the heart, and all is accomplifhed. Hear, again, why I have always fhunned kindnefs fo much; becaufe every aft of kindnefs requires a grateful mind, and I find my heart ungrateful, from this alone, that gratitude is a duty. Laftly, that kind of felicity which is neceffary for me, is not fo much to do that which I wifh, as not to do what I wifh not to do." Rouffeau enjoyed this felicity which he fo much wifhed in his retirement. Without entirely adopting that too rigorous mode of life purfued by the ancient Cynics, he deprived himfelf of every thing that could in any meafure add fuel to this wifhed-for luxury, which is ever the companion of riches, and which inverts even cuftom itfelf. He might have been happy in this retreat, if he could have forgot this public which he affected to defpife; but his defire after a great name got the better of his felf-love, and it was this thirft after reputation which made him introduce fo many dangerous paragraphs in his Emilia.

The French parliament condemned this book in 1762, and entered into a criminal profecution againft the author, which forced him to make a precipitate retreat. He directed his fteps towards his native country, which fhut its gates upon him. Profcibed in the place where he firft drew breath, he fought an afylum in Switzerland, and found one in the principality of Neufchatel. His firft care was to defend his Emilia againft the mandate of the archbifhop of Paris, by whom it had been anathematifed. In 1763 he publifhed a letter, in which he re-exhibits all his errors, fet off with the moft animated difplay of eloquence, and in the moft infidious manner. In this letter he defcribes himfelf as "more vehement than celebrated in his refearches, but fincere on the whole, even againft himfelf; fimple and good, but fenfible and weak; often doing evil, and always loving good; united by friendfhip, never by circumftances, and keeping more to his opinions than to his interefts; requiring nothing of men, and not wifhing to be under any obligation to them; yielding no more to their prejudices than to their will, and preferving his own as free as his reafon; difputing about religion without licentiousnefs; loving neither impiety nor fanaticifm, but difliking precise people more than bold fpirits," &c. From this fpecimen, the limitations he would appoint to this portrait may eafily be difcovered.

The letters of La Montaigne appeared foon after; but this work, far lefs eloquent, and full of envious difcuffions on the magiftrates and clergy of Geneva, irritated the Proteftant minifters without effecting a reconciliation with the clergy of the Romifh church. Rouffeau had folemnly abjured the latter religion in 1753, and, what is fomewhat ftrange, had then refolved to live in France, a Catholic country. The Proteftant clergy were not fully reconciled by this change; and the protection of the king of Pruffia, to whom the principality of Neufchatel belonged, was not fufficient to refcure him from that obloquy which the minifter of Moutiers-Travers, the village to which he had retired, had excited againft him. He preached againft Rouffeau, and his fermons produced an uproar among the people. On the night between the 6th and 7th September 1765, fome fanatics, drove on by wine and the declamations of their minifter, threw fome ftones at the windows of

Rousseau. the Genevan philosopher, who fearing new insults, in vain sought an asylum in the canton of Berne. As this canton was connected with the republic of Geneva, they did not think proper to allow him to remain in their city, being proscribed by that republic. Neither his broken state of health, nor the approach of winter, could soften the hearts of those obdurate Spartans. In vain, to prevent them from the fear they had of the spreading of his opinions, did he beseech them to shut him up in prison till the spring; for even this favour was denied him. Obligated to set out on a journey, in the beginning of a very inclement season, he reached Strasbourg in a very destitute situation. He received from Marshal de Contades, who then commanded in that place, every accommodation which could be expected from generosity, humanity, and compassion. He waited there till the weather was milder, when he went to Paris, where Mr Hume then was, who determined on taking him with him to England. After having made some stay in Paris, Rousseau actually set out for London in 1766. Hume, much affected with his situation and his misfortunes, procured for him a very agreeable settlement in the country. Our Genevan philosopher was not, however, long satisfied with this new place. He did not make such an impression on the minds of the English as he had done on the French. His free disposition, his obdurate and melancholy temper, was deemed no singularity in England. He was there looked upon as an ordinary man, and the periodical prints were filled with satires against him. In particular, they published a forged letter from the king of Prussia, holding up to ridicule the principles and conduct of this new Diogenes. Rousseau imagined there was a plot between Hume and some philosophers in France to destroy his glory and repose. He sent a letter to him, filled with the most abusive expressions, and reproaching him for his conduct towards him. From this time he looked upon Hume as a wicked and perfidious person, who had brought him to England with no other view than to expose him to public ridicule; which foolish and chimerical idea was nourished by self-love and a restless disposition. He imagined that the English philosopher, amidst all his kindnesses, had something disagreeable in the manner of expressing them. The bad health of Rousseau, a strong and melancholy imagination, a too nice sensibility, a jealous disposition, joined with philosophic vanity, cherished by the false informations of his governess, who possessed an uncommon power over him; all these taken together, might tend to prepossess him with unfavourable sentiments of some innocent freedoms his benefactor might have taken with him, and might render him ungrateful, which he thought himself incapable of becoming. Meanwhile, these false conjectures and probabilities ought never to have had the weight with an honest mind to withdraw itself from its friend and benefactor. Proofs are always necessary in cases of this kind; and that which Rousseau had was by no means a certain demonstration. The Genevan philosopher, however, certainly returned to France. In passing through Amiens, he met with M. Gresset, who interrogated him about his misfortunes and the controversies he had been engaged in. He only answered, "You have got the art of making a parrot speak; but you are not yet possessed of the secret of making a bear speak." In the mean time, the magistrates of this city wished to confer

on him some mark of their esteem, which he absolutely refused. His disordered imagination viewed these flattering civilities as nothing else than insults, such as were lavished on Sancho in the island of Barataria. He thought one part of the people looked upon him as like Lazarille of Tormes, who, being fixed to the bottom of a tub, with only his head out of the water, was carried from one town to another to amuse the vulgar. But these wrong and whimsical ideas did not prevent him from aspiring after a residence in Paris, where, without doubt, he was more looked on as a spectacle than in any other place whatever. On the 1st July 1775, Rousseau appeared, for the first time, at the regency coffee-house, dressed in ordinary clothing, having for some time previous to this wore an Armenian habit. He was loaded with praises by the surrounding multitude. "It is somewhat singular (says M. Sennebier) to see a man so haughty as he returning to the very place from whence he had been banished so often. Nor is it one of the smallest inconsistencies of this extraordinary character, that he preferred a retreat in that place of which he had spoken so much ill." It is as singular that a person under sentence of imprisonment should wish to live in so public a manner in the very place where his sentence was in force against him. His friends procured for him, however, liberty of staying, on condition that he should neither write on religion nor politics: he kept his word; for he wrote none at all. He was contented with living in a calm philosophical manner, giving himself to the society of a few tried friends, shunning the company of the great, appearing to have given up all his whimsies, and affecting neither the character of a philosopher nor a *bel esprit*. He died of an apoplexy at Ermenonville, belonging to the marquis de Girardin, about ten leagues from Paris, July 2. 1778, aged 66 years. This nobleman has erected to his memory a very plain monument, in a grove of poplars, which constitutes part of his beautiful gardens. On the tomb are inscribed the following epitaphs:

*Ici repose
L'Homme de la Nature
Et de la Verité!*

Vitam impendere Vero.*

Hic jacent Ossa J. J. Rousseau.

* His most
zo.

The curious who go to see this tomb likewise see the cloak which the Genevan philosopher wore. Above the door is inscribed the following sentence, which might afford matter for a whole book: "He is truly free, who, to accomplish his pleasure, has no need of the assistance of a second person." Rousseau, during his stay in the environs of Lyons, married Mademoiselle le Vasseur, his governess, a woman who, without either beauty or talents, had gained over him a great ascendancy. She waited on him in health and in sickness: But as if she had been jealous of possessing him alone, she drove from his mind, by the most perfidious insinuations, all those who came to entertain him; and when Rousseau did not dismiss them, she prevented their return by invariably refusing them admittance. By these means she the more easily led her husband into inconsistencies of conduct, which the originality of his character as well as of his opinions so much contributed to assist. Nature had perhaps but given him the embryo

Rousseau. bryo of his character, and art had probably united to make it more singular. He did not incline to associate with any person; and as this method of thinking and living was uncommon, it procured him a name, and he displayed a kind of fantasticalness in his behaviour and his writings. Like Diogenes of old, he united simplicity of manners with all the pride of genius; and a large stock of indolence, with an extreme sensibility, served to render his character still more uncommon. "An indolent mind (says he), terrified at every application, a warm, bilious, and irritable temperament, sensible also in a high degree to every thing that can affect it, appear not possible to be united in the same person: and yet these two contrarieties compose the chief of mine. An active life has no charms for me. I would an hundred times rather consent to be idle than to do any thing against my will; and I have an hundred times thought that I would live not amiss in the Bastille, provided I had nothing to do but just continue there. In my younger days I made several attempts to get in there; but as they were only with the view of procuring a refuge and rest in my old age, and, like the exertions of an indolent person, only by fits and starts, they were never attended with the smallest success. When misfortunes came, they afforded me a pretext of giving myself up to my ruling passion." He often exaggerated his misfortunes to himself as well as to others. He endeavoured particularly to render interesting by his description his misfortunes and his poverty, although the former were far less than he imagined, and notwithstanding he had certain resources against the latter. In other respects he was charitable, generous, sober, just, contenting himself with what was purely necessary, and refusing the means which might have procured him wealth and offices. He cannot, like many other sophists, be accused of having often repeated with a studied emphasis the word *Virtue*, without inspiring the sentiment. When he is speaking of the duties of mankind, of the principles necessary to our happiness, of the duty we owe to ourselves and to our equals, it is with a copiousness, a charm, and an impetuosity, that could only proceed from the heart. He said one day to M. de Buffon, "You have asserted and proved before J. J. Rousseau, that mothers ought to suckle their children." "Yes (says this great naturalist), we have all said so; but M. Rousseau alone forbids it, and causes himself to be obeyed." Another academician said, "that the virtues of Voltaire were without heart, and those of Rousseau without head." He was acquainted at an early age with the works of the Greek and Roman authors; and the republican virtues there held forth to view, the rigorous austerity of Cato, Brutus, &c. carried him beyond the limits of a simple estimation of them. Influenced by his imagination, he admired every thing in the ancients, and saw nothing in his contemporaries but enervated minds and degenerated bodies.

His ideas about politics were almost as eccentric as his paradoxes about religion. Some reckon his *Social Compact*, which Voltaire calls the *Unsocial Compact*, the greatest effort his genius produced. Others find it full of contradictions, errors, and cynical passages, obscure, ill arranged, and by no means worthy of his shining pen. There are several other small pieces wrote by him, to be found in a collection of his works published

in 25 vols 8vo and 12mo, to which there is appended a very insignificant supplement in 6 vols.

The most useful and most important truths in this collection are picked out in his *Thoughts*; in which the confident sophist and the impious author disappear, and nothing is offered to the reader but the eloquent writer and the contemplative moralist. There were found in his port-folio his *Confessions*, in twelve books; the first six of which were published. "In the preface to these memoirs, which abound with characters well drawn, and written with warmth, with energy, and sometimes with elegance, he declares (says M. Palissot), like a peevish misanthrope, who boldly introduces himself on the ruins of the world, to declare to mankind, whom he supposes assembled upon these ruins, that in that innumerable multitude, none could dare to say, *I am better than that man*. This affectation of seeing himself alone in the universe, and of continually directing every thing to himself, may appear to some narrow minds a fanaticism of pride, of which we have no examples, at least since the time of Cardan." But this is not the only blame which may be attached to the author of the *Confessions*. With uneasiness we see him, under the pretext of sincerity, dishonouring the character of his benefactress Lady Warren. There are innuendos no less offensive against obscure and celebrated characters, which ought entirely or partly to have been suppressed. A lady of wit said, that Rousseau would have been held in higher estimation for virtue, "had he died without his confession." The same opinion is entertained by M. Sennebler, author of the *Literary History of Geneva*: "His confessions (says he) appear to me to be a very dangerous book, and paint Rousseau in such colours as we would never have ventured to apply to him. The excellent analyses which we meet with of some sentiments, and the delicate anatomy which he makes of some actions, are not sufficient to counterbalance the detestable matter which is found in them, and the unceasing obloquies everywhere to be met with." It is certain, that if Rousseau has given a faithful delineation of some persons, he has viewed others through a cloud, which formed in his mind perpetual suspicions. He imagined he thought justly and spoke truly; but the simplest thing in nature, says M. Servant, if distilled through his violent and suspicious head, might become poison. Rousseau, in what he says of himself, makes such acknowledgments as certainly prove that there were better men than he, at least if we may judge him from the first six books of his memoirs, where nothing appears but his vices. They ought not perhaps to be separated from the six last books, where he speaks of the virtues which make reparation for them; or rather the work ought not to have been published at all, if it be true (which there can be little doubt of) that in his confessions he injured the public manners, both by the baseness of the vices he disclosed, and by the manner in which he united them with the virtues. The other pieces which we find in this new edition of his works are, 1. *The Reveries of a Solitary Wanderer*, being a journal of the latter part of his life. In this he confesses, that he liked better to send his children into hospitals destined for orphans, than to take upon himself the charge of their maintenance and education; and endeavours to palliate this error, which nothing can exculpate. 2. *Considerations upon the Government*

Rousseau.

Rouffeau
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Rowe.

vernment of Poland. 3. The Adventures of Lord Edward, a novel, being a kind of supplement to the new Heloifa. 4. Various Memoirs and Fugitive Pieces, with a great number of letters, some of which are very long, and written with too much study, but containing some eloquent passages and some deep thought. 5. Emilia and Sophia. 6. The Levite of Ephraim, a poem in prose, in 4 cantos; written in a truly ancient style of simplicity. 7. Letters to Sara. 8. An Opera and a Comedy. 9. Translations of the first book of Tacitus's History, of the Epifode of Olinda and Sophronia, taken from Taffo, &c. &c. Like all the other writings of Rouffeau, we find in these posthumous pieces many admirable and some useful things; but they also abound with contradictions, paradoxes, and ideas very unfavourable to religion. In his letters especially we see a man chagrined at misfortunes, which he never attributes to himself, suspicious of every body about him, calling and believing himself a lamb in the midst of wolves; in one word, as like Pascal in the strength of his genius, as in his fancy of always seeing a precipice about him. This is the reflection of M. Servant, who knew him, assisted him, and carested him during his retreat at Grenoble in 1768. This magistrate having been very attentive in observing his character, ought the rather to be believed, as he inspected it without either malice, envy, or resentment, and only from the concern he had for this philosopher, whom he loved and admired.

ROUT, in *Law*, is applied to an assembly of persons going forcibly to commit some unlawful act, whether they execute it or not. See RIOT.

ROUTE, a public road, highway, or course, especially that which military forces take. This word is also used for the defeat and flight of an army.

ROWE, NICHOLAS, descended of an ancient family in Devonshire, was born in 1673. He acquired a complete taste of the classic authors under the famous Dr Busby in Westminster school; but poetry was his early and darling study. His father, who was a lawyer, and designed him for his own profession, entered him a student in the Middle Temple. He made remarkable advances in the study of the law; but the love of the belles lettres, and of poetry in particular, stopt him in his career. His first tragedy, the Ambitious Stepmother, meeting with universal applause, he laid aside all thoughts of rising by the law. He afterward composed several tragedies; but that which he valued himself most upon, was his Tamerlane. The others are, the Fair Penitent, Ulysses, the Royal Convert, Jane Shore, and Lady Jane Grey. He also wrote a poem called the Biter, and several poems upon different subjects, which have been published under the title of Miscellaneous Works, in one volume, as his dramatic works have been in two. Rowe is chiefly to be considered (Dr Johnson observes) in the light of a tragic writer and a translator. In his attempt at comedy, he failed so ignominiously, that his Biter is not inserted in his works; and his occasional poems and short compositions are rarely worthy of either praise or censure, for they seem the casual sports of a mind seeking rather to amuse its leisure than to exercise its powers. In the construction of his dramas there is not much art; he is not a nice observer of the unities. He extends time, and varies place, as his convenience requires. To vary the place is not (in the opinion of the learned critic from whom these ob-

servations are borrowed) any violation of nature, if the change be made between the acts; for it is no less easy for the spectator to suppose himself at Athens in the second act, than at Thebes in the first; but to change the scene, as is done by Rowe in the middle of an act, is, to add more acts to the play, since an act is so much of the business as is transacted without interruption. Rowe, by this licence, easily extricates himself from difficulties; as in Lady Jane Gray, when we have been terrified with all the dreadful pomp of public execution, and are wondering how the heroine or the poet will proceed, no sooner has Jane pronounced some prophetic rhymes, than—pass and be gone—the scene closes, and Pembroke and Gardiner are turned out upon the stage. I know not (says Dr Johnson) that there can be found in his plays any deep search into nature, any accurate discriminations of kindred qualities, or nice display of passion in its progress; all is general and undefined. Nor does he much interest or affect the auditor, except in Jane Shore, who is always seen and heard with pity. Alicia is a character of empty noise, with no resemblance to real sorrow or to natural madness. Whence then has Rowe his reputation? From the reasonableness and propriety of some of his scenes, from the elegance of his diction, and the suavity of his verse. He seldom moves either pity or terror, but he often elevates the sentiment; he seldom pierces the breast, but he always delights the ear, and often improves the understanding. Being a great admirer of Shakespeare, he gave the public an edition of his plays; to which he prefixed an account of that great man's life. But the most considerable of Mr Rowe's performances was a translation of Lucan's *Pharsalia*, which he just lived to finish, but not to publish; for it did not appear in print till 1728, ten years after his death.

Meanwhile, the love of poetry and books did not make him unfit for business; for nobody applied closer to it when occasion required. The duke of Queenberry, when secretary of state, made him secretary for public affairs. After the duke's death, all avenues were stopped to his preferment; and during the rest of Queen Anne's reign he passed his time with the Muses and his books. A story, indeed, is told of him, which shows that he had some acquaintance with her ministers. It is said, that he went one day to pay his court to the lord treasurer Oxford, who asked him, "If he understood Spanish well?" He answered, "No;" but thinking that his Lordship might intend to send him into Spain on some honourable commission, he presently added, "that he did not doubt but he could shortly be able both to understand and to speak it." The earl approving what he said, Rowe took his leave; and, retiring a few weeks to learn the language, waited again on the Earl to acquaint him with it. His Lordship asking him, "If he was sure he understood it thoroughly?" and Rowe affirming that he did, "How happy are you, Mr Rowe," said the Earl, "that you can have the pleasure of reading and understanding the History of Don Quixote in the original!" On the accession of George I. he was made poet laureat, and one of the land surveyors of the customs in the port of London. The prince of Wales conferred on him the clerkship of his council; and the Lord Chancellor Parker made him his secretary for the presentations. He did not enjoy these promotions long; for he died Dec. 6. 1718, in his 45th year.

Mr

Rowe.

Mr Rowe was twice married, had a son by his first wife, and a daughter by his second. He was a handsome, genteel man; and his mind was as amiable as his person. He lived beloved; and at his death had the honour to be lamented by Mr Pope, in an epitaph which is printed in Pope's works, although it was not affixed on Mr Rowe's monument in Westminster-abbey, where he was interred in the poet's corner, opposite to Chaucer.

ROWE, *Elisabeth*, an English lady, eminent for her excellent writings both in prose and verse, born at Ilchester in Somersetshire in 1647, was the daughter of worthy parents, Mr Walter Singer and Mrs Elisabeth Portnel. She received the first serious impressions of religion as soon as she was capable of it. There being a great affinity between painting and poetry, this lady, who had a vein for the one, naturally had a taste for the other. She was also very fond of music; chiefly of the grave and solemn kind, as best suited to the grandeur of her sentiments and the sublimity of her devotion. But poetry was her favourite employment, her distinguishing excellence. So prevalent was her genius this way, that her prose is all poetical. In 1696, a collection of her poems was published at the desire of two friends. Her paraphrase on the xxxviiith chapter of Job was written at the request of Bishop Ken. She had no other tutor for the French and Italian languages than the honourable Mr Thynne, who willingly took the task upon himself. Her shining merit, with the charms of her person and conversation, had procured her a great many admirers. Among others, it is said, the famous Mr Prior made his addresses to her. But Mr Thomas Rowe was to be the happy man. This gentleman was honourably descended: and his superior genius, and insatiable thirst after knowledge, were conspicuous in his earliest years. He had formed a design to compile the lives of all the illustrious persons in antiquity omitted by Plutarch; which, indeed, he partly executed. Eight lives were published since his decease. They were translated into French by the abbé Bellen-ger in 1734. He spoke with ease and fluency; had a frank and benevolent temper, an inexhaustible fund of wit, and a communicative disposition. Such was the man who, charmed with the person, character, and writings, of our authoress, married her in 1710, and made it his study to repay the felicity with which she crowned his life. Too intense an application to study, beyond what the delicacy of his frame would bear, broke his health, and threw him into a consumption, which put a period to his valuable life in May 1715, when he was but just past the 28th year of his age. Mrs Rowe wrote a beautiful elegy on his death; and continued to the last moments of her life to express the highest veneration and affection for his memory. As soon after his decease as her affairs would permit, she indulged her inclination for solitude, by retiring to Frome, in Somersetshire, in the neighbourhood of which place the greatest part of her estate lay. In this recess it was that she composed the most celebrated of her works, Friendship in Death, and the Letters Moral and Entertaining. In 1736, she published, the History of Joseph; a poem which she had written in her younger years. She did not long survive this publication; for she died of an apoplexy, as was supposed, Feb. 20. 1736-7. In her cabinet were found letters to several of

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her friends, which she had ordered to be delivered immediately after her decease. The Rev. Dr Isaac Watts, agreeably to her request, revised and published her devotions in 1737, under the title of Devout Exercises of the Heart in Meditation and Soliloquy, Praise and Prayer; and, in 1739, her Miscellaneous Works, in prose and verse, were published in 2 vols 8vo, with an account of her life and writings prefixed.

As to her person, she was not a regular beauty, yet possessed a large share of the charms of her sex. She was of a moderate stature, her hair of a fine colour, her eyes of a darkish gray inclining to blue, and full of fire. Her complexion was very fair, and a natural blush glowed in her cheeks. She spoke gracefully; her voice was exceedingly sweet and harmonious; and she had a softness in her aspect which inspired love, yet not without some mixture of that awe and veneration which distinguished sense and virtue, apparent in the countenance, are wont to create.

ROWEL, among farriers, a kind of issue answering to what in surgery is called a *seton*. See FARRIERY, sect. v.

ROWLEY, a monk who is said to have flourished at Bristol in the 15th century, and to have been an author voluminous and elegant. Of the poems attributed to him, and published some time ago, various opinions have been entertained, which we have noticed elsewhere. They seem now to be almost forgotten. See CHATTERTON.

ROWLEY, *William*, who stands in the third class of dramatic writers, lived in the reign of King Charles I. and received his education at the university of Cambridge; but whether he took any degree there, is not evident; there being but few particulars preserved in regard to him more than his close intimacy and connection with all the principal wits and poetical geniuses of that age, by whom he was well beloved, and with some of whom he joined in their writings. Wood styles him "the ornament, for wit and ingenuity, of Pembroke-hall in Cambridge." In a word, he was a very great benefactor to the English stage, having, exclusive of his aid lent to Middleton, Day, Heywood, Webster, &c. left us five plays of his own composing, and one in which even the immortal Shakespeare afforded him some assistance.

ROWNING, JOHN, an English mathematician and philosopher of considerable ingenuity, was fellow of Magdalen college, Cambridge, and afterwards rector of Anderby in Lincolnshire, in the gift of that society. He constantly attended the meetings of the Spalding society, and was a man of an extraordinary philosophical habit and turn of mind, while at the same time his dispositions were social and cheerful. His genius was peculiarly fitted for mechanical contrivances or inventions. He published a compendious system of Natural Philosophy at Cambridge, in the year 1738, in two vols. 8vo.; a work of much ingenuity, which has gone through several editions. He likewise inserted two pieces in the Philosophical Transactions, viz. a description of a barometer, wherein the scale of variation may be increased at pleasure; vol. xxxviii. p. 39.; and directions for making a machine for finding the roots of equations universally, together with the manner in which it is to be used; vol. lx. p. 240.

He died at his lodgings in Carey street, near Lincoln's-

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coln's-

Rowe

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Rowning.

Roxburgh-shire. coln's-inn Fields, in the end of November 1771, at 72 years of age. Though a man both ingenious and pleasant, his external appearance was rather forbidding, as he was tall, stooped in the shoulders, and his countenance was down-looking and fallow.

ROXBURGHSHIRE, a county of Scotland, which is also known by the name of TEVIOTDALE, measures about 40 miles in length from north to south, and in breadth about 36 miles in a direction between east and west; containing 472,320 square acres. The centre of the county is computed to lie in 55°. 25'. N. Lat. and in 2°. 37'. W. Long. from the meridian of London. The counties of Northumberland and Cumberland form its boundary on the south; it is also bounded by the former county on the east, by Berwickshire on the north, and on the west by the counties of Dumfries, Selkirk, and Edinburgh.

The external appearance of this county is regarded as upon the whole extremely beautiful, exhibiting an alternate succession of hills and dales, through which flow a considerable number of small rivers. The greater part of the hills are covered with a fine sward, producing valuable grasses for the feeding of sheep; and the county is divided into four different districts, the most mountainous part of it being denominated the district of Hawick; the second is that of Jedburgh; the third is the district of Kelso, and the fourth is known by the name of the district of Melrose, being composed of that part of the county which is situated to the northward of the rest.

The most remarkable hills in the county of Roxburgh are Minto, 858 feet above the level of the sea; Dunion 1021; Eldon 1330; Ruberslaw 1419; Carterfell 1602, Wisp 1803. These constitute a part of that extensive range generally known by the appellation of *Cheviot*, which is distant not above a mile from the most easterly point of Roxburgh. Whinstone is their chief constituent, in which veins of Scotch pebbles are usually interspersed. They are often covered with whinstone reduced to the state of powder by the action of the weather. The hills towards their summits are in general of a conical form, a circumstance which some think is favourable to the volcanic system;—that the globe at some remote period has suffered the most dreadful convulsions from the irresistible action of fire.

The county of Roxburgh is intersected by a multitude of streams, the most important of which are the Teviot, Jed, Tweed, Rule, Kale, Oxnam, Gala, Slitrig, Ale, Caster, Borthwick, Ednam, Bowmont, Allan, Leader, Ettrick, Hermitage, Liddel. The term *river* is rarely applied to any of these streams, except to the three first, viz. the Teviot, the Jed, and the Tweed, none of which are navigable but for small ferry boats. Some rivers in England, such as the Tyne, the Cocket, &c. have their origin in the more elevated parts of the county of Roxburgh.

In an agricultural point of view, Roxburghshire may be divided into land under tillage and under pasture, although a considerable portion of the latter may be reduced to arable land. The soils under tillage may be divided into light and clayey, the former of which is usually denominated *green*, and the latter *white soil*, because it is best adapted to the rearing of oats, wheat, and other white grains. What is called *till* in Roxburghshire, generally consists of a hard clay intermixed

with stones, by which it resembles coarse gravel. Most of the different species of till may be changed into a fertile soil in process of time, by being exposed to the action of the atmosphere, and mixed with lime and manure. Sweet, sour, and healthy, are the terms by which lands under pasture are usually distinguished, and these are conferred from a consideration of the nature of the soil, its grasses, and such other circumstances as indicate them to be favourable or unfavourable for the rearing of sheep. Much of these lands was, at a remote period, under wood and heath, the existence of the former being pointed out by the roots of trees still remaining in the ground. The soil in general is sharp and dry upon the hills; but some of the high moors and the grounds in the vicinity of rivers are wet and marshy.

There are different tracts of land in this county which still continue in a state of nature, a portion of which kind, measuring about four miles long and two broad, runs through part of the parishes of Ancrum and Roxburgh, chiefly of a light gravelly nature, covered with heath, bent, and other coarse grasses. The large district of Liddesdale is wholly under sheep pasturage, with the exception of a few stripes on the banks of the Liddel and Hermitage. Indeed a cold wet soil, an exposed situation, and unfriendly climate, hold out few incentives to improvements in agriculture. In ancient times this must have been very different from what it is at present. The marks of the plough can still be traced on the summits of lofty mountains, where the production of crops at this day is wholly impracticable. The counties on the borders were not, at a remote period, possessed by individuals in large detached portions, but the people of a whole neighbourhood had their alternate ridges, in which case they became interested in defending the property of each other against invaders and plunderers. The wars of the border, however, were happily terminated by the union of England and Scotland under one sovereign, in consequence of which the holding of property in what was denominated *runrigg*, no longer possessed its ancient advantages, but was rather a disadvantage, as it created constant quarrels and disputes among farmers, and greatly retarded the improvement of the soil. Each individual, therefore, became anxious to have his lands detached from those of his neighbours, an advantageous change which was very soon and very generally adopted.

A Mr Dawson, the son of a farmer in Roxburghshire, having resided four years in the west riding of Yorkshire, and a year in Essex, thereby made himself well acquainted with the most approved methods of husbandry practised in England, and returned to his native country in the full assurance of being able to introduce into the agriculture of Scotland the most essential improvements. On his arrival in Roxburghshire in the year 1753, he immediately introduced the turnip husbandry, which he sowed in drills, and was certainly the first Scots farmer who introduced the cultivation of turnip into the open field. His neighbours being wholly ignorant of the agricultural knowledge which this young gentleman had acquired in England, began to predict his ruin as wholly inevitable; but he was not to be intimidated by their prophetic sentiments, and he went on resolutely in bringing his lands into the very best condition, which he fully effected by means of the turnip husbandry,

Roxburghshire. husbandry, by the sowing of artificial grasses, a practice then unknown in Scotland, and by the free and extensive use of lime. By such a procedure his neighbours saw him becoming rapidly opulent, and having followed his example with the most flattering success, they were constrained to alter their sentiments respecting his conduct as a farmer, and to hail him the father of the agriculture of the south of Scotland.

The rotation of crops now followed in this county has nothing in it of a peculiar nature, the arrangement on a dry soil being generally oats, turnips, barley with grasses, hay or pasture for one year, then barley as before. Where the soil is good and properly prepared, it is not uncommon with farmers to adopt the following rotation, viz. oats, turnips, oats, turnips, wheat or barley with grasses, and hay or pasture for one year. A part of Roxburghshire has been long celebrated for a species of oats which produce early crops, and which are known by the appellation of Blainly oats, because they have been produced at Blainly from time immemorial, which is a district in the parish of Melrose, and northern extremity of the county. These are often five shillings a boll dearer than common oats, and in no situation whatever are they known to degenerate. In some rich soils the produce is 16 or 18 for 1, and the lowest average produce is at least six for one. The general practice of feeding cattle with turnip has diminished the culture of pease and beans in this county, and there are so few potatoes reared that they cannot be regarded as forming a part of the farmer's crop. Extensive crops of hay are not in general cultivated in this county, there being but few cities in which an advantageous market could be found; and the use of it is in a great measure supplanted by that of turnip. Little more flax is reared than what is necessary for domestic purposes.

There is a circumstance worthy of observation, that the rearing of tobacco was, at one period, attempted in this county with remarkable success. It was introduced by a Mr Thomas Man, who had been for some time in America. Soon after the first experiments were made, a single acre of land produced a crop worth 70*l.* sterling; and the crop of 13 acres was sold on the ground for 320*l.*; but in consequence of an act of parliament prohibiting the culture of it, the purchaser could not implement his bargain, and the farmer was obliged to sell it to government at the rate of fourpence a pound, in consequence of which it brought him no more than 104*l.* instead of 320.

Great quantities of cattle are fed in this county, and about 260,000 sheep of the Cheviot breed in general, which are found to thrive remarkably in every part of the county. The horses are either of the English breed, or from Lanarkshire, which latter are deemed preferable for steady work in the plough. Although swine are not kept by the farmers as a part of their stock, yet great numbers of them are reared by tradesmen, cottagers, hinds, and others, the small breed being chiefly preferred, not exceeding eight or nine stones English each. Roxburghshire is also famous for the rearing of poultry, and immense quantities of eggs are sent from it to Berwick, to be shipped for the London market. Crows are here so numerous, that they frequently darken the air in their flight, and are extremely destructive to every species of grain. A great part of the county is uninclosed, and the fences made use of are the hedge

and ditch, although in some places upright stone dykes have the decided preference, where stones can be readily procured. Roxburghshire.

The orchards of Roxburgh county have been long celebrated for different kinds of fruit, and there are here two extensive nurseries for the rearing of trees. These last are at Hassendean burn in the parish of Min-to, and at Hawick. The whole county, however, like that of Berwick, is extremely defective in mineral productions, and coal has nowhere been found. Limestone is no doubt met with in different places of it, but the want of fuel requisite for its calcination, induces farmers to bring it from Dalkeith or Edinburgh, in their corn carts, which might otherwise return empty.

In the vicinity of Jedburgh there are two springs of chalybeate water, with indications of more in different parts of the parish, which have not yet been subjected to any examination or analysis, although the waters of *Tudhope well* have been regarded as antiscorbutic, and of use also in rheumatic disorders.

In this county there are many remains of antiquity, such as ancient strong buildings, and vestiges of camps. Different remains of encampments and fortifications are to be met with in the parish of Robertson, which in all probability have been the work of the Romans. Hermitage castle is situated upon the bank of the river of the same name, and is nearly 100 feet square, defended by a strong rampart and ditch. The inner part of it is a heap of ruins, but the walls are almost entire. This is probably the very castle mentioned by Smollet, which was built in Liddesdale by Alexander II. and which gave such offence to Henry III. of England, that he made war on Alexander in the year 1240. There are several caves or recesses on the banks of the Aye water, not fewer than fifteen of which, it is said, may be still pointed out, in some of which the vestiges of chimneys or fire-places are very discernible. Although at first used by plunderers as places of safe retreat, they were no doubt afterwards employed by the poorer classes of the community as their ordinary habitations. Perhaps the abbey of Melrose is the most distinguished monument of antiquity to be met with in this county; for an account of which the reader may consult the article MELROSE.

Roxburghshire has given birth to some of the most eminent characters who have adorned the republic of letters, among whom we find Dr John Armstrong, a distinguished physician and poet; James Thomson, the far-famed author of the *Seasons*; the poet Gawin Douglas, at one time rector of Hawick, afterwards bishop of Dunkeld; and the celebrated George Augustus Elliot, afterwards Lord Heathfield.

Notwithstanding the difficulty of procuring fuel in this county, several manufactures have been carried on with a considerable degree of spirit and determined perseverance, the chief of which are carpets, inkle, cloth and stockings, in the manufacture of which nearly 300 packs of wool (each 12 stones) have been annually consumed. About 4000 pairs of stockings have been made in the same time, and 10 tons of linen yarn consumed in the making of inkle.

The population of this county, estimated in 1801, amounted to 33,682; and the following is the population according to the parishes, taken from the Statistical History of Scotland.

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	Parishes.	Population in 1755.	Population in 1790—1798.
	Ancrum	1066	1146
	Ashkirk	629	539
	Bedrule	297	259
	Bowden	672	860
5	Castleton	1507	1418
	Cavers	993	1300
	Crailing	387	672
	Ednam	387	600
	Eckford	1083	952
10	Hawick	2713	2928
	Hobkirk	520	700
	Hownam	632	365
	Jedburgh	5816	3288
	Kelfo	2781	4324
15	Kirktown	330	342
	Leshuden	309	500
	Lilliesleaf	521	630
	Linton	413	383
	Mackerston	165	255
20	Maxton	397	326
	Melrose	2322	2446
	Minto	395	513
	Morebattle	789	789
	Oxnam	760	690
25	Roberton	651	629
	Roxburgh	784	840
	Smailholm	551	421
	Southdean	669	714
	Sprouston	1089	1000
30	Wilton	936	1215
	Yetholm	699	976
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		31,273	32,020
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			Increase 747

ROXENT-CAPE, or *ROCK of Lisbon*, a mountain and remarkable promontory in Portugal, situated in the Atlantic ocean, at the north entrance of the Tagus, 22 miles north of Lisbon.

ROYAL, something belonging to a king: thus we say, royal family, royal assent, royal exchange, &c.

ROYAL Family. The first and most considerable branch of the king's royal family, regarded by the laws of England, is the queen.

1. The queen of England is either queen *regent*, queen *consort*, or queen *dowager*. The queen *regent*, *regnant*, or *sovereign*, is she who holds the crown in her own right; as the first (and perhaps the second) Queen Mary, Queen Elizabeth, and Queen Anne; and such a one has the same powers, prerogatives, rights, dignities, and duties, as if she had been a king. This is expressly declared by statute 1 Mar. I. st. 3. c. 1. But the queen *consort* is the wife of the reigning king; and she by virtue of her marriage is participant of divers prerogatives above other women.

And, first, she is a public person, exempt and distinct from the king; and not, like other married women, so closely connected as to have lost all legal or separate existence so long as the marriage continues. For the queen is of ability to purchase lands and to convey

them, to make leases, to grant copyholds, and do other acts of ownership, without the concurrence of her lord; which no other married woman can do: a privilege as old as the Saxon era. She is also capable of taking a grant from the king, which no other wife is from her husband; and in this particular she agrees with the *augusta* or *piissima regina conjux divi imperatoris* of the Roman laws; who, according to Justinian, was equally capable of making a grant to, and receiving one from, the emperor. The queen of England hath separate courts and officers distinct from the king's, not only in matters of ceremony, but even of law; and her attorney and solicitor general are entitled to a place within the bar of his majesty's courts, together with the king's counsel. She may likewise sue and be sued alone, without joining her husband. She may also have a separate property in goods as well as lands, and has a right to dispose of them by will. In short, she is in all legal proceedings looked upon as a feme sole, and not as a feme covert; as a single, not as a married woman. For which the reason given by Sir Edward Coke is this: because the wisdom of the common law would not have the king (whose continual care and study is for the public, and *circa ardua regni*) to be troubled and disquieted on account of his wife's domestic affairs; and therefore it vests in the queen a power of transacting her own concerns, without the intervention of the king, as if she were an unmarried woman.

The queen hath also many exemptions, and minute prerogatives. For instance: she pays no toll; nor is she liable to any amercement in any court. But in general, unless where the law has expressly declared her exempt, she is upon the same footing with other subjects; being to all intents and purposes the king's subject, and not his equal: in like manner as in the imperial law, *Augustus legibus solutus non est*.

The queen hath also some pecuniary advantages, which form her distinct revenue: as, in the first place, she is entitled to an ancient perquisite called *queen gold*, or *aurum reginæ*; which is a royal revenue belonging to every queen-consort during her marriage with the king, and due from every person who hath made a voluntary offering or fine to the king, amounting to 10 merks or upwards, for and in consideration of any privileges, grants, licences, pardons, or other matter of royal favour conferred upon him by the king: and it is due in the proportion to one-tenth part more, over and above the entire offering or fine made to the king, and becomes an actual debt of record to the queen's majesty by the mere recording of the fine. As, if 100 merks of silver be given to the king for liberty to take in mortmain, or to have a fair, market, park, chase, or free-warren; there the queen is intitled to 10 merks in silver, or (what was formerly an equivalent denomination) to one merk in gold, by the name of *queen-gold*, or *aurum reginæ*. But no such payment is due for any aids or subsidies granted to the king in parliament or convocation; or for fines imposed by courts on offenders against their will; nor for voluntary presents to the king, without any consideration moving from him to the subject; nor for any sale or contract whereby the present revenues or possessions of the crown are granted away or diminished.

The original revenue of our ancient queens, before and soon after the conquest, seems to have consisted in certain

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certain reservations or rents out of the demesne lands of the crown, which were expressly appropriated to her majesty, distinct from the king. It is frequent in domesday book, after specifying the rent due to the crown, to add likewise the quantity of gold or other renders reserved to the queen. These were frequently appropriated to particular purposes; to buy wood for her majesty's use, to purchase oil for lamps, or to furnish her attire from head to foot, which was frequently very costly, as one single robe in the fifth year of Henry II. stood the city of London in upwards of 80 pounds: A practice somewhat similar to that of the eastern countries, where whole cities and provinces were specifically assigned to purchase particular parts of the queen's apparel. And for a farther addition to her income, this duty of queen-gold is supposed to have been originally granted; those matters of grace and favour, out of which it arose, being frequently obtained from the crown by the powerful intercession of the queen. There are traces of its payment, though obscure ones, in the book of domesday, and in the great pipe-roll of Henry I. In the reign of Henry II. the manner of collecting it appears to have been well understood; and it forms a distinct head in the ancient dialogue of the exchequer written in the time of that prince, and usually attributed to Gervase of Tilbury. From that time downwards, it was regularly claimed and enjoyed by all the queen-consorts of England till the death of Henry VIII.; though after the accession of the Tudor family, the collecting of it seems to have been much neglected: and there being no queen consort afterwards till the accession of James I. a period of near 60 years, its very nature and quantity then became a matter of doubt; and being referred by the king to the chief justices and chief baron, their report of it was so very unfavourable, that his consort Queen Anne, though she claimed it, yet never thought proper to exact it. In 1635, 11 Car. I. a time fertile of expedients for raising money upon dormant precedents in our old records (of which ship-money was a fatal instance), the king, at the petition of his queen Henrietta Maria, issued out his writ for levying it; but afterwards purchased it of his consort at the price of 10,000 pounds; finding it, perhaps, too trifling and troublesome to levy. And, when afterwards, at the Restoration, by the abolition of military tenures, and the fines that were consequent upon them, the little that legally remained of this revenue was reduced to almost nothing at all; in vain did Mr Prynne, by a treatise that does honour to his abilities as a painful and judicious antiquarian, endeavour to excite Queen Catherine to revive this antiquated claim.

Another ancient perquisite belonging to the queen consort, mentioned by all our old writers, and therefore only worthy notice, is this: that on the taking a whale on the coasts, which is a royal fish, it shall be divided between the king and queen; the head only being the king's property; and the tail of it the queen's. *De surigione observetur, quod rex illum habebit integrum: de balena vero sufficit, si rex habeat caput, et regina caudam.* The reason of this whimsical division, as assigned by our ancient records, was, to furnish the queen's wardrobe with whale-bone.

But farther: though the queen is in all respects a subject, yet, in point of the security of her life and

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person, she is put upon the same footing with the king. It is equally treason (by the statute 25 Edward III.) to imagine or compass the death of our lady the king's companion, as of the king himself; and to violate or defile the queen consort, amounts to the same high crime; as well in the person committing the fact, as in the queen herself if consenting. A law of Henry VIII. made it treason also for any woman who was not a virgin, to marry the king without informing him thereof: but this law was soon after repealed; it trespassing too strongly, as well on natural justice as female modesty. If however the queen be accused of any species of treason, she shall (whether consort or dowager) be tried by the peers of parliament, as Queen Ann Boleyn was in 28 Hen. VIII.

The husband of a queen regnant, as Prince George of Denmark was to Queen Anne, is her subject; and may be guilty of high treason against her: but, in the instance of conjugal fidelity, he is not subjected to the same penal restrictions. For which the reason seems to be, that if a queen consort is unfaithful to the royal bed, this may debase or bastardize the heirs to the crown; but no such danger can be consequent on the fidelity of the husband to a queen regnant.

2. A queen *dowager* is the widow of the king, and as such enjoys most of the privileges belonging to her as queen consort. But it is not high treason to conspire her death, or to violate her chastity; for the same reason as was before alleged, because the succession to the crown is not thereby endangered. Yet still, *pro dignitate regali*, no man can marry a queen dowager without special licence from the king, on pain of forfeiting his lands and goods. This Sir Edward Coke tells us, was enacted in parliament in 6 Henry VI. though the statute be not in print. But she, though an alien born, shall still be entitled to dower after the king's demise, which no other alien is. A queen-dowager when married again to a subject, doth not lose her regal dignity, as peeresses-dowager do when they marry commoners. For Katharine, queen dowager of Henry V. though she married a private gentleman, Owen ap Meredith ap Theodore, commonly called *Owen Tudor*; yet, by the name of *Katharine queen of England*, maintained an action against the bishop of Carlisle. And so the dowager of Navarre marrying with Edmond the brother of King Edward I maintained an action of dower by the name of *queen of Navarre*.

3. The prince of Wales, or heir apparent to the crown, and also his royal consort and the princess royal, or eldest daughter of the king, are likewise peculiarly regarded by the laws. For, by statute 25 Edw. III. to compass or conspire the death of the former, or to violate the chastity of either of the latter, are as much high treason as to conspire the death of the king, or violate the chastity of the queen. And this upon the same reason as was before given; because the prince of Wales is next in succession to the crown, and to violate his wife might taint the blood-royal with bastardy; and the eldest daughter of the king is also alone inheritable to the crown on failure of issue male, and therefore more respected by the laws than any of her younger sisters; insomuch that upon this, united with other (feodal) principles, while our military tenures were in force, the king might levy an

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aid for marrying his eldest daughter, and her only. The heir apparent to the crown is usually made prince of Wales and earl of Chester, by special creation and investiture; but being the king's eldest son, he is by inheritance duke of Cornwall, without any new creation.

4. The rest of the royal family may be considered in two different lights, according to the different senses in which the term *royal family* is used. The larger sense includes all those who are by any possibility inheritable to the crown. Such, before the revolution, were all the descendants of William the Conqueror; who had branched into an amazing extent by inter-marriages with the ancient nobility. Since the revolution and act of settlement, it means the Protestant issue of the princess Sophia; now comparatively few in number, but which in process of time may possibly be as largely diffused. The more confined sense includes only those who are in a certain degree of propinquity to the reigning prince, and to whom therefore the law pays an extraordinary regard and respect; but after that degree is past, they fall into the rank of ordinary subjects, and are seldom considered any farther, unless called to the succession upon failure of the nearer lines. For though collateral consanguinity is regarded indefinitely with respect to inheritance or succession, yet it is and can only be regarded within some certain limits in any other respect, by the natural constitution of things and the dictates of positive law.

The younger sons and daughters of the king, and other branches of the royal family, who are not in the immediate line of succession, were therefore little farther regarded by the ancient law, than to give them a certain degree of precedence before all peers and public officers as well ecclesiastical as temporal. This is done by the statute 31 Henry VIII. c. 10. which enacts, that no person except the king's children shall presume to sit or have place at the side of the cloth of estate in the parliament chamber; and that certain great officers therein named shall have precedence, above all dukes, except only such as shall happen to be the king's son, brother, uncle, nephew (which Sir Edward Coke explains to signify grandson or *nepos*), or brother's or sister's son. But under the description of the king's *children*, his *grandsons* are held to be included, without having recourse to Sir Edward Coke's interpretation of *nephew*; and therefore when his late majesty King George II. created his grandson Edward, the second son of Frederick prince of Wales deceased, duke of York, and referred it to the house of lords to settle his place and precedence, they certified that he ought to have precedence next to the late duke of Cumberland, the then king's youngest son; and that he might have a seat on the left hand of the cloth of estate. But when, on the accession of his present majesty, these royal personages ceased to take place as the *children*, and ranked only as the *brother* and *uncle* of the king, they also left their seats on the side of the cloth of estate; so that when the duke of Gloucester, his majesty's second brother, took his seat in the house of peers, he was placed on the upper end of the earls bench (on which the dukes usually sit) next to his royal highness the duke of York. And in 1717, upon a question referred to all the judges by King George I. it was resolved, by the opinion of ten against the other

two, that the education and care of all the king's grandchildren, while minors, did belong of right to his majesty as king of this realm, even during their father's life. But they all agreed, that the care and approbation of their marriages, when grown up, belonged to the king their grandfather. And the judges have more recently concurred in opinion, that this care and approbation extend also to the presumptive heir of the crown; though to what other branches of the royal family the same did extend, they did not find precisely determined. The most frequent instances of the crown's interposition go no farther than nephews and nieces; but examples are not wanting of its reaching to more distant collaterals. And the statute of Henry VI. before mentioned, which prohibits the marriage of a queen-dowager without the consent of the king, assigns this reason for it: "because the disparagement of the queen shall give greater comfort and example to other ladies of estate, who are of the blood-royal, more lightly to disparage themselves." Therefore by the statute 28 Hen. VIII. c. 18. (repealed, among other statutes of treasons, by 1 Edw. VI. c. 12.) it was made high treason for any man to contract marriage with the king's children or reputed children, his sisters or aunts *ex parte paterna*, or the children of his brethren or sisters; being exactly the same degrees to which precedence is allowed by the statute 31 Hen. VIII. before-mentioned. And now, by statute 12 Geo. III. c. 11. no descendant of the body of King Geo. II. (other than the issue of princesses married into foreign families) is capable of contracting matrimony, without the previous consent of the king signified under the great seal; and any marriage contracted without such a consent is void. Provided, that such of the said descendants as are not above 25, may, after a twelvemonth's notice given to the king's privy-council, contract and solemnize marriage without the consent of the crown; unless both houses of parliament shall, before the expiration of the said year, expressly declare their disapprobation of such intended marriage. And all persons solemnizing, assisting, or being present at any such prohibited marriage, shall incur the penalties of the statute of *præmunire*.

ROYAL Oak, a fair spreading tree at Boscobel, in the parish of Donnington in Staffordshire, the boughs of which were once covered with ivy; in the thick of which King Charles II. sat in the day-time with Colonel Careless, and in the night lodged in Boscobel house: so that they are mistaken who speak of it as an old hollow oak; it being then a gay flourishing tree, surrounded with many more. Its poor remains are now fenced in with a handsome wall, with this inscription in gold letters: *Felicissimam arborem quam in asyllum potentissimi regis Caroli II. Deus op. max. per quem reges regnant, hic crescere voluit, &c.*

ROYAL Society. See SOCIETY.

ROYALTIES, the rights of the king; otherwise called the *king's prerogative*, and the *regalia*. See PREROGATIVE and REGALIA.

ROYENIA, a genus of plants belonging to the decandria class; and in the natural method ranking under the 18th order, *Bicornes*. See BOTANY Index.

ROYSTON, a town of Hertfordshire in England, seated in E. Long. 0. 1. N. Lat. 52. 3. It is a large place, seated in a fertile vale full of inns, and the market is very considerable for corn. There was lately discovered,

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discovered, almost under the market-place, a subterraneous chapel of one Rosia, a Saxon lady: it has several altars and images cut out of the chalky sides, and is in form of a sugar-loaf, having no entrance but at the top.

RUBBER, INDIA. See CAOUTCHOUC.

RUBENS, SIR PETER PAUL, the most eminent of the Flemish painters, was born in 1577; but whether at Antwerp or Cologne is uncertain. His father, who was a counsellor in the senate of Antwerp, had been forced by the civil wars to seek refuge in Cologne, and during his residence there Rubens is commonly said to have been born.

The genius of Rubens, which began to unfold itself in his earliest years, was cultivated with peculiar care, and embellished with every branch of classical and polite literature.

He soon discovered a strong inclination for designing; and used to amuse himself with that employment in his leisure hours, while the rest of his time was devoted to other studies. His mother, perceiving the bias of her son, permitted him to attend the instructions of Tobias Verhaecht a painter of architecture and landscape. He next became the pupil of Adam Van Oort, but he soon found that the abilities of this master were insufficient to answer his elevated ideas. His surly temper too was disgusting to Reubens, whose natural disposition was modest and amiable.

Anxious to find an artist whose genius and dispositions were congenial with his own, he became the disciple of Octavio Van Veen, generally known by the name of Otho Venius, a painter of singular merit, and who was not only skilled in the principles of his art, but also distinguished for learning and other accomplishments. Between the master and scholar a remarkable similarity appeared in temper and inclination; indeed, in the whole turn of their minds. It was this congeniality of sentiments which animated Rubens with that ardent passion for the art of painting which at length determined him to pursue it as a profession. From this time he gave up his whole mind to it; and so successful were his exertions, that he soon equalled his master.

In order to arrive at that perfection which he already beheld in idea, it became requisite to study the productions of the most eminent artists. For this purpose he travelled through Italy, visiting the most valuable collections of paintings and antique statues with which that country abounds.

Sandart, who was intimately acquainted with Rubens, informs us, that he was recommended in the most honourable manner to the duke of Mantua by the archduke Albert, who had witnessed his talents in the finishing of some fine paintings designed for his own palace. At Mantua he was received by the duke with the most flattering marks of distinction, and had opportunities of improving himself, which he did not neglect. Here he carefully studied the works of Julio Romano. He next visited Rome, where he had an opportunity of examining the productions of Raphael. The paintings of Titian and Paolo Veronese called him to Venice, where he improved himself in the art of colouring.

He continued in Italy seven years. At length receiving intelligence that his mother was taken ill, he hastened to Antwerp: but his filial affection was not gratified with a sight of her; she died before his arrival.

He married soon after; but his wife dying at the end of four years, he retired from Antwerp for some time, and endeavoured to soothe his melancholy by a journey to Holland. At Utrecht he visited Hurtort, whom he greatly esteemed.

The fame of Rubens was now spread over Europe. He was invited by Mary of Medicis queen of Henry IV. of France to Paris, where he painted the galleries in the palace of Luxembourg. These form a series of paintings which delineate the history of Mary; and afford a convincing proof how well qualified he was to excel in allegorical and emblematical compositions. While at Paris he became acquainted with the duke of Buckingham, who was so taken with his great talents and accomplishments, that he judged him well qualified to explain to Isabella, the wife of Albert the archduke, the cause of the misunderstanding which had taken place between the courts of England and Spain. In this employment Rubens acquitted himself with such propriety, that Isabella appointed him envoy to the king of Spain, with a commission to propose terms of peace, and to bring back the instructions of that monarch. Philip was no less captivated with Rubens: he conferred on him the honour of knighthood, and made him secretary to his privy council. Rubens returned to Brussels, and thence passed over into England in 1630 with a commission from the Catholic king to negotiate a peace between the two crowns. He was successful in his negotiation, and a treaty was concluded. Charles I. who then filled the British throne, could not receive Rubens in a public character on account of his profession; nevertheless, he treated him with every mark of respect. Having engaged him to paint some of the apartments of Whitehall, he not only gave him a handsome sum of money, but, as an acknowledgment of his merit, created him a knight; and the duke of Buckingham, his friend and patron, purchased of him a collection of pictures, statues, medals, and antiques, with the sum of 10,000*l*.

He returned to Spain, where he was magnificently honoured and rewarded for his services. He was created a gentleman of the king's bedchamber, and named secretary to the council of state in the Netherlands. Rubens, however, did not lay aside his profession. He returned to Antwerp, where he married a second wife called *Helena Forment*, who, being an eminent beauty, helped him much in the figures of his women. He died on 30th May 1640, in the 63d year of his age; leaving vast riches to his children. Albert his eldest son succeeded him in the office of secretary of state in Flanders.

As Rubens was possessed of all the ornaments and advantages that render a man worthy to be esteemed or courted, he was always treated as a person of consequence. His figure was noble, his manners engaging, and his conversation lively. His learning was universal. Though his favourite study must have occupied him much, yet he found time to read the works of the most celebrated authors, and especially the poets. He spoke several languages perfectly, and was an excellent statesman.

His house at Antwerp was enriched with every thing in the arts that was rare and valuable. It contained one spacious apartment, in imitation of the rotunda at Rome, adorned with a choice collection of pictures which

Rubens.

Rubens

Rubia.

which he had purchased in Italy; part of which he sold to the duke of Buckingham.

His genius qualified him to excel equally in every thing that can enter into the composition of a picture. His invention was so fertile, that, if he had occasion to paint the same subject several times, his imagination always supplied him with something striking and new. The attitudes of his figures are natural and varied, the carriage of the head is peculiarly graceful, and his expression noble and animated.

He is by all allowed to have carried the art of colouring to its highest pitch; he understood so thoroughly the true principles of the chiaro-scuro, that he gave to his figures the utmost harmony, and a prominence resembling real life. His pencil is mellowed, his strokes bold and easy, his carnation glows with life, and his drapery is simple, but grand, broad, and hung with much skill.

The great excellence of Rubens appears in his grand compositions; for as they are to be viewed at a distance, he laid on a proper body of colours with uncommon boldness, and fixed all his tints in their proper places; so that he never impaired their lustre by breaking or torturing them; but touched them in such a manner as to give them a lasting force, beauty, and harmony.

It is generally allowed, that Rubens wanted correctness in drawing and designing; some of his figures being heavy and too short, and the limbs in some parts not being justly sketched in the outline. Though he had spent seven years in Italy in studying those antiques by which other celebrated artists had modelled their taste; though he had examined them with such minute attention as not only to perceive their beauties, but to be qualified to describe them in a Dissertation which he wrote on that subject: yet he seems never to have divested himself of that heavy style of painting, which, being peculiar to his native country, he had insensibly acquired. The astonishing rapidity too with which he painted, made him fall into inaccuracies, from which those works that he finished with care are entirely exempted.

Among his finished pieces may be mentioned the Crucifixion of Jesus Christ between the two Thieves, which was very lately to be seen at Antwerp; but of all his works the paintings in the palace of Luxembourg best display his genius and his style.

It is the observation of Algarotti, that he was more moderate in his movements than Tintoretto, and more soft in his chiaro-scuro than Carravaggio; but not so rich in his compositions, nor so light in his touches, as Paolo Veronese; in his carnations less true than Titian, and less delicate than Vandyck. Yet he contrived to give his colours the utmost transparency and harmony, notwithstanding the extraordinary deepness of them; and he possessed a strength and grandeur of style which were entirely his own.

RUBIA, Madder; a genus of plants belonging to the tetrandria class; and in the natural method ranking under the 47th order, *Stellatae*. See *BOTANY Index*; and for an account of the use of madder as a dye-stuff, see *DYEING Index*.

Madder root is also used in medicine. The virtues attributed to it are those of a detergent and aperient; whence it has been usually ranked among the opening

roots, and recommended in obstructions of the viscera, particularly of the kidneys, in coagulations of the blood from falls or bruises, in the jaundice, and beginning dropsies.

This root, taken internally, tinges the urine of a deep red colour; and in the Philosophical Transactions we have an account of its producing a like effect upon the bones of animals who had it mixed with their food: all the bones, particularly the more solid ones, were said to be changed, both externally and internally, to a deep red; but neither the fleshy nor cartilaginous parts suffered any alterations: some of these bones macerated in water for many weeks together, and afterwards steeped and boiled in spirit of wine, lost none of their colour, nor communicated any tinge to the liquors. This root, therefore, was concluded to be possessed of great subtilty of parts, and its medical virtues hence to deserve inquiry. The same trials, however, made by others, have not been found to produce the same effects as those above mentioned.—Of late the root has come into great reputation as an emmenagogue.

RUBININSKA, one of the northern provinces of Russia, bounded by the province of Dwina on the north, by Syriane on the east, by Belozera on the south, and by the lake Onega on the west.

RUBRIC, in the canon law, signifies a title or article in certain ancient law-books; thus called because written, as the titles of the chapters in our ancient bibles are, in red letters.

RUBUS, the BRAMBLE, or *Raspberry-bush*; a genus of plants belonging to the icolandria class; and in the natural method ranking under the 35th order, *Senticosia*. See *BOTANY Index*. The principal species is the common raspberry, which, with its varieties, demands culture in every garden for their fruit; particularly the common red kind, white sort, and twice-bearing raspberry; all of which are great bearers: but for the general plantations, we choose principally the common red and the white kind, as being generally the greatest bearers of all; planting also a share of the twice-bearing sort, both as a curiosity and for the sake of its autumnal crops of fruit, which in favourable seasons ripen in tolerable perfection; observing to allow all the sorts some open exposure in the kitchen garden, though they will prosper in almost any situation.

The other species are considered as plants of variety, for hardy plantations in the shrubbery. Some of them are also very ornamental flowering plants; particularly the Virginian flowering raspberry, and the double-blossomed bramble, which answer well for ornamental compartments; and the white-berried bramble, which is a great curiosity. All the other species and varieties serve to diversify large collections.

RUBY, a species of precious stone, belonging to the siliceous genus. See *MINERALOGY Index*. The ruby is of various colours; as, of a deep red colour inclining a little to purple; the *carbuncle* of Pliny; the spinell, of the colour of a bright coral poppy flower; the balaf or pale red inclining to violet. Tavernier and Dutens inform us, that in the East Indies all coloured gems are named *rubies*, without regard to what their colours may be; and that the particular colour is added to the name of each in order to distinguish them from one another. The spinell rubies are about half the value of diamonds

Rubia

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Ruby.

Ruby
||
Rudder.

Rudder.

of the same weight; the balas is valued at 30 shillings per carat. Tavernier mentions 108 rubies in the throne of the Great Mogul, from 100 to 200 carats, and of a round one almost $2\frac{1}{2}$ ounces: there is also mention made by other travellers of rubies exceeding 200 carats in weight. According to Dutens, a perfect ruby, if it weigh more than $3\frac{1}{2}$ carats, is of greater value than a diamond of the same weight. If it weigh one carat, it is worth 10 guineas; if two carats, 40 guineas; three carats, 150 guineas; if six carats, upwards of 1000 guineas.

Rubies, it is said, are artificially made from Brazilian topazes of a smoky appearance, by giving them a gradual heat in a crucible filled with ashes, until it be red hot.

Rock *RUBY*, the *amethystizontas* of the ancients, is found in Syria, Calcutta, Cananor, Cambaya, and Ethiopia. It is the most valued of all the varieties of garnets, and is frequently sold as a ruby under the name of *rubinus Rufficum*.

RUCTION, a ventosity arising from indigestion, and discharging itself at the mouth with a very disagreeable noise.

RUDBECK, OLAUS, a learned Swedish physician, born of an ancient and noble family in 1630. He became professor of medicine at Upsal, where he acquired great applause by his extensive knowledge; and died in 1702. His principal works are, 1. *Exercitatio anatomica, exhibens ductus novos hepaticos aquosos, et vasa glandularum serosa*, in 4to. He there asserts his claim to the discovery of the lymphatic vessels, against the pretensions of Thomas Bartholin. 2. *Atlantica, sive Manheim, vera Japheti posterorum sedes ac patria*, 4 vols folio, is full of strange paradoxes supported with profound learning: he there endeavours to prove, that Sweden was the country whence all the ancient Pagan divinities and our first parents were derived; and that the Germans, English, French, Danes, Greeks, and Romans, with all other nations, originally came from thence.

RUDBECKIA, a genus of plants belonging to the syngenesia class; and in the natural method ranking under the 49th order, *Compositæ*. See *BOTANY Index*.

RUDDER, in *Navigation*, a piece of timber turning on hinges in the stern of the ship, and which, opposing sometimes one side in the water and sometimes another, turns or directs the vessel this way or that. See *HELM*.

In the seventh volume of the Transactions of the Society instituted at London for the Encouragement of Arts, Manufactures, and Commerce, there is explained a method of supplying the loss of a ship's rudder at sea. The invention, which is Capt. Pakenham's of the royal navy, has been approved by Admiral Cornwallis, the commissioners of the admiralty, by the society in whose transactions the account of it was first published, and who presented to Capt. Pakenham their gold medal, by the Trinity-house, by the managing owners of East India shipping, by the duke of Sudermania then regent of Sweden, and by the society for the improvement of naval architecture. The substitute here recommended for a lost rudder, says the inventor, is formed of those materials without which no ship goes to sea, and its construction is simple and speedy. Capt. Pakenham, however, did not give a particular account of his inven-

tion to the society whom he addressed, and to whom he sent a model of his invention, till such time as he had an opportunity of reducing the theory he had conceived to practice. On the 7th of July 1788, he made this trial with the Merlin of Newfoundland; and he declares that, during the different manœuvres of tacking and wearing, he could not discover the least variation between the operation of the machine and that of the ship's rudder: she was steered with the same ease by one man, and answered the helm in every situation fully as quick. Admiral Cornwallis certifies the same with respect to the Crown of 64 guns, which lost her rudder on the Kentish Knock, when with the substitute she was steered to Portsmouth with the utmost ease in a heavy gale, and, as the admiral asserts, it would have taken her to the East Indies.

The materials and construction are thus described in the Transactions. "N^o 1. a topmast inverted; the fid-hole to ship the tiller in, and secured with hoops from the anchor stocks; the heel forming the head of the rudder. N^o 2. The inner half of a jibb-boom. N^o 3. The outer half of a jibb-boom. N^o 4. A fish: the whole of these materials well bolted together:—in a merchantman her ruff-tree. N^o 5. A cap, with the square part cut out to fit the stern-post, and acting as a lower gudgeon, secured to the stern-post with hawfers, leading from the bolts of the cap, under the ship's bottom, into the hawse-holes, and hove well tort. N^o 6. A plank, or, if none on board, the ship's gangboards. N^o 7. Anchor-stocks, made to fit the topmast as partners, secured to the deck, and supplying the place of the upper gudgeon, and in a merchant ship the clamps of her windlafs. N^o 8. A stern-post. N^o 9. Hoops from the anchor-stocks. N^o 10. Pigs of ballast, to sink the lower part. The head of the rudder to pass through as many decks as you wish."

On this the Captain makes the following remarks: "It might probably be supposed, that a difficulty would occur in bringing the jaws of the cap to embrace the stern-post; but this will at once be obviated, when it is remembered that the top-chains, or hawfers, leading from each end of the jaws, under the ship's bottom, are in fact a continuance of the jaws themselves. Nor can it be apprehended that the cap, when fixed, may be impelled from its station, either by the efforts of the sea, or the course of the ship through the water, though even the hawfers, which confine it in the first instance, should be relaxed:—the experiment proves, that the partners must be first torn away, or the main-piece broken off.

"Since the improved state of navigation, notwithstanding remedies have been found in general for the most disastrous accidents at sea, experience has evinced that nothing complete had been hitherto invented to supply the loss of a rudder. The first expedient within my knowledge were cables veered astern, with tackles leading from them to the ship's quarters. This practice was superseded by the invention of the machine usually called *the Ipswich machine*; but the construction of it is complex and unwieldy, and vessels are seldom found in possession of the materials which form it. Commodore Byron, in the Journal of his Voyage round the World, says, that the Tamer, with every assistance from his own ship, was five days in constructing it. Besides, like the before-mentioned scheme, it can only operate to steer a

Plate
CCCLXVI.

Rudder,
Ruddiman.

ship large (and that but very wildly), and of course, under the circumstance of a lee-shore, defeat the most skilful exertions of a seaman. Several other expedients have been adopted, which I shall not mention here, as the same defects equally appear in all.

“ Thus it was apparent, that ample room was left for the discovery of some more certain resource than any of the former; and the scheme which has suggested itself to me, will, I trust, be found fully to answer the purpose intended. The materials are such as scarcely any ship can venture to sea without; and the construction so speedy, easy, and simple, that the capacity of the meanest sailer will at once conceive it. I need not, from mathematical principles, show the certainty of its effect, as it is formed and managed in the same manner as a ship's common rudder: and as the common rudder is certainly of all inventions the best calculated for guiding a vessel through the water, it will of course follow, that whatever substitute the nearest resembles that, must be best adapted to supply its loss.”

RUDDIMAN, THOMAS, one of the most eminent grammarians which Scotland has produced, was born in October 1674 at Raggel, in the parish of Boyndie and county of Banff. His father James Ruddiman was a farmer, and strongly attached to the house of Stuart.

Mr Ruddiman was instructed in the principles of Latin grammar at the parish school of Boyndie, where his application was so vigorous, and his progress so rapid, that he quickly surpassed all his class-fellows. His master George Morrison, who was a skilful and attentive teacher, being unwilling to check his ardour for learning, permitted him to follow the impulse of his genius, and to advance without waiting the slow progress of the other boys.

The pleasure which the youthful mind receives from vivid description, though wild and romantic, approaches to ecstasy, and often makes an impression which remains indelible. While at school, the first book which charmed the opening mind of Ruddiman was Ovid's *Metamorphoses*; nor did he cease to relish the beauties of this author when his judgment was mature, for during the rest of his life Ovid was his favourite poet.

At the age of sixteen he became anxious to pursue his studies at the university; but his father thinking him too young, opposed his inclination. Hearing of the competition trial, which was annually held at King's college, Aberdeen, for a certain number of burfaries on the foundation of that university, Ruddiman's ambition was kindled. Without the knowledge of his father, and with only a single guinea, in his pocket, which his sister had privately given him, he set out for that place. On the road he was met by a company of gypsies, who robbed him of his coat, his shoes, his stockings, and his guinea. This misfortune did not damp his enterprising spirit: He continued his journey to Aberdeen, presented himself before the professors as a candidate; and though he had neither clothes to give him a decent appearance nor friends to recommend him, he gained the first prize.

After attending the university four years, he obtained the degree of master of arts; an honour of which he was always proud. The thesis says, the disputation on this occasion lasted *ab aurora usque ad vesperum*, i. e. “from morning till night.” Though Ruddiman was only 20

years of age when he left the university, it appears from Ruddiman's a book intitled *Rhetoricorum Libri tres*, composed before this period, but never published, that he had then read the Roman classics with uncommon attention and advantage.

He was soon after engaged as a tutor to the son of Robert Young, Esq. of Auldbar, the great grandson of Sir Peter Young, who under the direction of Buchanan had been preceptor of James VI. His income here must have been very small, or his situation unpleasant; for within a year he accepted the office of schoolmaster in the parish of Laurencekirk. The profession of schoolmaster in a country parish at that period could open no field for ambition, nor prospect of great emolument; for by an act of parliament passed in 1633, the salary appropriated to this office could not be increased above 200 merks Scots, or 11l. 2s. 2½d. sterling. In discharging the duties of this humble but important station, it is probable that he used Simson's *Rudimenta Grammatica*, which was then generally taught in the northern schools, and by which he himself had been instructed in the principles of Latin grammar.

When Ruddiman had spent three years and a half in this employment, the celebrated Dr Pitcairne happening to pass through Laurencekirk, was detained in that village by a violent storm. Pitcairne wanting amusement, inquired at the hostess if she could procure any agreeable companion to bear him company at dinner. She replied, that the schoolmaster, though young, was said to be learned, and, though modest, she was sure could talk. Pitcairne was delighted with the conversation and learning of his new companion, invited him to Edinburgh, and promised him his patronage.

When Ruddiman arrived in Edinburgh, the advocates library, which had been founded 18 years before by Sir George Mackenzie, attracted his curiosity and attention, and he was soon after appointed assistant-keeper under Mr Spottiswoode the principal librarian. His salary for executing this laborious office was 8l. 6s. 8d. He had besides a small honorary present from those who were admitted advocates for correcting their theses: he was also paid for copying manuscripts for the use of the library. And the faculty, before he had held the office two years, were so highly pleased with his conduct, that they made him a present of 50 pounds Scots, or 4l. 3s. 4d. sterling.

During the sitting of the court of session he attended the library from ten till three. But this confinement did not prevent him from engaging in other laborious duties: A part of his time was occupied in teaching young gentlemen the Latin language. Some he attended at their lodgings, some waited upon him, and some resided in his own house. An exact list of the names of those who attended him, expressing the date of their entry, and the sums which he was to receive from each, has been found in his pocket-book; a curious relic, which is still preserved.

When Ruddiman's merit as a scholar became better known, his assistance was anxiously solicited by those who were engaged in literary publications. Freebairne, a respectable bookseller of that period, prevailed upon him to correct and prepare for the press Sir Robert Sibbald's *Introductio ad historiam rerum à Romanis gestarum in ea Borealis Britannicæ parte quæ ultra murum Picticum est*. He received for his labour 3l. sterling.

At

Ruddiman. At the request of Mr Spottiswoode librarian, for 51. sterling he contributed his aid to the publication of Sir Robert Spottiswoode's *Præctiques of the Laws of Scotland*.

In 1707 he commenced auctioneer, an employment not very suitable to the dignified character of a man of letters: but to this occupation he was probably impelled by necessity; for upon balancing his accounts at the end of the preceding year, the whole surplus was 281. 2s. with prospects of 2361. 7s. 6d. Scots. Ruddiman had a family; and seems to have been a stranger to that foolish pride which has seduced some literary men into the opinion, that it is more honourable to starve than have recourse to an occupation which men of rank and opulence are accustomed to despise. The same year he published an edition of *Voluseni de Animi Tranquillitate Dialogus*, to which he prefixed the life of Volusenus. Volusenus or Wilson was a learned Scotsman, and had the honour to be patronised by Cardinal Wolfsey (see WILSON). In 1709 he published *Johnsoni Cantici Solomonis Paraphrasis Poetica*, and *Johnsoni Cantica* with notes, which he dedicated in verse to his friend and patron Dr Pitcairne. The edition consisted of 200 copies. The expence of printing amounted to 51. 10s. sterling, and he sold them at a shilling each copy.

The philological talents of Ruddiman were next directed to a more important object, in which they became more conspicuous and useful. Freebairne the bookseller proposed to publish a new edition of the Scottish translation of Virgil's *Æneid* by Gavin Douglas bishop of Dunkeld. Of the contributions which some eminent characters of the age presented, the most valuable were supplied by Ruddiman. Freebairne acknowledged in general terms this obligation, but has not done him the justice to inform the reader what these valuable contributions were, and Ruddiman's modesty restrained him from publicly asserting his claim. From the pocket-book which has been already mentioned, it appears that Ruddiman corrected the work and wrote the glossary; and there is strong reason to believe that he was the author of the 42 general rules for assisting the reader to understand the language of Douglas. To those who wish to be acquainted with the ancient language of this island, the glossary will be a treasure, as it forms a compendious dictionary of the Anglo-Saxon. For this elaborate work Ruddiman was allowed 81. 6s. 8d. sterling.

The reputation of Ruddiman had now extended to a distance. He was invited by the magistrates of Dundee to be rector of the grammar school of that town; but the faculty of advocates, anxious to retain him, augmented his salary to 301. 6s. 8d. sterling, and he declined the offer.

In 1711 he assisted Bishop Sage in publishing Drummond of Hawthornden's works; and performed the same favour to Dr Abercrombie, who was then preparing for the press his *Martial Achievements*.

In 1713 he was deprived of his friend Dr Pitcairne. On this occasion he testified all the respect which friendship could inspire to the memory of his deceased patron and surviving family. He composed Pitcairne's epitaph, and conducted the sale of his library, which was disposed of to Peter the Great of Russia.

In 1714 the Rudiments of the Latin tongue were published. Eighteen or nineteen Latin grammars, composed by Scotchmen, had appeared before this period; yet such is the intrinsic value of this little treatise, that it soon superseded all other books on the subject, and is now taught in all the grammar schools in Scotland. It has also been translated into other languages.

He was next called upon to publish the works of Buchanan. The value of these he enhanced much by an elaborate preface, his *Tabula Regum Scotiae Chronologica* and *Propriorum Nominum Interpretatio*. The interpretation of proper names was highly requisite; for Buchanan has so disguised them in the Roman dress, that the original name is scarcely discernible; and the preface puts the reader on his guard against the chronological errors and factious spirit of the history. Ruddiman also added a learned dissertation, intitled *De Metris Buchananeis Libellus*, and subjoined annotations critical and political on the History of Scotland. As he espoused the cause of Queen Mary, he raised against himself a host of enemies, and gave occasion to that celebrated controversy which has been carried on with much keenness and animosity, and with little intermission, even to the present times. For this work Ruddiman was promised 401. sterling.

He had now been so long accustomed to superintend the press, that he was led to form the plan of erecting a printing-office himself (A). Accordingly, in the year 1715, he commenced printer in partnership with his brother Walter, who had been regularly bred to the business. Some years after he was appointed printer to the university, along with James Davidson bookseller.

The first literary society formed in Scotland was instituted in the year 1718. It probably derived its origin from the factious and turbulent spirit of the times. The learned, anxious perhaps to find some respite from the political dissensions of the day, endeavoured to procure it in elegant amusement; for one of the fundamental articles of the new association was, that the "affairs of church and state should not be introduced." Ruddiman and the masters of the high-school had the honour to found this society. They were afterwards joined by Lord Kaimes.

In 1725 the first part of his *Grammaticæ Latinae Illustrationes*, which treated of etymology, was published. The second part, which explained the nature and principles of syntax, appeared in 1731. He also wrote a third part on prosody, which is said to be more copious and correct than any other publication on the subject. When urged to give it to the public, he said dryly, "The age has so little taste, the sale would not pay

(A) It has long been an object of curiosity to ascertain the time at which the art of printing was introduced into Scotland. Mr Robertson, the late keeper of the records, discovered a patent of King James IV. which renders it certain that a printing-press was first established at Edinburgh during the year 1507, 30 years after Caxton had brought it into England. See PRINTING.

Ruddiman. the expence." Of this work he published an abridgement, to which he subjoined an abstract of his profody.

Ruddiman next engaged in the management of a newspaper, an employment for which his genius and industry seemed to render him well qualified. But those who should expect either much information or amusement from this publication, would perhaps be greatly disappointed. The newspaper which he conducted was the Caledonian Mercury, and was established in 1720 by William Rolland a lawyer. Ruddiman acted only in the capacity of printer for five years; but upon the death of Mr Rolland in 1729, the property was transferred to him, or to his brother Walter and him conjunctly. This paper continued in the family of Ruddiman till the year 1772, when it was sold by the trustees of his grandchildren.

The Caledonian Mercury was at first printed three times a week, on Monday, Tuesday, and Thursday, in a small 4to of four pages, with two columns in each page, and 50 lines in each column; so that the whole paper contained only 400 lines. It now contains in its folio size 2480 lines.

Mr Ruddiman, after the death of Mr Spottiswoode librarian, remained for some time in his former station; but was at length appointed keeper of the library; though without any increase of salary; and some years after Mr Goodal, the defender of Queen Mary, succeeded him in the office of sub-librarian.

The assiduous application of Ruddiman, supported by such learning, was intitled to wealth, which now indeed flowed upon him in what was at that period deemed great abundance. On the first of October 1735, it appeared from an exact statement of his affairs, that he was worth 1882l. 5s. 2d. sterling; and on the 20th of May, the ensuing year, his wealth had increased to 1985l. 6s. 3d. sterling. In 1710 he valued his effects at 24l. 14s. 9d sterling.

In 1737 the schoolmasters and teachers in Edinburgh formed themselves into a society, in order to establish a fund for the support of their wives and children. Of this scheme Ruddiman was an active promoter, and was chosen treasurer. Perhaps it was this association which in 1742 gave the idea to the Scots clergy of forming their widows fund.

In 1739 he published *Selectus Diplomatum et Numismatum Scotiae Thesaurus*. This work was projected and begun by Anderson (hence called *Anderson's Diplomata*), but was finished by Ruddiman. The preface, which is an excellent commentary on Anderson's performance, was written by Ruddiman, and displays a greater extent of knowledge than any of his other productions.

As Ruddiman had imbibed from his father those political principles which attached him to the family of Stuart, he probably did not remain an unconcerned spectator of the civil commotions which in 1745 agitated Scotland. He did not, however, take any active part in the rebellion. His principles, he has been heard to say, induced him to be a quiet subject and a good citizen. He retired to the country during the summer of 1745; and while his fellow-citizens were spilling each others blood, he was more happily engaged in writing *Critical Observations on Burman's Commentaries on Lucan's Pharsalia*. The Caledonian Mercury was in

the mean time marked with a jealous eye. His son, Ruddiman, who had for some time been the principal manager of that newspaper, having copied a paragraph which was reckoned seditious from an English paper, was imprisoned. The sollicitation of his father procured his release: but it was too late; for the unhappy young man had contracted a distemper in the tolbooth of Edinburgh which brought him to his grave.

During the last seventeen years of his life Ruddiman was almost incessantly engaged in controversy. To this he was in some measure compelled by the violent attacks which some critics of the times had successively made upon his works. He was first called upon by Benson, auditor in the exchequer, to determine the comparative merit of Buchanan and Johnston as poets. He gave a decided preference to Buchanan in perspicuity, purity, and variety of style; but, like a candid critic, allowed Johnston to be superior in the harmony of his numbers. His next antagonist was Logan, one of the ministers of Edinburgh, a weak illiterate man, but an obstinate polemic. The subject of contest was, whether the crown of Scotland was strictly hereditary, and whether the birth of Robert III. was legitimate? Ruddiman maintained the affirmative in both points, and certainly far surpassed his antagonist in the powers of reasoning. He proved the legitimacy of Robert by the public records of the kingdom with a force of argument which admits of no reply; but in discussing the first question (by which he was led to consider the contest between Bruce and Baliol) he was not so successful: for there are many instances in the history of Scotland in which the brother succeeded to the crown in preference to the son. He showed, however, that the Scottish crown was at no period properly elective; and that, according to the old licentious constitution of the kingdom, the right of Bruce, who was the nearest in blood to the royal stock, was preferable to the claim of Baliol though descended from the eldest daughter.

But the labours of Ruddiman did not end when the pen dropt from the feeble hand of Logan. He was soon called upon to repel the attacks of Love schoolmaster of Dalkeith, who maintained, in opposition to him, that Buchanan had neither repented of his treatment of Queen Mary, nor had been guilty of ingratitude to that prince's. That Buchanan ever repented there is reason to doubt. Whether he was guilty of ingratitude, let the unbiaffed determine, when they are assured by authentic records that Mary conferred on him a pension for life of 500 pounds Scots.

When Ruddiman had arrived at his eightieth year, and was almost blind, he was assailed by James Man, master of an hospital at Aberdeen, with a degree of rancour and virulence, united with some learning and ability, which must have touched him in a sensible manner, and alarmed his fears for his reputation after his decease. He was called a *finished pedant, a furious calumniator, and a corrupter of Buchanan's works*. The venerable old man again put on his armour, entered the lists, and gained a complete victory. Man, with all his acuteness, could only point out twenty errors in two folio volumes. Some of these were typographical, some trifling, and some doubtful. Ruddiman, with much pleasantry, drew up against Man an account of 469 errors, consisting of 14 articles, of which two or three may be produced as a specimen. 1. Falsehoods and prevarications,

Ruddiman, Rudenheim. variations, 20. 2. Absurdities, 69. 3. Passages from classic authors which were misunderstood by Man, 10. The triumph which he gained over this virulent adversary he did not long enjoy; for he died at Edinburgh on the 19th of January 1757, in the 83d year of his age, and was buried in the Grey Friars churchyard without any monument to distinguish his grave.

He was three times married, but left behind him only one daughter, Alison, who was married in 1747 to James Stewart, Esq. He is supposed to have died worth 3000l. sterling.

He was of the middle size, of a thin and straight make, and had eyes remarkably piercing. Of his talents and learning his works afford the most satisfactory proofs. His memory was tenacious and exact. He could repeat long passages of his favourite poet Ovid, to the amount of 60 lines, and without omitting a word. He was so great a master in the Latin language, that he has perhaps been equalled by none since the days of Buchanan.

Ruddiman has left a character unstained by vice, and distinguished by many virtues. His piety was exemplary. He spent Sunday in religious employment; and we are informed had prayers read to him every morning by his amanuensis when the infirmities of age required such an assistant. He was frugal of his time, neither indolent nor fond of amusement; and so remarkably temperate, that it is said he was never intoxicated. Though often forced into controversy, and treated with insolence, he never descended to scurrility and abuse, nor cherished resentment against his enemies. His candour was much admired in one instance in the favourable character which he published in the Caledonian Mercury of his antagonist Love (B), after his decease. Upon the whole, it must be allowed that Ruddiman has been of great service to classical literature, and an honour to his native country.

RUDESHEIM, a rich village of the Rhinegau, situated about five miles from the city of Mentz, contains about 2500 inhabitants. The wine of this place is looked upon as without comparison the best of the Rhinegau, and consequently of all Germany. Baron Riesbeck says, he found it much more fiery than that of Hochheim; but that for pleasantness of taste there is no comparison betwixt them. The best Rudesheim, like the best Hochheimer, sells upon the spot for three guilders the bottle. "You can (says our author) have no tolerable wine here for one guilder, nor any very good for two; at least I should prefer the worst Burgundy I ever tasted to any Rudesheimer I met with either here or at Mentz for these prices. Indeed the wine of our host (a rich ecclesiastic) was far better than any we could get at the inn. It stands to reason, that the same vintage furnishes grapes of very different degrees of goodness; but besides this, it is in the Rhi-

negau as every where else. The best wines are generally sent abroad by the poor and middling inhabitants, and the worst kept for internal consumption; for the expense of the carriage being the same in both cases, strangers had much rather pay a double price for the good than have the bad. It is only rich people, such as our host was, who can afford to keep the produce of their land for their own drinking. Upon this principle, I have eaten much better Swiss cheefes out of Switzerland than in it, and have drank much better Rhenish in the inns of the northern parts of Germany than in the country where the wine grows. The position of the country also contributes to render the wine dearer than it would otherwise be. As the best wine grows in its more northern parts, the easy transport by the Rhine to Holland, and all parts of the world, raises its price above its real value. The place where the flower of the Rudesheim wine grows is precisely the neck of the land, formed by the winding of the Rhine to the north, after it has run to the westward from Mentz hither. This neck, which is a rock almost perpendicular, enjoys the first rays of the rising and the last of the setting sun. It is divided into small low terraces, which are carried up to the utmost top of the hill like steep stairs; these are guarded by small walls and earthen mounds, which are often washed away by the rain. The first vine was brought hither from France, and they still call the best grape the Orleanois. They plant the vine stocks very low, scarce ever more than four or five feet high. This way of planting the vine is favourable to the production of a great deal of wine, but not to its goodness, as the phlegmatic and harsh parts of it would certainly evaporate more, if the sap was refined through higher and more numerous canals. This is undoubtedly the reason why every kind of Rhenish has something in it that is harsh, sour, and watery. The harvest of the best vineyards, which are the lower ones, in the above-mentioned neck of land, is often bought before-hand, at the advanced price of some ducats, by Dutch and other merchants. It must be a very rich stock to yield above four measures of wine.—You may easily imagine, that the cultivation of vineyards must be very expensive in this country, as the dung, which is extremely dear, must be carried up to the top of the mountains on the peasants shoulders."

RUDIMENTS, the first principles or grounds of any art or science, called also the elements thereof.

RUE. See RUTA, BOTANY Index.

RUE, *Charles de la*, a French orator and poet, was born at Paris in 1643. He was educated at the college of the Jesuits, where he afterwards became a professor of humanity and rhetoric. At an early age his talent for poetry disclosed itself. In 1667, when he was only 24 years old, he composed a Latin poem on the conquests of Louis XIV. which was so much esteemed by the

(B) The following character of Love was published in the Caledonian Mercury of the 24th of September 1750. "On Thursday morning died at Dalkeith, after a lingering illness, in the 55th year of his age, Mr John Love, rector of the grammar school there; who, for his uncommon knowledge in classical learning, his indefatigable diligence, and strictness of discipline without severity, was justly accounted one of the most sufficient masters in this country." This character is doubtless just; though Love is now known to have been the schoolmaster satirized by Smollet in the beginning of his *Roderick Random*.

Rue
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Ruff.

the celebrated Peter Corneille, that he translated it into French, presented it to the king, and at the same time passed so high encomiums on the superior merit of the original, that the author was received into the favour of that monarch, and ever after treated by him with singular respect.

De la Rue, anxious to preach the gospel to the Canadians, requested leave of absence from his superiors; but having destined him for the pulpit, they refused to comply with his request. Accordingly he commenced preacher, and became one of the most eminent orators of his age. In his discourses he would probably have been too lavish of his wit, if he had not been cautioned against it by a judicious courtier. "Continue (said he) to preach as you do. We will hear you with pleasure as long as you reason with us; but avoid wit. We value the wit contained in two verses of a song more than all that is contained in most of the sermons in Lent."

Respecting the delivery of sermons, he entertained an opinion quite opposite to the established practice of his countrymen. In France it was customary not to read sermons from the pulpit, but to recite them from memory. This he considered as a laborious task, not compensated by any advantages. On the contrary, he was of opinion that reading sermons was preferable.—The preacher, with his discourse before him, could read it with ease, free from that timidity and embarrassment which frequently attends the act of recollection; and he would save a considerable time which is usually spent in committing it to memory. In these sentiments many will not be disposed to acquiesce: but, without pretending to determine the question, it may be asserted, that a sermon, whether read or recited, if spoken in a serious manner, and with proper inflections and tones of voice, will produce all the effects for which a sermon is calculated.

De la Rue died at Paris on the 27th of May 1725, at the age of 82.

He was as amiable in society as he was venerable in the pulpit. His conversation was pleasant and instructive. His taste and knowledge enabled him to converse with ease, and to express himself with propriety on every subject. He charmed his superiors by his wit, and his inferiors by his affability. Though living amidst the bustle of the world, he was always prepared for the solitude of the closet and the retreat of the cloister. In the pulpit he poured forth the finest effusions of eloquence in the most animated and impressive manner.—He published Panegyrics, Funeral Orations, and Sermons. His best sermon is that intitled *Des Calamités Publiques*, and his most admired funeral oration was composed on the Prince of Luxembourg. There are also tragedies of his writing, both in Latin and French, which were approved by Corneille. He was one of those who published editions of the classics for the use of the Dauphin. Virgil, which fell to his share, was published with notes, and a Life of the Poet, in 1675, 4to, and is a valuable and useful edition.

RUELLIA, a genus of plants belonging to the didymnia class; and in the natural method ranking under the 40th order, *Personata*. See BOTANY Index.

RUFF, a species of PERCA. See ICHTHYOLOGY Index.

RUFF, a species of TRINGA. See ORNITHOLOGY Index.

Ruffhead
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Rufinus.

RUFFHEAD, DR OWEN, was the son of his Majesty's baker in Piccadilly; who buying a lottery ticket for him in his infancy, which happened to be drawn a prize of 500l. this sum was applied to educate him for the law. He accordingly entered in the Middle Temple; and seconded so well the views of his father, that he became a good scholar and an acute barrister. While he was waiting for opportunities to distinguish himself in his profession, he wrote a variety of pamphlets on the politics of the day; and was afterwards distinguished by his accurate edition of *The Statutes at Large*, in 4to. He now obtained good business, though more as a chamber counsellor in framing bills for parliament than as a pleader; but his close application to study, with the variety of works he engaged in as an author, so impaired his constitution, that after the last exertion of his abilities to defend the conduct of administration toward Mr Wilkes, by a pamphlet intitled, "The Case of the late election for the county of Middlesex considered," he was prevented from receiving the reward of a place in the Treasury, by dying in 1769, at about 46 years of age. Some time before his death, Bishop Warburton engaged him to write his long promised *Life of Alexander Pope*; which, however, when executed, was very far from giving general satisfaction. The author attributed his ill success to the deficiency of his materials; while the public seemed rather to be of opinion that, as a lawyer, he ventured beyond his proper line, when he assumed the task of a critic in poetry.

RUFFLING, or RUFFING, a beat on the drum. Lieutenant generals have three ruffles, major-generals two, brigadiers one, and governors one, as they pass by the regiment, guard, &c.

RUFINUS was born about the middle of the fourth century at Concordia, an inconsiderable town in Italy. At first he applied himself to the belles lettres, and particularly to the study of eloquence. To accomplish himself in this elegant art, he removed to Aquileia, a town at that time so celebrated that it was called a second Rome. Having made himself acquainted with the polite literature of the age, he withdrew into a monastery, where he devoted himself to the study of theology. While thus occupied, St Jerome happened to pass through Aquileia. Rufinus formed an intimate friendship with him; but to his inexpressible grief was soon deprived of the company of his new friend, who continued his travels through France and Germany, and then set out for the east. Rufinus, unable to bear his absence, resolved to follow him. Accordingly he embarked for Egypt; and having visited the hermits who inhabit the deserts of that country, he repaired to Alexandria to hear the renowned Didymus. Here he was gratified with a sight of St Melania, of whose virtue and charity he had heard much. The sanctity of his manners soon obtained the confidence of St Melania, which continued without interruption during their residence in the east, a period of 30 years. The Arians, who swayed the ecclesiastical sceptre in the reign of Valens, persecuted Rufinus with great cruelty. They threw him into a dungeon, loaded him with chains, and after almost starving him to death, banished him to the deserts of Palestine. From this exile he was relieved by the pecuniary aid of St Melania, who employed her wealth in ransoming those confessors who had been condemned to prison or banishment.

Rufinus
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Ruins.

St Jerome, supposing that Rufinus would immediately proceed to Jerusalem, wrote to one of his friends there, congratulating him on the prospect of so illustrious a visitor. To Jerusalem he went, and having built a monastery on the Mount of Olives, he there assembled a great number of hermits, whom he animated to virtue by his exhortations. He converted many to the Christian faith, and persuaded more than 400 hermits who had taken part in the schism of Antioch to return to the church. He prevailed on many Macedonians and Arians to renounce their errors.

His attachment to the opinions of Origen set him at variance with St Jerome, who, being of a temper peculiarly irritable, not only retracted all the praises which he had lavished upon him, but loaded him with severe reproaches. Their disputes, which were carried to a very indecent height, tended to injure Christianity in the eyes of the weak. Theophilus, their mutual friend, settled their differences; but the reconciliation was of short continuance. Rufinus having published a translation of the principles of Origen at Rome, was summoned to appear before Pope Anastasius. But he made a specious apology for not appearing, and sent a vindication of his work, in which he attempted to prove that certain errors, of which Origen had been accused, were perfectly consistent with the opinions of the orthodox. St Jerome attacked Rufinus's translation. Rufinus composed an eloquent reply, in which he declared that he was only the translator of Origen, and did not consider himself bound to sanction all his errors. Most ecclesiastical historians say that Rufinus was excommunicated by Pope Anastasius; but for this no good evidence has been brought. In 407, he returned to Rome; but the year after, that city being threatened by Alaric, he retired to Sicily, where he died in 410.

His works are, 1. A Translation of Josephus; 2. A Translation of several works of Origen; 3. A Latin Version of Ten Discourses of Gregory Nazianzen, and Eight of Basil's; 4. Chromatius of Aquileia prevailed on him to undertake a Translation of the Ecclesiastical History of Eusebius, which engaged him almost ten years. He made many additions to the body of the work, and continued the history from the 20th year of Constantine to the death of Theodosius the Great. Many parts of this work are negligently written, many things are recorded as facts without any authority but common report, and many things of great importance are entirely omitted. 5. A Vindication of Origen. 6. Two Apologies addressed to St Jerome. 7. Commentaries on the prophets Hosea, Joel, and Amos. 8. Lives of the Hermits. 9. An Explanation of the Creed.

RUGEN, an island in the Baltic sea, on the coast of Pomerania, over against Stralsund, about 23 miles in length and 15 in breadth, with the title of a principality. It is strong both by art and nature, abounds in corn and cattle, and belongs to Sweden. The chief town is Bergen. E. Long. 14. 30. N. Lat. 54. 32.

RUINS, a term particularly used for magnificent buildings fallen into decay by length of time, and whereof there only remains a confused heap of materials. Such are the ruins of the tower of Babel, of the tower of Belus, two days journey from Bagdat, in Syria, on the banks of the Euphrates; which are now no more than a heap of bricks, cemented with bitumen, and

whereof we only perceive the plan to have been square. Such also are the ruins of a famous temple, or palace, near Schiras, in Persia, which the antiquaries will have to have been built by Ahasuerus, and which the Persians now call Tchelminar, or Chelminar; *q. d.* the 40 columns; because there are so many columns remaining pretty entire, with the traces of others; a great quantity of bas-reliefs, and unknown characters, sufficient to shew the magnificence of the antique architecture. The most remarkable ruins now existing of whole cities are those of PALMYRA and PERSEPOLIS, of the grandeur of which some idea may be formed from the views given in the plates referred to from these articles, to which may be added those of HERCULANEUM and POMPEII. The magnificent ruins still remaining in Rome, Athens, &c. of particular edifices, as temples, palaces, amphitheatres, aqueducts, baths, &c. it were endless to enumerate, and beyond the plan of this work to represent.

RUZIA, a genus of plants belonging to the monadelphia class; and in the natural method ranking under the 37th order, *Columniferae*. See BOTANY Index.

RULE, in matters of literature, a maxim, canon, or precept, to be observed in any art or science.

RULE, in a monastic sense, a system of laws or regulations, according to which religious houses are governed, and which the religious make a vow, at their entrance, to observe. Such are the rules of the Augustines, Benedictines, Carthusians, Franciscans, &c. See AUGUSTINES, &c.

RULES of Court, in Law, are certain orders made from time to time in the courts of law, which attorneys are bound to observe, in order to avoid confusion; and both the plaintiff and defendant are at their peril also bound to pay obedience to rules made in court relating to the cause depending between them.

It is to be observed, that no court will make a rule for any thing that may be done in the ordinary course; and that if a rule be made, grounded upon an affidavit, the other side may move the court against it, in order to vacate the same, and thereupon shall bring into court a copy of the affidavit and rule. On the breach and contempt of a rule of court an attachment lies; but it is not granted for disobedience to a rule, when the party has not been personally served; nor for disobeying a rule made by a judge in his chamber, which is not of force to ground a motion upon, unless the same be entered.

A rule of court is granted every day the courts at Westminster sit, to prisoners of the King's-bench or Fleet prisons, to go at large about their private affairs.

RULE of Three. See ARITHMETIC and PROPORTION.

RULE, or Ruler, an instrument of wood or metal, with several lines delineated on it; of great use in practical mensuration. When a ruler has the lines of chords, tangents, sines, &c. it is called a *plane scale*.

RUM, a species of brandy or vinous spirits, distilled from sugar canes.

Rum, according to Dr Shaw, differs from simple sugar-spirit, in that it contains more of the natural flavour or essential oil of the sugar-cane; a great deal of raw juice and parts of the cane itself being usually fermented in the liquor or solution of which the rum is prepared.

Ruins
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Rum.

Rum.

prepared. The unctuous or oily flavour of rum is often supposed to proceed from the large quantity of fat used in boiling the sugar; which fat, indeed, if coarse, will usually give a stinking flavour to the spirit in our distillations of the sugar liquor or wash, from our refining sugar-houses; but this is nothing of kin to the flavour of the rum, which is really the effect of the natural flavour of the cane.

The method of making rum is this: When a sufficient stock of the materials are got together, they add water to them, and ferment them in the common method, though the fermentation is always carried on very slowly at first; because at the beginning of the season for making rum in the islands, they want yeast or some other ferment to make it work: but by degrees, after this, they procure a sufficient quantity of the ferment, which rises up as a head to the liquor in the operation; and thus they are able afterwards to ferment and make their rum with a great deal of expedition, and in large quantities.

When the wash is fully fermented, or to a due degree of acidity, the distillation is carried on in the common way, and the spirit is made up proof: though sometimes it is reduced to a much greater strength, nearly approaching to that of alcohol or spirit of wine; and it is then called *double-distilled rum*. It might be easy to rectify the spirit, and bring it to much greater purity than we usually find it to be of: for it brings over in the distillation a very large quantity of the oil; and this is often so disagreeable, that the rum must be suffered to lie by a long time to mellow before it can be used; whereas, if well rectified, it would grow mellow much sooner, and would have a much less potent flavour.

The best state to keep rum in, both for exportation and other uses, is doubtless that of alcohol or rectified spirit. In this manner it would be transported in one half the bulk it usually is, and might be let down to the common proof-strength with water when necessary: for the common use of making punch, it would likewise serve much better in the state of alcohol; as the taste would be cleaner, and the strength might always be regulated to a much greater exactness than in the ordinary way.

The only use to which it would not so well serve in this state, would be the common practice of adulteration among our distillers; for when they want to mix a large portion of cheaper spirit with the rum, their business is to have it of the proof-strength, and as full of the flavouring oil as they can, that it may drown the flavour of the spirits they mix with it, and extend its own. If the business of rectifying rum was more nicely managed, it seems a very practicable scheme to throw out so much of the oil, as to have it in the fine light state of a clear spirit, but lightly impregnated with it: in this case it would very nearly resemble arack, as is proved by the mixing a very small quantity of it with a tasteless spirit, in which case the whole bears a very near resemblance to arack in flavour.

Rum is usually very much adulterated in Britain; some are so bare-faced as to do it with malt-spirit; but when it is done with molasses spirit, the tastes of both are so nearly allied, that it is not easily discovered. The best method of judging of it is by setting fire to a little of it; and, when it has burnt away all the inflamma-

ble part, examining the phlegm both by the taste and smell.

RUM is a considerable island, one of the Hebrides, or rather one continued rock, of nearly 30 miles in circumference. It is the property of Mr Maclean of Coll; contains 400 inhabitants; grazes cattle and sheep; pays above 200l. rent annually: but has neither kelp, free-stone, nor lime.

RUMELIA, in *Geography*, the same with ancient Greece; now a part of Turkey in Europe.

RUMEN, the paunch, or first stomach of such animals as chew the cud; thence called *Ruminant Animals*. See ANATOMY, COMPARATIVE.

RUMEX, DOCK, a genus of plants belonging to the hexandria class, and in the natural method ranking under the 12th order, *Holoraceae*. See BOTANY *Index*.

RUMINANT, in *Natural History*, is applied to an animal which chews over again what it has eaten before; which is popularly called *chewing the cud*. Peyer, in a treatise *De Ruminantibus et Ruminacione*, shows that there are some animals which really ruminant; as oxen, sheep, deer, goats, camels, hares, and squirrels: and that there are others which only appear to do so, as moles, crickets, bees, beetles, crabs, mullets, &c. The latter class, he observes, have their stomachs composed of muscular fibres, by which the food is ground up and down as in those which really ruminant. Mr Ray observes, that ruminants are all four-footed, hairy, and viviparous; some with hollow and perpetual horns, others with deciduous ones.

RUMP OF THE SACRIFICE. Moses had ordained, that the rump and fat of the sheep that were offered for a peace-offering should be put upon the fire of the altar, (Lev. iii. 9. vii. 3. viii. 25. ix. 19.). The rump was esteemed the most delicate part of the animal.

RUMPHIA, a genus of plants belonging to the triandria class, and in the natural method ranking with those of which the order is doubtful. See BOTANY *Index*.

RUNCIMAN, ALEXANDER, an eminent Scottish painter, was born in Edinburgh in the year 1736. He was the son of an architect, a profession which has a strong affinity to that of painting. The opportunity he thus enjoyed of examining his father's drawings, gave him an early propensity to the art in general, which he very soon evinced by making sketches of any remarkable object, either of nature or art, that happened to come in his way. We are unacquainted with the gradual progress of his fertile genius; but it is not to be supposed that he long remained satisfied with the delineations of straight lines, while the fascinating beauties of landscape lay open to his inspection. Water that falls over a rugged precipice in the form of cascades, or the foaming surges of the deep, when carried like hoar frost with impetuosity into the air, both astonish and delight by their awful grandeur. These objects, and such as these, would naturally fire the genius of Runciman at an early period.

He was bound an apprentice to John and Robert Norries in the year 1750; the former of whom was a landscape painter of very considerable eminence, and by his instructions our young artist made rapid progress. About the year 1755, when only 19 years of age, he began professionally to paint landscapes; from which it appeared that they were by no means first attempts, as they evinced

Rum
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Runciman.

Runciman. ced his ardent application to study before he ventured to appear at the tribunal of the public. Yet, although these were excellent, they were nothing more than the dawn of that distinguished eminence to which he afterwards attained. His reputation as a painter of landscape continued to increase during five years; but such was the strength of his genius, and the amazing fertility of his invention, that he could not rest satisfied with eminence in a single department. About the year 1760 he successfully attempted historical painting, in which his mind had more ample scope than in portraying the solemn silence of a field, a humble cottage, or a shepherd void of ambition. Six years of his life were devoted to the study and practice of this important branch of the art, notwithstanding his situation was attended with numerous disadvantages. Great, however, as his attainments were in this department, he never could be satisfied with himself, till he had studied in Italy those masterly performances which it was his highest ambition to imitate.

He accordingly set out for Italy in the year 1766, when just 30 years of age, and during a residence of five years in that enchanting country, where specimens of his favourite art are met with in all their grandeur and perfection, he continued to copy the best pictures of the ancient masters, in consequence of which his taste was very much corrected and improved. His conceptions were also greatly enlarged, by the steady contemplation of so many sublime works of the greatest and most celebrated artists. The art of composition, which it is of the first consequence for an historical painter to understand, was only to be acquired from the study of its principles, as these are exemplified in such highly finished models; and to these he applied himself with indefatigable industry. He caught the rich yet chaste colouring of the Venetian school with such truth, that he was allowed to surpass all his competitors in this valuable quality.

In the year 1771, Runciman returned to his native country, in the full possession of such improvements as were to be expected from the opportunities he enjoyed, and also with a judgment very much matured. It will readily be granted that he had now some claim upon the patronage of his country, and we are happy to add that this was not withheld; for the Honourable Board of Trustees, and Sir James Clerk of Pennycuick, were among his patrons; and to Mr Robert Alexander in particular, a respectable merchant in Edinburgh, his country was more indebted for the fostering of his rising genius, than to the whole of its nobility.

An academy for the study of drawing and painting was established in Edinburgh by the honourable trustees for the encouragement of arts in Scotland, of which De la Cour and Pavilon, two French artists of some ability, were successively chosen masters. When Pavilon died in 1771, an application was made to Runciman to take charge of the academy, the laborious and interesting duties of which he discharged much to his own honour and the benefit of his country.

His masterly work in the Hall of Ossian at Pennycuick, the seat of his patron Sir James Clerk, was projected and begun by him soon after his return to Edinburgh. Of this performance, the following account was given by a very eminent judge.

“The fate of old Ossian seems to have been peculiarly happy. Upon the eve of being deserted by tradi-

tion, his only preserver, and even by the language itself, the genius of Macpherson interposed, received the charge, and gave him to the world. Runciman.

“Fortunate in a translator, the Celtic bard has been equally so, in receiving his fame from the taste and judgment of a critic, blest with every valuable quality and character.

“To complete the honours of the poet, nothing was wanting, but the attendance of the sister art. It was therefore with uncommon pleasure, that I heard his being adopted by a native artist, under the patronage of a gentleman, distinguished by a fine taste and warm regard to the arts. The work, which is now finished, is the only *original performance* ever executed in Scotland.”

The next able performance of Runciman was the picture of the Ascension, painted on the ceiling above the altar of the Episcopal Chapel, Cowgate, Edinburgh.

The fire and feeling displayed in his *King Lear*, were conceived and executed in a manner not inferior to those of Shakespeare; and the *Andromeda*, from which Legat took his highly finished engraving, will bear a comparison, in respect of colouring, with the works of Titian or Corregio. He appears to have regarded his own historical work of *Agrippina* landing the ashes of Germanicus her husband, as a capital performance, in the execution of which he bestowed more than ordinary pains; and posterity will determine that his opinion was just, as the ingenious Mr Brown bestowed upon it the highest encomiums.

While his health permitted (which the painting the hall of Ossian had much impaired), he continued to superintend the business of the academy, and devoted his leisure hours to the drawing of historical pieces. He enjoyed a competency from his office as teacher, which, with the emoluments arising from his other works, made him independent. He never formed any matrimonial connection, but he had a natural son called John, who was bred to the occupation of a silversmith, and went afterwards to reside in London.

Runciman as a man, was possessed of great candour and simplicity of manners, having a happy talent for conversation, which made some of the most distinguished literary characters, such as Hume, Robertson, Kaims, and Monboddo, extremely fond of his company; but the genuine worth of this eminent man, and his real goodness of heart, were only fully known to his most intimate friends. He could communicate information with great facility, and gave his best advice to young artists, with a view to further the progress of their improvement.

As a painter, his character has been elegantly drawn by a brother artist, the accomplished Mr John Brown, who was better qualified than most men to make a proper estimate of his merits. We shall lay this sketch before our readers in his own words.

“Mr Runciman was an artist by nature, eminently qualified to excel in all those nobler parts of the art, the attainment of which depends on the possession of the highest powers of the mind.—Though for a long period of years labouring under every possible disadvantage, he completed works, which upon the whole, are equal to the best of those of his cotemporaries, and in some respects, it may be boldly asserted, that they are superior.—His fancy was fertile, his discernment of character

Runciman
||
Rupert.

keen, his taste truly elegant, and his conceptions always great.—Though his genius seems to be best suited to the grand and serious, yet many of his works amply prove, that he could move with equal success in the less elevated line of the gay and pleasing. His chief excellence was composition, the noblest part of the art, in which it is doubted whether he had any living superior. With regard to the truth, the harmony, the richness, and the gravity of colouring; in that stile, in short, which is the peculiar characteristic of the ancient Venetian, and the direct contrast to the modern English school, he was unrivalled. His works, it must be granted, like all those of the present times, were far from being perfect; but it was Mr Runciman's peculiar misfortune, that his defects were of such a nature, as to be obvious to the most unskilful."

The fine arts and his friends were deprived of this extraordinary painter, on October 21st 1785.

RUNDET, or RUNLET, a small vessel, containing an uncertain quantity of any liquor, from 3 to 20 gallons.

RUNGS, in a ship, the same with the floor or ground timbers; being the timbers which constitute her floor; and are bolted to the keel, whose ends are rung-heads.

RUNG-Heads, in a ship, are made a little bending to direct the sweep or mold of the futtocks and navel-timbers; for here the lines begin which make the compass and bearing of the ship.

RUNIC, a term applied to the language and letters of the ancient Goths, Danes, and other northern nations. See **ALPHABET**.

RUNNER, in the sea-language, a rope belonging to the garnet and the two bolt-tackles. It is reeved in a single block joined to the end of a pendant: it has at one end a hook to hitch into any thing; and, at the other, a double block, into which is reeved the fall of the tackle, or the garnet, by which means it purchases more than the tackle would without it.

RUNNING-THRUSH, a disease in the feet of horses. See **FARRIERY Index**.

RUNNET, or RENNET, is the concreted milk found in the stomachs of sucking quadrupeds, which as yet have received no other nourishment than their mother's milk. In ruminating animals, which have several stomachs, it is generally found in the last, though sometimes in the next to it. If the runnet is dried in the sun, and then kept close, it may be preserved in perfection for years. Not only the runnet itself, but also the stomach in which it is found, curdles milk without any previous preparation. But the common method is, to take the inner membrane of a calf's stomach, to clean it well, to salt and hang it up in brown paper: when this is used the salt is washed off, then it is macerated in a little water during the night, and in the morning the infusion is poured into the milk to curdle it. But see more particularly the article **CHEESE** for a proper receipt to make runnet, upon which the quality of the cheese greatly depends.

RUPEE, a silver coin current in the East Indies, equal to about 2s. 6d. sterling.

RUPERT, or ROBERT. See **ROBERT**.

RUPERT, prince palatine of the Rhine, &c. son of Frederic prince elector palatine of the Rhine and Eli-

sabeth daughter to King James I. of England, was born in 1619. He gave proofs of his bravery at the age of 13; and in 1642 came over into England, and offered his service to King Charles I. his uncle, who gave him a command in his army. At Edgehill he charged with incredible bravery, and made a great slaughter of the parliamentarians. In 1643 he seized the town of Cirencester; obliged the governor of Litchfield to surrender; and having joined his brother Prince Maurice, reduced Bristol in three days, and passed to the relief of Newark. In 1644 he marched to relieve York, where he gave the parliamentarians battle, and entirely defeated their right wing; but Cromwell charged the marquis of Newcastle with such an irresistible force, that Prince Rupert was entirely defeated. After this the prince put himself into Bristol, which surrendered to Fairfax after a gallant resistance. The king was so enraged at the loss of this city, so contrary to his expectation, that he recalled all Prince Rupert's commissions, and sent him a pass to go out of the kingdom. In 1648 he went to France, was highly complimented by that court, and kindly received by King Charles II. who sojourned there for the time. Afterward he was constituted admiral of the king's navy; attacked the Dutch ships, many of which he took; and having engaged with De Ruyter, obliged him to fly. He died in 1682, and was interred with great magnificence in King Henry VII.'s chapel, Westminster. Mr Grainger observes, that he possessed in a high degree that kind of courage which is better in an attack than a defence; and is less adapted to the land-service than that of the sea, where precipitate valour is in its element. He seldom engaged but he gained the advantage, which he generally lost by pursuing it too far. He was better qualified to storm a citadel, or even to mount a breach, than patiently to sustain a siege; and would have furnished an excellent hand to a general of a cooler head.

This prince is celebrated for the invention of prints in mezzotino, of which he is said to have taken the hint from a soldier's scraping his rusty fusil. The first print of this kind ever published was done by his highness, and may be seen in the first edition of Evelyn's *Sculptura*. The secret is said to have been soon after discovered by Sherwin an engraver, who made use of a loaded file for laying the ground. The prince, upon seeing one of his prints, suspected that his servant had lent him his tool, which was a channeled roller; but upon receiving full satisfaction to the contrary, he made him a present of it. The roller was afterwards laid aside; and an instrument with a crenelled edge, shaped like a shoemaker's cutting knife, was used instead of it. He also invented a metal called by his name, in which guns were cast; and contrived an excellent method of boring them, for which purpose a water-mill was erected at Hackney-marsh, to the great detriment of the undertaker, as the secret died with the illustrious inventor.

RUPERT'S Drops, a sort of glass-drops with long and slender tails, which burst to pieces on the breaking off those tails in any part; said to have been invented by Prince Rupert, and therefore called by his name. Concerning the cause of this surprising phenomenon scarcely any thing that bears the least appearance of probability has been offered. Their explosion, it is said, is attended

Rupert.

Rupin
||
Rushworth. tended in the dark with a flash of light; and by being boiled in oil, the drops are deprived of their explosive quality.

RUPIN, or RAPIN, a town of Germany, in the marquissate of Brandenburg, and capital of a duchy of the same name. It is divided into the Old and the New. The Old was nothing but an ancient castle, very well furnished, the late king of Prussia, before his father's death, residing there. New Rupin is seated on a lake, and become a considerable place of trade, with a manufactory of cloth. It is also noted for brewers. E. Long. 13. 23. N. Lat. 53. 0.

RUPPIA, a genus of plants, belonging to the tetrandria class; and in the natural method ranking under the 15th order, *Inundatæ*. See *BOTANY Index*.

RUSCUS, KNEE-HOLLY, or *Butcher's Broom*; a genus of plants, belonging to the dioecia class; and in the natural method ranking under the 11th order, *Sarmentaceæ*. See *BOTANY Index*.

The most remarkable species is the aculeatus, or common butcher's broom, common in the woods in many parts of England. It has roots composed of many thick fibres which twine about each other; from which arise several stiff green stalks about three feet high, sending out from their sides several short branches, garnished with stiff, oval, heart-shaped leaves, placed alternately on every part of the stalk, ending with sharp prickly points. The flowers are produced in the middle, on the upper side of the leaves; they are small, and cut into six parts; of a purple colour, fitting close to the midrib. They appear in June; and the female flowers are succeeded by berries as large as cherries, of a sweetish taste, which ripen in winter; when they are of a beautiful red colour. As this plant grows wild in most parts of England, it is rarely admitted into gardens; but if some of the roots be planted under tall trees in large plantations, they will spread into large clumps; and as they retain their leaves in winter, at that season they will have a good effect. The seeds of this plant generally lie a year in the ground before they vegetate; and the plants so raised are long before they arrive at a size big enough to make any figure, and therefore it is much better to transplant the roots.—The root of this plant is accounted aperient, and in this intention is sometimes made an ingredient in apozems and diet-drinks, for opening slight obstructions of the viscera and promoting the fluid secretions. This plant is used by the butchers for besoms to sweep their blocks. Hucksters place the boughs round their bacon and cheese to defend them from the mice; for they cannot make their way through the prickly leaves.

RUSH. See *JUNCUS*. *BOTANY Index*.

RUSH-Candles. See *Rush-CANDLES*.

RUSHWORTH, JOHN, the compiler of some useful collections respecting the affairs of state, was born in Northumberland about the year 1607, and was descended of honourable ancestors. After attending the university of Oxford for some time, he removed to Lincoln's Inn; but the study of law not suiting his genius, he soon deserted it, in order to seek a situation where he might more easily gratify his love for political information. He frequently attended the meetings of parliament, and wrote down the speeches both of the king and members. During the space of 11 years, from 1630 to 1640, when no parliament was held, he was an

attentive observer of the great transactions of state in the star-chamber, the court of honour, and exchequer chamber, when all the judges of England assembled there on cases of great emergency. Nor did he neglect to observe with a watchful eye those events which happened at a distance from the capital. He visited the camp at Berwick, was present at the battle of Newborn, at the treaty of Rippon, and at the great council of York.

In 1640 he was appointed assistant to Henry Elfyng clerk to the house of commons, and thus had the best opportunities of being acquainted with their debates and proceedings. The commons considered him as a person worthy of confidence. In particular, they trusted him with carrying their messages to the king while he remained at York. And when the parliament created Sir Thomas Fairfax their general, Rushworth was appointed his secretary, and discharged the office much to the advantage of his master. When Fairfax resigned his commission, his secretary returned to Lincoln's Inn, and was soon after (in 1651-2) chosen one of the committee that was appointed to deliberate concerning the propriety and means of altering or new-modelling the common law. He was elected one of the representatives for Berwick-upon-Tweed to the parliament which Richard Cromwell assembled in 1658, and was re-elected by the same town to the parliament which restored Charles II. to the crown.

After the Restoration, he delivered to the king several books of the privy-council, which he had preserved in his own possession during the commotions which then agitated the country. Sir Orlando Bridgeman keeper of the great seal chose him his secretary in 1677, an office which he enjoyed as long as Sir Orlando kept the seals. In 1678 he was a third time chosen member for Berwick, and a fourth time in the ensuing parliament in 1679. He was also a member of the parliament which was convened at Oxford. The different offices he had held afforded him favourable opportunities of acquiring a fortune, or at least an independence; yet, whether from negligence or prodigality, he was never possessed of wealth. Having run himself into debt, he was arrested and committed to the King's Bench prison, Southwark, where he lingered for the last six years of his life in the most deplorable condition. His memory and judgement were much impaired, partly by age and partly by the too frequent use of spirituous liquors. He died on the 12th of May 1690.

His "Historical Collections of private Passages in State, weighty Matters in Law, remarkable Proceedings in Parliament," were published in folio at different times. The first part, comprehending the years between 1618 and 1629, appeared in 1659. The copy had been entrusted by Oliver Cromwell to Whitelock, with instructions to peruse and examine it. Upon perusing it, he thought it necessary to make some alterations and additions. The second part was published in 1680; the third in 1692; the fourth and last, which comes down to the year 1648, was published in 1701; and altogether made seven volumes. These underwent a second edition in 1721; and the trial of the earl of Strafford was added, which made the eighth. This work has been much applauded by those who condemn the conduct of Charles I. and accused of partiality by those who favour the cause of that unhappy monarch. One person

Ruffworth in particular, Dr John Nelson of Cambridge, in a Collection of the Affairs of State published by the command of Charles II. undertook to prove, "that Ruffworth has concealed truth, endeavoured to vindicate the prevailing detractions of the late times, as well as their barbarous actions, and with a kind of rebound to libel the government at second-hand." This accusation seems to be carried too far. His principles indeed led him to show the king and his adherents in an unfavourable light, and to vindicate the proceedings of parliament; yet it cannot justly be affirmed that he has misrepresented or falsified any of the speeches or facts which he has admitted into his collection. Perhaps he may have omitted some papers merely because they were unfavourable to the party which he had espoused; and is therefore not to be considered as an impartial historian who relates the whole truth, but as an honest lawyer, who states all his facts fairly and candidly, but passes over such as are injurious to his client's cause.

RUSSELIA, a genus of plants belonging to the pentandria class. See BOTANY Index.

1
Situation
and bound-
aries.

RUSSIA, the largest empire, and one of the most powerful states in the known world, is situated partly in Europe, partly in North America, but chiefly in Asia; where it occupies that immense tract of country which extends from the Uralian mountains and the Caspian on the west, to Bering's straits and the sea of Kamtschatka on the east, comprehending a great variety of tribes and nations, whose very names were, half a century ago, scarcely known to the west of Europe. This vast empire is bounded on the north by the *Arctic ocean*; on the east by the *Northern Pacific* or *Eastern ocean*; on the south by the extensive *Chinese* territories, the *Mogul empire*, the *Caspian sea*, and part of *Turkey*; and on the west by the *Austrian* dominions, the kingdoms of *Prussia* and *Sweden*, and the *Baltic*.

2
Extent.

If we examine the extent of the Russian empire, we shall find it stretching from the western part of the island of Ozel in the Baltic in 22° E. Long. from Greenwich, to the eastern promontory of the Tschutchki territory in 172° E. from the same meridian; thus including 150° of longitude; while, from its most northern promontory in N. Lat. 78°, to the most southern point of 39° N. it comprehends 39° of latitude. Mr Tooke, computing its extent in British miles, estimates it at 9200 in length, and 2400 in breadth. Its absolute superficial measure in square miles can scarcely be ascertained. That of the European part is estimated at 1,200,000 square miles; and the Asiatic part alone is so extensive as to exceed the whole of Europe.

3
Divisions.

The whole Russian empire is, by the natural boundary of the Uralian mountains, divided into European and Asiatic Russia; the former comprehending Russia Proper, Russian Lapland, Courland, Livonia, Russian Poland, the Taurican Chersonesus or Crim Tartary, and the country of the Kozaks, bordering on the sea of Azof; the latter including the country of the Samoieds, the vast district of Siberia, the country of the Tschutchki, the country of the Mongul Tartars, and some other districts that will be noticed hereafter. The

whole empire was, by Catharine II. divided into governments, denominated in general from the names of their capital cities. Of these governments, by far the greater number belong to European Russia, the vast tract of the Asiatic part having been divided into only two governments, viz. that of Tobolsk to the west, and Irkutk to the east.

Russia.

In enumerating the governments of European Russia, we shall begin with the north, where lies the extensive government of Archangel, stretching from the confines of Sweden along the shores of the White sea and the Arctic ocean, to the Uralian chain. To the south of this, along the Asiatic frontier, as far as the sea of Azof, are situated the governments of Vologda, Perm, Vyotka, Kazan, Simbirsk, Saratof, and the territory of the Don Kozaks. To the west of these last, along the sea of Azof and the Black sea, lies the government of Catharinof, including Taurida and the Crimea. On the western side of the empire extend the acquisitions derived from the partition of Poland; and along the southern shores of the Baltic lie the governments of Riga, Reval, St Petersburg, and Viborg; while that of Olonetz on the frontiers of Sweden completes the circuit. The remaining governments which occupy the centre, are those of Novgorod, Tver, Kostroma, and Yaroslavl, that lie chiefly to the north and east of the Volga; and those of Polotsk, Pskov, Smolensk, Moskva, Vladimir, Nizney-Novgorod, Moghilef, Kaluga, Toulala, Reazan, Tambof, Penza, Orel, Sieverskof, Tchernigof, Koursk, Kief, Kharkof, and Voronetz, lying principally to the west of the Volga (A).

In the account which we are here to give of this extensive empire, which has of late made so conspicuous a figure among the states of Europe, we shall first consider what may be called the permanent features of the empire, as the face of the country, the soil, the mountains, rivers, lakes, and forests, the climate and seasons, and the most important natural productions; we shall then trace its origin and progress in the history of its transactions, from which we shall deduce its progressive geography; and we shall conclude with describing the more fluctuating circumstances, which constitute its political and civil geography.

In a tract of country so immense, which is calculated to include a seventh part of the known continent, and nearly a twenty-sixth part of the whole globe, its surface must present a great variety of appearances; but these are much more remarkable in Asiatic than in European Russia. The latter is distinguished chiefly by extensive plains, called *steppes*, that rival the deserts of Asia and Africa, presenting to the eye little more than a vast expanse of level sand, with very little appearance of vegetation. The chief situation of these steppes is towards the south, especially in the neighbourhood of the sea of Azof, where they extend in length above 400 British miles. In this part of the empire there are but few considerable elevations, and no mountains of importance, except on the eastern frontier, and towards the south, between the Don and the Volga. The whole country is well watered with rivers, and contains numer-
ous

4
Face of the
country.

(A) In our orthography of the names of persons and places we have followed Mr Tooke, who has explained the principles of Russian orthography, in his *History of Russia*, vol. i. p. 130.

RUSSIA
in
EUROPE.



Longitude East 45 from Greenwich.

A. Bell Prin. W. B. Sculptor. fecit.

Russia. ous large and populous towns. In the north and east of Asiatic Russia, we see little more than extensive marshy plains, covered with almost perpetual snow, and crossed by broad rivers, which take their course to the Arctic ocean. In this part, and even towards the centre of Siberia, vegetation is so much checked by the severe cold, that few trees are to be seen; but towards the south there are vast forests of pine, fir, larch, and trees of a similar nature. In some parts of this division of the empire, especially about lake Baikal, the scenery is beautiful and picturesque. Here, too, the country abounds in steppes, which are still more extensive than those of the European part.

As these steppes are among the most striking peculiarities of the Russian empire, it may be proper to consider them rather minutely. These steppes resemble, in many respects, the sandy deserts of Africa; but though their soil is composed of the same materials, they are not so barren of vegetation, exhibiting here and there scattered patches of thin grass, and at distant intervals, small stunted thickets. In general they are destitute of wood, though in a few places we find small forests of birch trees. They abound with salt lakes, but streams of fresh water are uncommon. The most remarkable steppes are, as we have said, those of Asiatic Russia, and of these there are four that merit particular notice. One of these extends between the rivers Volga and Ural, and was formerly called the KALMUK steppe. On the north it skirts the floetz mountains that proceed from the Uralian chain, while to the south it borders on the Caspian. This sandy plain contains a few districts that are well adapted to the purposes of agriculture, but in general it is destitute of wood and fresh water. It abounds in salt lakes, and is very thinly inhabited. The second great steppe is that which extends between the Tobol and the Irtysh, and between this latter river and the Alay and the Oby, as far as the influx of the Irtysh into the Oby. This comprehends a most extensive territory, containing numerous forests of birch, pines, and firs, interspersed with salt lakes, and in most places well calculated for pasturage and agriculture. The greater part of this steppe lies in the government of Tobolsk. A third comprehends that large tract that lies beyond the river Tshulim, between the Oby and the Yenissy, as far as the shores of the Arctic ocean. In this steppe there is much wood, especially towards the south, where there are considerable forests. Eastward from this, between the Yenissy, the Tunguska, and the Lena, lies a fourth desert, resembling the last in its appearance, and the nature of its soil, but containing less wood. A great part of this steppe lies in the government of Irkutsk.

The mountains in Asiatic Russia are indeed more numerous, but are not remarkable for their height. The rivers are large and majestic, and are navigable for a considerable extent.

Soil. 5 The soil is of course extremely various. That of the northern parts is marshy, and little susceptible of cultivation, but the south abounds in rich and fertile plains. The most fertile part of European Russia is that between the Don and the Volga, from the government of Voronezh to that of Simbirsk. Here the soil consists of a black mould, strongly impregnated with nitre, and is so rich, that the fields are never manured. The harvests are abundant, and the natural pastures render the sowing

of artificial grasses unnecessary. Most parts of Siberia are totally incapable of agriculture and improvement.

We have already remarked that Russia is rather a flat than a mountainous country, and this character is particularly applicable to the European part. The most elevated region of this division lies in the road between St Peterburgh and Mosco, and is commonly called the mountain of Volday, though denominated by the natives Vhifokaya Ploftchade, or the elevated ground. This mountain is flat at the top, is surrounded with large sand hills, interspersed with granite rocks, and has in its vicinity several lakes and groves. In this mountain are the sources of the rivers Duna, Volga, and Dniepr.

To the south-west, bounding the steppe of the Dniepr, lie the mountains of Taurida, which are rather romantic, from their adjacent scenery, than remarkable for their height. Between them and the shores of the Black sea lie beautiful valleys, abounding with olives, figs, and pomegranates, while the steepest cliffs of the mountain are adorned with the red bark and evergreen foliage of the *arbutus*. These valleys are very productive in vineyards, and feed numerous flocks of sheep and goats.

The largest mountainous tract of European Russia is that of Olonetz, that lies between the Swedish frontiers and the White sea. This chain occupies a space of nearly 15°, or above 1000 British miles, running almost due north. This chain is of no great height, but its northern part is covered with perpetual snow. These mountains are very rich in mineral products, which will be noticed hereafter.

The Uralian mountains that separate European from Asiatic Russia, have been sufficiently described in the article GEOLOGY, N° 131, 135.

The mountains of Asiatic Russia are more numerous and more important. They include the Altaic chain, the mountains of Savansk, of Yablonnoy, and Stanovoy, forming the southern boundary between the Russian and Chinese empires, and the classical range of Caucasus, extending between the Caspian and the Black sea. Of these, the Altaic chain has also been sufficiently described under GEOLOGY, N° 132; and as the other mountains to the south and east may be considered as a continuation of the same chain, they need not occupy our attention in the present article.

The ridge of Mount Caucasus divides Russia from Turkey to the west, and from Persia to the east, and extends between the Euxine and the Caspian for about 400 British miles. It is not of any considerable breadth, being in no part more than 20 or 30 miles across, and in some places not more than five or six. Its height is considerable, and its summits are covered with eternal ice and snow. The valleys at its foot abound in forest trees; and the bowels of the mountain contain veins of silver, lead, and copper.

Among the mountains of the Russian empire we must not omit the volcanoes of Kamtschatka. The whole of this peninsula is divided lengthwise by a chain of lofty, rocky mountains, commonly covered with snow, and shooting into conical summits that very frequently emit smoke, and sometimes burst out into flame. We do not find, however, that they pour out lava, or water, like the European volcanoes. Many of them appear to be extinct,

Russia.
6
Mountains.

7

Volcanoes.

Russia. extinct, but their former volcanic state is evinced by the appearance of craters at their summits. In the neighbourhood of these volcanoes there are hot springs, not inferior in temperature to those of Iceland, and like them throwing up jets of water with a great noise, but to an inconsiderable height.

Seas. The seas that are connected with *Russia* are, the Arctic ocean, and that part of the Pacific which has been called the eastern Archipelago, forming its northern and eastern boundaries; the inland seas of the Baltic, the Black sea, the sea of Azof, the Caspian, the sea of Aral, and the sea of Okhotsk. Some account of these, except the sea of Okhotsk, will be found under their respective articles in this work.

The sea of Okhotsk may be considered as a large gulf lying between the peninsula of Kamtschatka to the east, and the country of the Tungoussi to the west. Its entrance from the Pacific ocean is closed by a chain of small islands, called the Kourilskie islands, and within these are the two large islands of Ezzo and Sackhalin. Its principal port is Okhotsk, at the mouth of the small river Okhota, and to the north-east it has a considerable branch called the sea of Pengina.

Bays and gulfs. The shores of *Russia* are hollowed out into numerous indentations, forming several important bays and gulfs. The most remarkable of these are, the gulf of Finland in the Baltic, that of Archangel in the White sea, the bays of Oby and of Enissy in the Arctic ocean; the bay of Anadhir in the eastern Archipelago; the large gulf of the sea of Okhotsk, called the sea of Pengina, and the harbour of St Peter and St Paul in the southern extremity of Kamtschatka.

Rivers. This extensive empire is watered by numerous and important rivers, which traverse it in every direction. These we shall class, not according to the divisions of the empire through which they pass, but according to the seas or oceans into which they flow.

The rivers which flow into the Baltic are, the Duna and the Neva. Those which fall into the White sea are the Onega and the Dvina to the west, and the Keiloi and the Mefen to the east. Into the Arctic ocean flow the Cara, the Petshora or Bolshaia Petshora, the Oby, which receives the Irtysh; the Tobol, the Yenissy, the Khatanga, the Lena, the Yana, the Indighirka, and the Kolyma. Those which flow into the eastern Pacific are, the Anadhir and the Kamtschatka. Into the Caspian sea fall the Yemba or Emba, the Ural or Yaik, the Volga, receiving the Kamma, and the Okka and the Terek. Lastly, there flow into the Black sea, the Khuban, the Don, the Dniepr or Nieper, the Bog or Bogue, and the Dniestr or Niester. Of these rivers we have already given an account of the Don, the Dvina, the Irtysh, the Lena, the Nieper, the Niester, the Oby, and the Onega, under their respective titles, and an account of the Volga will be found under that head. We shall here add a brief view of the remaining rivers.

The Duna, sometimes called the western Dvina, rises between the provinces of Pskov and Smolensk, and takes a north-westerly course for about 500 miles, till it falls into the Baltic at Riga. This river has some con-

Russia. siderable and dangerous falls; and when the ice breaks up on the approach of warm weather, vast quantities of it are hurried down the stream, so as frequently to do much injury to the port of Riga.

Of those rivers which flow into the Arctic ocean, the Cara is one of the most inconsiderable, were it not that it completes the boundary between Europe and Asia to the north. It runs from the Uralian mountains to the sea of Kamskoye, a distance of about 140 miles.

The Petshora rises in the Uralian mountains, in the government of Vologda, runs across the government of Archangel, and falls into the Arctic ocean at Pooostozertuk, after a course of about 450 miles.

The Tobol rises in the chain of mountains that separate the government of Ufa from the country of the Kirghistzi, and empties itself into the Irtysh at Tobolsk, after receiving numerous tributary streams.

The Yenissy, or Enyssi, is formed by the junction of two rivers, viz. the Kamfara and the Veikem or Baykema, which belong to China. It first enters the Russian dominions, where alone it has the name of Yenissy, at the mouth of the Bon-Kemtsyng, and after running northward, and forming a bay containing several islands, it falls into the Arctic ocean about 2° eastward of the mouth of the Oby.

The Khatanga rises from a lake in the government of Tobolsk, and falls into a large bay of the Frozen ocean, called Khatanskaia Guba. Its course is through a low and very marshy country.

The Yana rises from a little lake in about 64° N. lat. and after making some small turns, runs northward to the Arctic ocean, forming five considerable arms that empty themselves into a capacious bay.

The Indighirka rises near the source of the Yana, but on the other side of the mountains. At its efflux into the Arctic ocean after a course of 1200 versts, (B) it forms four great arms.

The Anadhir rises in the country of the Tschutchki. Its bed is sandy, its channel very broad, and its current slow. It is so shallow that it can scarcely be crossed by the common ferry boats of the country, though these draw no more than two feet of water. It takes its course through a flat country, which on the north side of the river is destitute of wood, but overgrown with moss, affording pasture to innumerable herds of reindeer; but on the south well wooded and abounding with verdure. It falls into a considerable bay a little south of the tropic of Cancer, called the bay of Anadhir.

The Kamtschatka takes a short course from south to north, along the peninsula of that name, till, not far from its mouth it turns to the south-east, and falls into a bay nearly opposite to Bhering's island.

The Amoor was formerly reckoned among the rivers of *Russia*, but was lately ceded entirely to China.

Of the rivers that fall into the Caspian sea we have to notice the Yemba, the Ural, and the Terek. The first of these rises in the most southern part of the Uralian chain, and is the most eastern of all the rivers that fall into the Caspian. It forms part of the boundary between the country of the Kirghishes and the Ufinskoy government. The Ural or Yaik is a river of considerable

(B) A Russian verst is about two thirds of an English mile, or about 1174 yards.

^{Russia.} able importance. It rises in the Uralian mountains, in the government of Ufa, and after passing by Orenburg, and receiving several streams, it flows into the Caspian at Gourief. Its name is said to have been changed from Yaik to Ural, on account of a dangerous insurrection of the tribes that inhabited its banks. The Terek originates in Mount Caucasus, on the highest ridges that form the frontiers of Georgia. Its course is rapid, and in the autumn the melted snows rush down from the mountains in such torrents into the plain beneath, as to swell this river eight or ten feet above its usual level, so that it overflows the adjacent country, and not unfrequently shifts its bed. It falls into the Caspian at Kizliar, after forming two branches, with a considerable island between them.

The Kuban and the Bogue are the only important rivers of those which flow into the Black sea, that have not been noticed in their places in the general alphabet of this work. Of these the Kuban, anciently denominated Hypanis, rises at the foot of Mount Caucasus, and is formed chiefly by the confluence of several tributary streams. It takes a direction nearly westward, running along the parallel of 45° N. Lat. and falls into the Black sea, opposite the isle of Taman, in the straits of Kafa. Its stream is smooth and gentle, not obstructed by waterfalls, and, though not deep, is well adapted to purposes of inland navigation. Its banks are fertile, and near its source are considerable forests.

The Bogue rises in Poland, and formerly constituted part of the boundary between that kingdom and the Russian empire, as at present towards its mouth it forms part of the frontier between Russia and Turkey. It falls into the Black sea at Otchakof.

¹¹ Lakes. The Russian empire, considering its size, does not abound in lakes. These are proportionally most numerous in European Russia, where we find the lake of Imandra in Russian Lapland; those of Ladoga, Onega, and Peipus, in the neighbourhood of St Petersburg; Bielo-Ozero, or the White lake, in the government of Novgorod; and those which give rise to the river Volga, the principal of which is Seliger, in the government of Tver.

The Asiatic lakes are not numerous; but one of them, the lake or sea of Baikal, is highly important from its magnitude, and from the commercial intercourse which it promotes between the adjacent provinces. The other lakes of this part of Russia are these of Altyn-Noor, or the Golden lake, and of Altyn or Telitzko.

Most of these lakes have been already noticed under their proper heads in the general alphabet; but as the account there given, excepting that of Baikal, differs in some respects from the description of them by the latest geographers, we shall here add the account of the Russian lakes given by Mr Tooke.

¹² Ladoga. The lake of Ladoga is situated in the government of Vyborg, between the gulf of Finland and the lake of Onega, which in ancient times is said to have been denominated Nebo. It is reckoned one of the largest lakes in Europe, the length of it being about 175, and its breadth 105 versts. It produces a vast number of seals. On account of the perilous storms to which it is liable, and the several sand banks that are ever shifting their position, Peter the Great caused the famous Ladoga canal to be dug along its shore, from the Volkhof

into the Neva, which canal is 104 versts long, 10 sa-jènes* broad, 1½ sa-jène deep, and has 25 sluices. By the Neva the Ladoga is connected with the Baltic; ^{Russia.} by the Svir with the Onega; and by the Volkhof with ^{* A sa-jène is about 7 feet English,} the Ilmen. Into the canal flow the rivers Lipke, Nasia, Sheldika, Lava, and Kabona; into the lake, the rivers Pasha, Siæs, Oæt, &c. whereas the Neva alone runs out of it. Both shores of the lake belong to Russia, and these have every where a flat coast and a sandy beach. On this shore it has also a few low fishery islands, and a sandy bottom. That part of the northern side which lies in the government of Olonetz has marble on its coast, whence some of those beautiful and durable kinds of Finnish marble are brought to St Petersburg. As the bed of this lake, for a great extent, is in the lowest part of the country, it receives besides the above-mentioned rivers, the waters that come from the alum hills; all of which have no other outlet than the Neva.

¹³ The lake Onega is situated in the government of Olonetz, between the Ladoga and the White sea. Its length is between 180 and 200 versts, and its breadth from 60 to 80. Like the Ladoga, it contains a few islands consisting of marble, and in all other properties is much the same. With other rivers, the Vitegra falls into it on the south-east side, which river takes its rise not far from the Kofsha, and this river falls into the Bielo-ozero. On the Kofsha is the old Ladoga, and on the Vitegra, the old Vitegorfskaia, which are only about 40 versts asunder. Now, as from the Onega the navigable river Svir runs into the Ladoga, and from the Bielo-ozero the Sheksna flows into the Volga, there needs only a canal to be cut the said distance of 40 versts, for connecting the Neva with the Volga, which would be much more convenient for the navigation here than the passage by Visknoi-Volotflok, because there are no waterfalls, and therefore all the danger and trouble attending them in the present passage would be obviated.

¹⁴ The lake Peipus, called by the Russians Tshudfskoe-ozero, lies between the governments of Pfcove, Reval, Riga, and St Petersburg; is in length about 80, and in breadth about 60 versts. It is connected with the Pfcove lake by a very broad channel, about 50 versts in length. From this lake proceeds the river Narova, communicating through the Embach to the Vertzerb, and from this latter runs the Fellin to the gulf of Riga, so that an inland navigation might easily be formed between lake Peipus and the Baltic, though at present the commodities conveyed along the Narova to Narva, must be carried a considerable way by land, owing to the numerous falls in that river. In this lake there are a few small islands, one of which has three villages upon it, and is well furnished with wood.

¹⁵ The Bielo-ozero, or White lake, is in the same government with the foregoing; is about 50 versts long and 30 broad, and receives into it several smaller streams. The only one that flows out of it is the Sheksna, which falls into the Volga. The water of this lake is clear, having a bottom partly clay and partly stony. The clay is generally of a white colour, and in stormy weather causes a strong white foam upon the surface of the water. It is doubtless from this circumstance that the lake first obtained the name Bielo, or white. It abounds with fish and crabs.

¹⁶ The lake Tshany is situated partly in the government of Tshany.

Russia. of Tobolsk and partly in that of Kolhyvan. It communicates with the lakes Molski and Abilkan, is of very considerable circuit, and abounds in fish.

17 Ilmen. The lake Ilmen, formerly Moisk, lies in the government of Novgorod, being about 40 versts long and 30 broad. It receives the rivers Mita, Lovat, Skelton, &c. and gives birth to the Volkhof alone.

18 Altyn-Noor. The Altyn-Noor, or Teletzkoe-ozero, lies in the government of Kolhyvan, on a very considerable elevation of the Altai mountains, by which it is also entirely surrounded. Its length is computed at 126, and its greatest breadth at 84 versts. From this lake arises the famous river By, which, at its junction with the Katunia, takes the name of Oby.

19 Forest. European Russia abounds in wood; and numerous extensive forests are seen in various districts, especially between St Petersburg and Mosco, and between Vladimir and Arzonas. It is supposed that the Riphæan forest, so celebrated in antiquity, occupied the southern part of European Russia, where now extends a plain covered with a thick and fertile coat of black mould. The forests in some part of Asiatic Russia are also immensely large, especially towards the south. On the west of the government of Irkutsk, an enormous, dark and marshy forest of resinous trees, extends to the river Kan; but the northern and eastern parts of Siberia are bare of wood.

20 Climate and seasons. When we consider that the Russian empire occupies an extent from north to south of nearly 40°, we may rationally conclude that the climate and seasons of so vast a tract must be extremely diversified. Accordingly we find that while the northern regions are exposed to almost perpetual frosts, some of the southern districts enjoy the purest atmosphere, and the mildest sky. While the former is doomed to the utmost sterility, the latter is so fertile as to produce in the most lavish abundance all the vegetable riches of the most favoured climates.

One of the latest writers on the climate of Russia, M. Hermann, has divided the empire into four regions, which are thus distinguished.

1. The very cold region, extending from 78° to 60° of north latitude. This region comprehends the governments of Vyborg, Olonetz, Archangel, Tobolsk, the greater part of Irkutsk, Vologda, a part of Perme, Novgorod and St Petersburg.

2. The cold region, extending from 60° to 55°, and including the governments of Reval, Riga, Polotsk, Pscov, Tver, Mosco, Yaroslavl, Vladimir, Kostroma, Viætka, the greater part of Perme and Kazan, a part of Irkutsk, Kolhyvan, Ufa, Simbirsk, Nishney-Novgorod, Kaluga, and Smolensk.

3. The moderate region, extending from 55° to 50°, including the governments of Moghilef, Tchernigof, Orel, Kursk, Tula, Tambof, Penza, the greater part of Kief, Kharkof, Voronetsk, Riazan, Saratof, Kaluga, Sinbirsk, Ufa, Kolhyvan, and a part of Irkutsk, Kazan, Nishney-Novgorod, and Smolensk.

4. The hot region, extending from 50° to the most southern part of Russia, including Taurida, Ekatarinoslaf, the greater part of Caucasia, and a part of Kief, Kharkof, Voronetsk, Saratof, Ufa, Kolhyvan, and Irkutsk.

From the above enumeration we find that one of the Russian governments possesses all the varieties of climate and season, and that many of them are so divided as to

Russia. enjoy the advantages of two climates. We shall describe the nature of the climate and changes of the season, as they occur in each of these divisions, confining ourselves chiefly to the extremes of St Petersburg and Taurida, as being most interesting.

In many districts of the first region there is scarcely any summer; for the three or four months in which it does not snow, scarcely deserve that name. As in most parts of the globe, however, the eastern districts of this region are much colder and more barren than those on the western side; the fruits that come to maturity round St Petersburg, and in the government of Vyborg, are not found under the same latitude in Siberia. Even the weather of St Petersburg, however, is sufficiently rude, and the climate here is unsettled and unfriendly. In the winter of 1798 and 1799, the coldest ever known in that country, the mercury in Fahrenheit's thermometer stood at St Petersburg at 39° below 0, and even at Mosco, the same thermometer fluctuated during 35 successive days between -30° and -40°. The spring in this region (i. e. about St Petersburg), has in general much frost, snow, and rain; but the short summer is for the most part fair and fine. The longest day is here about 18½ hours, and the evening twilights are so uncommonly luminous, as readily to enable persons to read and write. The very sultry days are in general but few, and these are amply compensated by the cool evenings, nights and mornings. The autumn has seldom many bright days, but is for the most part cloudy, wet, and boisterous. The winter is always severe; and as the atmosphere is generally dry, even in snowy weather, this season is so healthy, that the smallest number of deaths is found to happen during winter. The shortest day is only five hours and a half, and though considerable light is reflected from the snow, yet when the atmosphere is cloudy, candles can be dispensed with but for a very short time. During this season the river Neva, the lakes in the vicinity of St Petersburg, and even the gulf of Finland, as far as the islands of the Baltic, are covered with ice, nearly a yard in thickness. On an average, there are annually from 150 to 190 days of frost, during which the ground is frozen to the depth of nearly three feet.

This severity of climate, apparently so inimical to health and comfort, is considered by the inhabitants as one of their greatest blessings. By the extent of ice and snow, distances are shortened, or at least travelling is facilitated, so that people, horses, and carriages with the heaviest burdens, cross the Neva, and the other rivers, lakes and canals in all directions. Ice cellars here form a necessary of life, for by their means provisions of all kinds are preserved during summer. Hence every house is provided with one of them; and in the beginning of February they are filled with large blocks cut from the river. The ice also promotes the amusements of the inhabitants, as we shall shew in the sequel of this article. Indeed, so essential is this severity of season to the comfort of the inhabitants, that when the winter is unusually mild, the roads are nearly impassable, and the provisions, which are always preserved in a frozen state, can scarcely be kept from putrefaction.

In this region the aurora borealis is very frequent, and its coruscations peculiarly vivid; storms of thunder

Russia. and lightning are neither numerous, violent, nor lasting; high winds are not predominant, and it seldom hails, though hoar-frosts are very common.

In the second region the summer is indeed short in many parts; but in most of them it is so warm, and the days are so long, that the fruits of the earth usually come to maturity in a shorter time than in other places. The winter in this region, especially in the governments of Irkutsk, Perme, Viætka, &c. is in general very severe.

In the third region the winter is also long and cold, especially in the governments of Irkutsk, Kolhyvan, and Ufa. This, however, is owing rather to the lofty mountains with which these districts abound, than from their high degree of latitude. The governments belonging to this region in European Russia, however, usually enjoy a short and mild winter, and a fine warm summer.

In the fourth region the winters are short, and, except in some parts of Irkutsk and Kolhyvan, not very cold; and the summer is warm, and in many parts very dry. One of the most delightful districts in this region is that of Taurida, of which M. Pallas has given the following animated description.

"One of the mildest and most fertile regions of the empire is the beautiful semicircular and amphitheatral vale formed by the Tauridan mountains along the shores of the Euxine. These valleys, which are blessed with the climate of Anatolia and the lesser Asia, where the winter is scarcely sensible, where the primroses and spring-saffron bloom in February and often in January, and where the oak frequently retains its foliage through the whole winter, are, in regard to botany and rural economy, the noblest tract in Taurida, and perhaps in the whole extent of the empire. Here, on all sides, thrive and flourish in open air the ever-verdant laurel, the olive tree, the fig, the lotus, the pomegranate, and the celtis, which perhaps are the remains of Grecian cultivation; with the manna-bearing ash, the turpentine tree, the tan-bark tree, the strawberry tree from Asia Minor, and many others. This last particularly covers the steepest cliffs of the shore, and beautifies them in winter by its perpetual foliage, and the red rind of its thick stem. In these happy vales the forests consist of fruit trees of every kind, or rather they form only a large orchard left entirely to itself. On the shores of the sea the caper-bushes propagate themselves spontaneously; without the assistance of art the wild or planted vine stems climb the loftiest trees, and, twining with the flowery five-leaved ivy, form festoons and hedges. The contrast of the orchards, and the rich verdure, with the beautiful wildness presented by the adjacent mountains and rocks, which in some places rise among the clouds, and in others are fallen in ruins; the natural fountains and cascades that agreeably present their rushing waters; lastly, the near view of the sea, where the sight is lost in the unbounded prospect; all these beauties together form so picturesque and delightful a whole, that even the enraptured muse of the poet or the painter would be unable to conceive a more captivating scene.

"In these enchanting valleys, to the benefit of the empire, which nowhere possesses so fine a climate, might the useful products of Asia Minor, and of the southern parts of Europe, be made indigenous. The superior

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kinds of fruits may be produced here without trouble, and are for the most part so already. The best kinds of olive and fig trees may be cultivated here; and even the sesamum plant never decays. Orange, lemon, and citron trees, and particularly the cedrat, the most excellent species of them, would bear the winter extremely well with a little care. The vine would be constantly improving, if a judicious selection were but made of the stocks for planting, if greater attention were paid to the various effects of the soil and situation of the vineyards, and if more care were taken in working the mud and keeping the wine. For the use of the apothecaries and manufacturers a number of excellent drugs and dyes might be produced, which are at present brought from the isles of the Archipelago, from Greece, from Asia Minor, and Persia; several of them are now seen here growing wild. Likewise many hard and useful kinds of wood, especially coloured, fit for inlaid work, might here be propagated; perhaps in some tracts even the sugar cane would thrive*."

The productions of Russia would afford an ample field for the investigation of the naturalist; and this part of its natural history has been fully illustrated by the enlightened travellers who were lately employed in the examination of the empire. We can here give only a brief sketch of the result of their inquiries.

In the central parts of European Russia are found most of the animals which are common to it with the rest of Europe. The finest horses here are those of Lithuania and Livonia, the former possessing great strength, the latter excelling in speed. The spirit and beauty of the Tartarian horses have been long celebrated; and in the Taurida, where this breed is much cultivated, these qualities have been improved by the introduction of Turkish and Arabian stallions. Near Archangel, the horses are small, and resemble those in the north of Britain. The country near Archangel is remarkable for fine pasturage, and an excellent breed of cattle; but indeed cattle abound in most parts of the empire. The sheep in the northern provinces are of a middle size, with short tails and coarse wool; but those in the south are long-tailed, and their wool is of a superior texture: but the best wool is procured from the district of Kazan. We have seen that the province of Taurida abounds in sheep, which constitute the chief riches of the inhabitants. Some opulent farmers in this district possess 50,000 sheep; and 1000 is by no means an uncommon flock. Goats and swine also abound throughout European Russia; and the rein-deer is not unknown in the most northern governments. In the north, too, are found the elk, the wolf, the lynx, and the sea bear; and in the most southern districts the camel is sometimes met with.

Asiatic Russia is remarkable for the rein-deer, which there performs the office of the horse, the cow, and the sheep. In the south are found the wild horse, and the wild ass; while the argali, or wild sheep, is often hunted in Siberia, and the regions of Mount Caucasus present the furious *bison*. Here, too, are seen the ibex, and the chamois. Near Lake Baikal are found the stag, the musk animal, and the wild boar; and on the banks of the Yenissy is seen the beaver. Walrusses haunt the shores of the Arctic ocean, and seals are found in most of its bays and inlets. In Siberia, in the provinces of Yakutsk and Nerchinsk, and in Kamt-

Y y schatka,

Russia.

* Tooke's
View of the
Russian
Empire,
vol. i. p. 30.

21
Animals

Russia.

schatka, the hunting of fables forms, during part of the year, the chief occupation of the inhabitants; and their skins, when procured perfectly entire, are said to be worth 10l. each. The skins of the black fox are also highly esteemed, as, according to Mr Tooke, one of them is sometimes sufficient to pay the tribute of a village. The bear is found in the neighbourhood of the Uralian mountains, and the civet cat in the Altai chain. The wild boar grows here to such a size, that its tusks are said sometimes to weigh 600 pounds*. The horses of the Mongul Tartars are of singular beauty, some of them being striped like the tiger, others spotted like the leopard. The stud of a noble Mongul sometimes contains 3000 or 4000 of these animals. The principal Nomadic hordes of Asiatic Russia, viz. the Tartars, Monguls, and Mandshurs, not unfrequently regale on horse-flesh; but they do not, as is commonly reported, eat it raw. The cattle of this division of Russia are of a middling size, and are commonly employed for draught, and even sometimes for carriage.

* Pinkerton's Geography, vol. ii. p. 15.

The whole empire abounds with wild fowl and game of all sorts; and in the more solitary regions of Mount Caucasus, and on the Uralian and Altaian chains, there are numerous birds of prey. The external parts and provinces of the empire are well supplied with sea fish from the northern ocean, the Baltic, the White sea, the Black sea and the Caspian; and the numerous lakes and rivers yield immense quantities of salmon, trout, pike, sturgeon, and belluga (a large fish from whose roe is made the best caviare). Innumerable swarms of insects are hatched by the summer's heat in the sands, morasses, and forests; and are said to be so troublesome as to render great part of these regions almost uninhabitable.

22 Vegetables.

Merely to enumerate the chief vegetable productions of the Russian empire, would far exceed the limits of our plan. We shall therefore only mention the most important. In the forests are found the fir, the Scotch pine, the larch, the elm, the birch, the alder, the greater maple, the sycamore, the oak of various species, the black and white poplar, the ash, the hornbeam, the beech, the nettle-tree, the cedar, and the cypress. Of fruit trees and shrubs, the most remarkable are, the almond, the peach, the apricot, the medlar, the walnut, the mulberry, the olive, the fig, the vine, and the pomegranate. In some parts of Asiatic Russia are found, besides, the quince, the date, the jujube, and the willow-leaved pear; and many other shrubs and plants, which in our climate require the aid of artificial heat, are, in the southern provinces of Russia, produced spontaneously.

23 Minerals.

Russia is not less rich in mineral productions, of which Siberia in particular contains a great variety. In the brief sketch of Russian mineralogy which we can here offer, we shall confine ourselves chiefly to the metallic mines. Of these there are few in European Russia, and those principally of iron. It appears that there was formerly a gold mine near the river Vigg in the north-western corner of the empire; and in the year 1739, gold was discovered in the same region, in the mountains of O'lonetz; but the product was scarcely sufficient to indemnify the government for the expence of working the mine, not more than 57 pounds of gold having been procured within the year. The richest iron mines in European Russia, are about 60 miles from

Mosco; and in the government of Perme are worked mines, both of iron and copper.

Russia.

In Siberia there are valuable gold mines, especially those of Catharineburg, on the east of the Uralian mountains, in the latitude of about 57°, where an office for the management of the mines was established by Peter I. in 1719. Several mines of different metals extend to a considerable distance on the north and south of Catharineburg; and there are in this district above 100 founderies, chiefly for copper and iron. The principal gold mines in this district are those of Berefot, a few miles north-east of Catharineburg, near the river Pyshma, that falls into the Tobol. The gold is sometimes found native, but is generally mixed with various substances, especially silver. There are other mines in Kolhyvan and Nerthinsk, chiefly of lead and silver, with a small proportion of gold. The former of these were discovered in 1704, and the latter in 1748. In the mines of Berefot is found the red lead of Siberia; and in the copper mines, about 30 miles south of Catharineburg, that particular ore called malachite, or stalactitic copper, is found in great perfection. There are also copper mines in the Altai mountains, where dendritic copper is met with. The richest iron mines in this part of Russia are in the neighbourhood of the Uralian chain. The large mass of native iron which we have mentioned under GEOLOGY, N° 165, was found by Professor Pallas in Siberia, near Mount Emox or Nemir, not far from the river Yenissy.

Rock salt is found in several parts of Siberia, especially near the Ilek, not far from Orenburgh. Coal is a rare production in Russia; but it is found near Lake Baikal, and in the steppe between the Don and the Volga. Sulphur, alum, sal ammoniac, nitre, and natron, are found in great abundance.

There are also found in Siberia various gems, which we must not omit to notice. These are discovered chiefly in the mountain Adumshollow, in the province of Nerthinsk or Daouri, not far from the Chinese river Argoon. Here are found common topazes, the hyacinth, the Siberian emerald, the beryl, the onyx, and beautiful red and green jaspers. Near Catharineburg are the gem mines of Mourmintsy, where are found the beryl and the chrysolite. Near Lake Baikal red garnets are very common; and there are also found lapis lazuli and the baikalite of Kirwan. The opal is said to be found in the Altai mountains.

The mineral springs of Russia are found principally in the Asiatic part, especially in Kamtschaika. The only European mineral waters that merit particular notice are, a hot spring near Selo Klintshy, in the government of Perme; a noted chalybeate spring in the village of Vingova, in the district of Olonetz, distinguished by Peter the Great, and called by him St Peter's Well, and another chalybeate spring, or rather assemblage of springs strongly impregnated with iron, discovered in 1775, near Sarepta on the Volga. In the district of Perekop and the island of Taman, belonging to the government of Taurida, there are springs of naphtha. Springs impregnated with naphtha and petroleum are also found near Lake Baikal. At Sarepta there is a sulphurous spring, and there are several others in Siberia. On the Terek, towards Mount Caucasus, are warm springs that serve as baths; and similar baths occur

24. Mineral waters.

^{Russia} occur in the province of Nerzhinsk, in the territory of the Kalmuks, to the south of the Altai mountains, and in the neighbourhood of Baikal. Chalybeate waters are found among the iron mines near Catharineburg, and a few occur in the province of Daouria.

The principal hot baths of Asiatic Russia are in Kamtschatka, and are formed by the hot springs noticed in N^o 7. The chief bath of this kind is in the southern part of the peninsula near Natchikin. The hot waters here fall in a rapid cascade, about 300 feet below which they are collected into a basin six or seven feet broad, and 18 inches deep. The water is extremely hot, and is said to contain vitriolic and nitrous salts.

²⁵
Russian
islands.

Before we conclude what may be called the permanent geography of Russia, we must enumerate the islands that belong to this extensive empire, and particularly notice such of them as have not been described in other parts of this Encyclopædia.

In Europe the Russians possess the islands of Oesel and Dago in the Baltic, and the little island of Cronstadt at the entrance of the gulf of Finland, the islands of Novaya Zemlia, and several smaller islands in the Arctic ocean; and though the dreary island of Spitzbergen is generally considered as belonging to Denmark, it is at least equally shared by the Russians, some of whom regularly winter here, on account of the whale fishery.

In Asiatic Russia we may enumerate the Aleutian (Alcouthie or Fox) islands, of which Bhering's island is the only one deserving particular notice; the Andronovian islands, about 500 miles to the south-east of Bhering's island, and the Kurile or Kurilian islands, extending from the southern promontory of Kamtschatka towards Japan.

²⁶
Dago.

The island of Dago, but briefly noticed in our general alphabet, is for the most part rocky, and its western shore is sandy; but the southern and eastern parts consist of a bluish clay, and are very fertile. They produce considerable quantities of barley, especially in rainy seasons; but it is found necessary to sow the seed very early in the spring. There are here several forests, especially one of alders, which is seen at a great distance, and serves as a landmark. This island is extremely populous, and very healthy. It is inhabited chiefly by Esthonians. The sea round Dago abounds with shallows, rocks, and sand banks, that render the navigation dangerous; but to prevent ships from being stranded on the coast, a lighthouse has been erected on the western promontory, about three miles from the sea.

²⁷
Oesel.

Oesel is much more considerable than Dago, being nearly 80 miles long, and about 60 at its greatest breadth. Its soil is naturally more barren than that of Dago, being chiefly sand, or loam and clay; but as it is well manured, the crops are pretty considerable. These consist of wheat, rye, and barley, and in favourable seasons, oats and pease. Oesel abounds in quarries, from which are procured excellent limestone, black and gray flagstone, and grindstones. Marble is also found, but is not much esteemed.

²⁸
Novaya
Zemlia.

The islands of Novaya Zemlia, or the New Land, consist chiefly of two very large insulated tracts, nearly alike in size and figure, extending between 40° and 68° of east longitude, and between 70° and 77° of north latitude. They are separated from the main land by the strait of Waigats. They may be estimated at 600 miles in length, by a medium breadth of nearly 400. Yet

this large tract of country is desert and uninhabited, except by reindeer, polar bears, white and blue foxes; and on the coast seals and walruses. The islands are well supplied with water, but are rocky and destitute of wood except a few stunted bushes. On the northern side they are encompassed with mountains of ice. In these dreary regions the sun is not seen for nearly four months, viz. from the middle of October to February.

^{Russia}

Bhering's island is situated in the sea of Kamtschatka, about 3° to the east of that peninsula, extending from 55° to 56° of N. Lat. It was discovered by Bhering in 1740. It consists of a range of bald cliffs and hills, running north and south, the highest of which are nearly 1000 fathoms above the level of the sea. These rocks consist of granite in the middle ridge, and a sandstone on each side; but some of the lower appear to be covered with clay. This island is entirely destitute of wood, but is otherwise not bare of vegetation. It contains springs of excellent water, and has several fine cataracts. The cold is moderate, and thunder has never been observed, though it is said some shocks of earthquakes have been felt. There are no human inhabitants; but the island affords a dwelling to sea bears, arctic foxes, seals, and walruses. The Aleutian and Kurilian islands have already been described under their respective heads; and an account of SPITSBERGEN will be found under that article.

²⁹
Bhering's
island.

Russia was scarcely known as an independent state before the latter end of the 9th century. We know, indeed, that long before that period, namely about the 5th century, a horde of those nations that roved at large on the banks of the Dnieper and the Volkhof, established themselves in that part of the region bordering on the Dnieper, where is now situated the government of Kief or Kiow. These people were called Slavi, or Slavonians, and had advanced eastward from the shores of the Danube. They appear to have laid the first foundation of the Russian monarchy, and to have built Kief, where they fixed their capital. It is probable that about the same time another tribe of Slavi had settled still farther to the east, in the province of Novgorod, where they built the city still known by that name, as their metropolis. Of the government and transactions of these people we have no regular accounts till the conclusion of the 9th century. It appears, however, from a work of the emperor Constantine Porphyrogenitus on the administration of the empire, that in his time the city of Novgorod was a place of great importance, and carried on an extensive commerce, both with Constantinople and the countries bordering on the Baltic. The government of the Novgorodians appears to have been republican, but the people were probably rather merchants than warriors. We find them involved in frequent disputes with the neighbouring nations, from whose ravages they suffered considerable losses.

³⁰
Origin of
the Russian
empire.

If we may credit the Russian historians, the Slavi that had settled about Kief and Novgorod, must have extended the boundaries of their territory northwards as far as the shores of the Baltic. We find that they were much harassed by a piratical nation who dwelt on the coasts of that sea, and were denominated Varages or Varagians, and who made frequent descents on the Russian coasts, and ravaged the country. It is not improbable that these Varagians formed a part of the Scandinavian nations, who, under the names of Danes and

³¹
Settlement
of the Va-
ragians in
Russia.

Russia. Saxons, successively made themselves masters of England. They were occasionally employed by the weaker neighbouring states as mercenary auxiliaries, and in this capacity they were once called to the assistance of the Novgorodians. As is usual, where a weak people requires the assistance of a warlike and powerful nation, the auxiliaries, after having overcome the enemies whom they were invited to combat, began to think of availing themselves of the advantages which their bravery had given them over their employers. From allies and servants they soon became the masters of the Slavi; and finding the country about Novgorod superior to that which they had left, they began to think of taking up their residence in their new quarters.

32
An. 860.
Establishment of the monarchy under Ruric.

Their leader Ruric built a town near the Volkhof, and surrounded it with a rampart of earth. This town is now called Old Ladoga. Here Ruric established the seat of his government. This event appears to have taken place about the year 860; and from this period we may date the commencement of the Russian monarchy. Ruric was assisted by two other chiefs of the Varages, Sinaus and Truvor, who are supposed to have been his brothers, and with whom he divided the territory of which he had possessed himself. Of these, Sinaus took up his residence at Bielo Osero, or the white lake, while Truvor kept his court at Isborfk, or according to some, at Twertzog, in the district of Plefkow. The three chiefs having thus divided among them the territories of the Novgorodians, continued to reign in amity with each other for several years.

33
Opposition of the Slavi.

The Slavi, however, did not submit to the dominion of their new masters, without an effort to regain their independence. At first, astonishment at the unexpected proceedings of their auxiliaries overcame the spirit of liberty which had hitherto actuated their minds; but they soon awakened from their lethargy, and determined to repel by force those whom they now considered as the invaders of their country. They flew to arms, and chose for their leader, Vadim, who by his feats in war had acquired the honourable appellation of the *valiant*. A fierce engagement took place between the Novgorodians under Vadim, and the Varages headed by Ruric and his brothers. The contest ended in favour of the latter, and the brave Vadim, with several other chiefs of the Novgorodians, lost their lives in the attempt to free their country from its ambitious guests. This new success emboldened Ruric to extend his territories, and to change the seat of government from the insignificant town of Ladoga, to the spacious and opulent city of Novgorod. Soon after, by the death of his partners in the government, Ruric became sole monarch of the conquered territory, where he reigned without farther molestation for 17 years, and became the primogenitor of a long line of descendants, who held the sovereignty without interruption for several centuries. Ruric appears to have been zealous for the strict administration of justice in his dominions, and issued his command to all the boyars who held territories under him, to see it exercised in an exact and uniform

manner. We are not informed of the nature of his institutions; nor is it known whether the laws then existing in his territories were merely oral, or were committed to writing.

Ruric assumed the title of grand prince. His dominions extended over the present governments of Riga, Reval, Polotzk, Pscov, Vyborg, St Petersburg, Novgorod, Smolensk, Olonetz, Archangel, Vladimir, Yaroslavl, Kostroma, and Vologda.

As Ruric left only one son, Igor, who was still a minor at his father's death, Oleg, a kinsman of the deceased monarch, took on him the administration of affairs. Either from the natural restlessness of the Varages, or from the spirit of rebellion manifested by the Novgorodians, which indicated the necessity of employing his people in some active enterprise, the new monarch did not long remain idle. He appears very early to have projected the extension of his territories, by annexing to them the settlement which the Slavi had formed about Kief, against which he soon undertook a formidable expedition. He collected a numerous army, composed of Slavi, Varages, and Tschudes, carried with him the young prince Igor, and opened the campaign with the capture of Lubitch, and of Smolensk the capital of the Krivitsches. (c)

Having reduced several other towns of less consequence, he advanced towards Kief, the possession of which formed the chief object of his ambition, as through the Kievian territory he would have an easy passage to the Grecian empire, by inroads into which he could gratify the predatory disposition of his followers. Having advanced near the walls of Kief, he did not think it advisable to hazard an open attack, and thus leave to the precarious decision of a battle the ultimate success of his favourite project. He therefore had recourse to artifice, and leaving behind him the greater part of his troops, he concealed the remainder in the barks that had brought them down the Dnieper from Smolensk. Oleg himself, disguising his name and quality, passed for a merchant sent by Oleg and his ward Igor on business of importance to Constantinople; and he dispatched officers to Oskhold and Dir, the two chieftains of the Kievians, requesting permission to pass through their territory into Greece, and inviting them to visit him as friends and fellow-citizens, pretending that indisposition prevented him from paying his respects to them in person. The princes, free from mistrust, and relying on these appearances of friendship, accepted Oleg's invitation, and scarcely thought it necessary to take with them their ordinary attendants. They were soon undeceived; for when they arrived at the regent's encampment, they were quickly surrounded by the Varagian soldiers, who sprung from their place of concealment in the barks. Oleg taking Igor in his arms, and casting on the sovereigns of Kief a fierce and threatening look, exclaimed, "You are neither princes nor of the race of princes; behold the son of Ruric." These words, which formed the signal that had been agreed on

34
An. 879.
Regency of Oleg.

35
Annexation of Kief to the Russian principality.

(c) The Krivitsches were a Slavonian tribe who inhabited the regions bordering on the upper parts of the rivers Volga, Dvina, Oka, and Dniepr, where are now the governments of Polotzk, Smolensk and Minsk. The Tschudes whom we have mentioned as forming part of Oleg's army, were a nation of Finnish extraction, and inhabited those districts which form part of the present governments of Pscov and Reval.

Russia. on between Oleg and his soldiers, were no sooner uttered, than the latter rushed on the two princes, and laid them prostrate at the feet of their master.

The inhabitants of Kief, thrown into consternation by this bold and treacherous act, made no resistance, but opened the gates of their city to the invader; and thus the two Slavonian states were united under one head.

36
First Russian expedition against Constantinople. Having thus made himself master of the key to the eastern empire, Oleg prepared to carry into effect his ambitious designs against Constantinople. Leaving Igor at Kief, he himself embarked on the Dniepr with 80,000 warriors, on board of not fewer than 2000 vessels. Their passage down the river met with no obstruction, till they came to that part where its course is embarrassed for nearly 15 leagues by seven rocks; and here began a series of perils, labours, and fatigues, which none but barbarians could have overcome. They were obliged to unload their barks, and convey them over the rocks; and in particular at the fourth rock, they carried their baggage for above 6000 paces, exposed to the perpetual risk of attack from the neighbouring nations with whom they were at war, while thus hampered and encumbered. Having at length passed all the rocks, and reached the mouth of the Dniepr, Oleg drew together his scattered vessels at a small island that lies between the points of Otchakof and Kinburn, where he caused them to be refitted, and waited for a favourable wind to carry him across the Black sea to the mouth of the Dniester. Here the vessels were again refitted, and hence the expedition coasting along the shores of the Euxine, soon arrived at the strait of Constantinople.

The inhabitants of the imperial city, on discovering the approach of the barbarians, had drawn a maffy chain across the harbour, thus hoping to prevent their landing. In this hope, however, they were deceived. The invaders drew ashore their barks, fitted wheels to their flat bottoms, and converted them into carriages, which by the help of sails they forced along the roads that led to the city, and thus arrived under the walls of Constantinople. In their route they ravaged the whole country, and pillaged and demolished the houses, loaded the inhabitants with irons, and committed other enormities which generally attend the incursions of a barbarous enemy. The earth that had been fertilized by the sweat of the husbandman, was now drenched with his blood, and the sea received, as in one vast grave, both the carcases of the dead, and the bodies of the living. The weak Leo, who then swayed the sceptre of the Grecian empire, instead of making a manly resistance, is said to have attempted carrying off his enemy by poison; but this not succeeding, he was obliged to purchase from the conqueror an ignominious peace. Thus, even at that early period, the sovereign of Russia triumphed over the emperor of Constantinople, and Oleg acquired the full completion of his wishes, by the rich booty which he carried off. He made his entrance into Kief on his return, laden with the wealth acquired by his victory; and the people, dazzled with such splendid objects, imagined their prince to be endowed with supernatural powers, and looked up to him with a reverence approaching to adoration.

* Tooke's History of Russia, vol. 2. p. 254. Soon after his return to his own dominions, the Russian monarch dispatched deputies to Constantinople, with the articles of a treaty which he required the Greek emperor to sign*. This treaty, which is pre-

served in the Chronicles of Nestor, is extremely curious; and we learn from it many important particulars respecting the internal policy of the Russians at the beginning of the tenth century. Several articles of this treaty shew, that the Russian laws laid great stress on oaths; that they pronounced the sentence of death against the murderer, instead of inflicting on him only a pecuniary fine, and thus allowing the rich to commit assassination with impunity; that wives were allowed a part of the estates of their husbands; that the punishment of offences did not extend to the entire confiscation of goods, and hence the widow and orphan did not suffer for a crime of which they were innocent; that robbery, which attacks only property, was punished by the privation of property, so that the Russian laws maintained a just proportion between the crime and the penalty; that the citizens, secure in their possessions, were under no apprehension that the sovereign would seize on their heritage, and might even dispose of their effects in favour of friends.

Oleg maintained the sovereign power for 33 years, nor does it appear that Igor, even after he obtained the age of majority, had any share in the government, till the death of his guardian, in 913, left him in full possession of the throne.

Igor had reached his 40th year before he entered on the government. He soon discovered marks of the same warlike spirit which had actuated his predecessor. Among the nations that had been subjugated by Oleg, several, on the accession of a new sovereign, attempted to regain their independence; in particular the Drevlians, who dwelt on the banks of the Ucha, in the present district of Vrutsch, were the first to rise in revolt. They were, however, soon quelled, and punished by the imposition of an increased tribute. The Uglitches, who inhabited the southern bank of the Dniepr, maintained a longer contest for their liberty. One of their principal towns sustained a siege of three years, and at last submitted on condition of the trifling tribute of a marten's skin blackened by fire; as these furs were valued in proportion to the darkness of their colour.

Igor soon had to contend with more formidable enemies. The Petchenegans, a nation hitherto unknown, quitted their settlements on the Yaik and the Volga, and made incursions into the Russian territory. These people appear to have been at least as powerful and warlike as the Varages; and Igor finding himself unable to cope with them in arms, concluded a treaty of alliance. About five years after, disputes arose between the new allies, and both had recourse to arms. It appears that the Russians were finally victorious, and the Petchenegans were, for some time, disabled from giving Igor any farther molestation.

38
An. 947. Second expedition against Constantinople. The Russian monarch, in imitation of his guardian, soon turned his attention towards the Grecian empire, where depredations might apparently be made with impunity. He equipped an immense armament, consisting, as we are assured by the Russian annals, of 10,000 barks, each carrying 40 men, thus forming an army of 400,000 warriors. With this immense force he set sail for Constantinople, without any previous declaration of war, and without any ostensible motive for thus infringing the treaty that had been concluded some years before between Oleg and Leo. In his route he overran and ravaged the provinces of Paphlagonia, Pontus, and Bithynia,

Russia.

thynia, plundering the towns, and butchering the inhabitants. For some time the barbarians met with no opposition, as the imperial troops were engaged in distant provinces; but the government of the empire was now in very different hands from those which held it during the former invasion. The Grecian forces were well appointed, and commanded by two generals of approved ability and courage. These were Theophanes and Phocas, of whom the former commanded the fleet, and the latter the army. The Russians had soon cause to repent their temerity. Theophanes attacked them on board their ships, within sight of the Pharos, and throwing among them the unquenchable Grecian fire, with the effects of which they were wholly unacquainted, threw them into such confusion, that many plunged into the sea to avoid the fires that threatened and pursued them. Their vessels were dispersed, shattered, or consumed by flames, and great numbers of their crews perished. The remainder reached the shores of Bithynia; but before they could recover from their consternation, they were met by Phocas, who fell upon them with his troops, and made prodigious slaughter. So great were the losses sustained by Igor in this unfortunate expedition, that he carried back with him scarcely a third of his army. This second naval expedition of the Russians against Constantinople took place in 941.

Though discouraged by the ill success which had attended his first invasion of the Grecian empire, Igor was too much stimulated by the desire of plunder, not to risk a second attempt. Three years after, he collected new forces, took into pay many of the Petchenegans, and again set out for Greece; but before he had advanced beyond the Taurican Chersonesus, the emperor Romanus, informed of his approach, and not choosing to hazard the result of an engagement, sent deputies to the Russian leader, offering to pay him the same tribute which had been given to his predecessor. With this offer Igor complied, and once more retired with his army.

Igor was now far advanced in years; but the insatiable rapacity of his officers, ever craving fresh spoils from vanquished nations, impelled him to turn his arms against the Drevlians, for the purpose of obtaining from them an increase of their yearly tribute. In this unjust attack he was at first successful, and returned loaded with the contributions which he had levied from that people; but having dismissed great part of his troops with the spoils of the vanquished, and marching with the remainder too far into the country, he fell into an ambuscade, which the Drevlians, now grown desperate, had formed on his approach in the neighbourhood of Korosten. The Russians were soon overpowered, and Igor being made prisoner, was put to death.

39
An. 945.
Regency of
Olga.

Before the death of Oleg, Igor had married a princess of a bold and daring spirit, named Olga, by whom he had one son, Sviatoslaf; but as he was very young at the death of his father, the queen mother Olga assumed the reins of government. Her first care was to take signal vengeance on the unhappy Drevlians, for having bravely defended themselves against the encroachments of tyranny and oppression. These people, satisfied with the death of their oppressor, appeared desirous of renewing their amicable intercourse with the Russians, and their chief, Male, is even said to have made an offer of his hand to Igor's widow. Olga, with that deep cun-

ning and concealed malice that so often mark the character of the despotic leader of a barbarous people, pretended to listen to their overtures, received the deputies of Male, but immediately ordered them to be privately put to death. In the mean time she invited a larger deputation from the Drevlian chief, which she treated in the same inhuman manner, taking care that no tidings of either murder should be carried to the Drevlians. She then set out, as if on an amicable visit, to conclude the new alliance, and having proclaimed a solemn entertainment, to which she invited some hundreds of the principal inhabitants of the Drevlian towns, she caused them to be treacherously assassinated. This was but the first step to the more dreadful vengeance which she had resolved to inflict on this deluded people. She laid waste the whole country of the Drevlians, and in particular the town of Korosten, near which Igor had lost his life. For a long time she could not master the place, as the inhabitants, dreading the horrible fate that awaited them, from the revengeful spirit of Olga, defended themselves with the utmost valour and success. At length, being assured of clemency, on condition of sending to Olga all the pigeons of the town, they submitted; but Olga causing lighted matches to be fastened to the tails of the pigeons, set them at liberty. The birds flew to their usual places of residence in the town, which were speedily in a conflagration. The wretched inhabitants endeavouring to escape the flames, fell into the hands of the Russian soldiers, planted round the town for that purpose, by whom they were put to the sword.

This was the only warlike transaction, if it deserves that name, which took place during the regency of Olga. Though not uncommon in the annals of a barbarous people, it would have been sufficient to hand down her name with detestation to posterity, had she not, in the opinion of her panegyrists, atoned for the enormity, by attempting to introduce into her dominions the Christian religion.

Hitherto the Slavi, and the Scandinavian nations who had taken possession of their territories, were Pagans, and their religious ceremonies, like those of all the surrounding nations, were marked by an absurd and cruel superstition, which, under pretence of worshipping the Supreme Being, insulted his attributes, and increased instead of lessening the miseries of human nature. Their deities seem to have been borrowed, partly from the Greeks and Romans, and partly from the Scythians; but were characterized by peculiar names, and represented by idols of complex workmanship and grotesque appearance. Thus, the god Perune, or Perkune, who was the chief among the Slavonian deities, analogous to the Zeus of the Grecian, and the Jupiter of the Roman mythology, was personated by an idol whose head was of silver, his ears and mustachios of massy gold, his legs of iron, and his trunk of hard incorruptible wood. It was decorated with rubies and carbuncles, and held in its hand a stone carved, to represent the symbol of lightning. The sacred fire burnt continually before it; and if the priests suffered this to be extinguished, they were doomed to perish in the flames, as enemies of the god. Sacrifices of their flocks to this supreme deity were regarded as trifling; his altar smoked with the blood of captives, and even the children of his worshippers were sometimes immolated to appease his wrath or propitiate his favour. Superstition has, in all ages, tinged the hands

Russia.

Russia hands of its pontiffs with blood, and has every where represented the deity as a cruel and malignant being, delighting in the spectacle of suffering humanity.

41 Conversion of Olga to Christianity. It is uncertain at what time the light of Christianity began to beam on the nations that occupied the banks of the Dniepr, nor are we acquainted with the circumstances that led to the conversion of the queen regent. We find, however, that about the middle of the 10th century, she undertook a journey to Constantinople for the express purpose of being initiated into the religion of Jesus. Constantine Porphyrogenitus, who then sat on the imperial throne, received the royal convert with the greatest honour and respect; himself conducted her to the baptismal font, and, in the character of her sponsor, gave her the name of Helen. He dismissed her loaded with rich presents, consisting chiefly of those fine stuffs which were then fabricated only in the east, and several costly vases. In return for the honour she had received at Constantinople, Olga promised to send the emperor a quantity of furs and wax, and to furnish him with troops; but as she delayed the performance of her promise, Constantine despatched an embassy to remind her of her engagements. We are told that she treated the ambassadors with disrespectful levity, and dismissed them with frigid compliments; so little change had baptism effected on the insidious disposition of the Russian princes! It is no wonder, therefore, if her example had little influence on her son, or the nation at large. The Russians do not seem to have been very ardent in their religious observations, or peculiarly attached to the opinions of their forefathers; but the nature of Christianity, and the character of its disciples, were not in their eyes sufficiently striking or alluring to produce any change in their religious system. Olga endeavoured to persuade her son Sviatoslaf to embrace her new religion; but either from his contempt for the unwarlike character of the Greek Christians, or through fear of the ridicule to which his conversion might subject him from his young companions, he disregarded her solicitations. He did not, however, prevent the people over whom he seems by this time to have assumed the chief dominion, from receiving baptism, and a few profelyes were made. Though the character of Olga, even after her conversion to Christianity, was by no means such as to intitle her to the rank which she afterwards attained among the Russian saints, it appears that she had given her son many wise and prudent instructions respecting the government of his future empire. She travelled with him round the country; superintended the erection of bridges and the making of roads, for the benefit of trade and commerce; built several towns and villages, and founded such laudable institutions, as sufficiently evince her talents for governing a nation. She died about the year 969, at a very advanced age.

42 Reign of Sviatoslaf.

It is probable that Olga retired from the administration of affairs soon after her conversion to Christianity; for we find Sviatoslaf in full possession of the government long before his mother's death. This prince has been considered one of the Russian heroes; and if a thirst for blood, a contempt of danger, and disregard of the luxuries and conveniences of life, be admitted as the characteristics of a hero, he deserves the appellation. His private life was such as to render him the favourite of his army. Regarding the narrow inclosure of a palace as little better than a splendid prison, he took up his

habitation in a camp, where he indulged himself in nothing more delicate or costly than what could be procured by the meanest soldier in his army. Without a utensil for preparing his food, he contented himself with cutting up the meat which was to form his meals, and broiling it upon the coals; and this meat often consisted of horse flesh. If he kept so poor a table, he was not more delicately lodged. He had no tent, but slept in the open field, with a saddle for his pillow, a horse-cloth for his covering, and lying on the bare ground, or at most on a piece of the coarsest felt. How much influence such a mode of life must have had on the minds of the barbarous soldiers whom he commanded, is sufficiently proved by the experience of times far posterior to that of which we are now writing. The Swedish hero who, in the beginning of the 18th century, astonished the whole of Europe with his mad exploits, fared in a similar manner, and, like Sviatoslaf, became the darling of his troops. Soldiers willingly share dangers and death with a leader who submits himself to every hardship, and denies himself every accommodation, except what he can enjoy in common with themselves.

When Sviatoslaf had thus ingratiated himself with his troops, he prepared to employ them in those ambitious projects which he had long been forming. His first expedition was against the Kozares, a people who had come from the shores of the Caspian, and the sides of Mount Caucasus, and had established themselves along the eastern coast of the Black sea. These people had rendered tributary both the Kievians and the Viatches, a Slavonian nation that dwelt on the banks of the Oka and the Volga. Sviatoslaf, desirous of transferring to himself the tribute which the Kozares derived from the latter people, marched against them, and appears to have succeeded in his design. He defeated them in a pitched battle, and took by storm their capital city Sarkel, or Belgorod. It is said by some historians, that he even annihilated the nation; and certain it is, that from that time no mention is made of the Kozares.

The martial fame of Sviatoslaf had extended to Constantinople; and the emperor Nicephorus Phocas, who was then harassed by the Ungrians, assisted by his treacherous allies, the Bulgarians, applied for succours to the Russian chieftain. A subsidiary treaty was entered into between them, and Sviatoslaf hastened with a numerous army to the assistance of his new ally. He quickly made himself master of most of the Bulgarian towns along the Danube, and was so elated with his success, that he determined to remove the seat of government from Kief to the city of Pereiaslavatz, now Yamboly, seated on the shores of that river. He was soon obliged, however, to postpone the completion of this design, on receiving intelligence that his old enemies the Petchenegans had assembled in great numbers, ravaged the Kievian territory, and laid siege to the capital, within the walls of which were shut up his mother and his sons. Sviatoslaf hastened to the relief of his family, but before he reached home, the Petchenegans had been induced to raise the siege by an artifice of the Kievian general. Sviatoslaf on his arrival pursued the enemy, defeated them, and obliged them to sue for peace.

He now resumed his design of establishing himself on the banks of the Danube, and divided his hereditary dominions among his children. He gave Kief to Yaropolk,

Russia.

43 An. 965.

44 His alliance with the Greek emperor.

45

Russia.

ropolk, the Drevlian territory to Oleg, and on Vladimir, a natural son, born to him by one of the attendants of Olga, he bestowed the government of Novgorod. On his return to Bulgaria, however, he found that his affairs had assumed a very different aspect. The Bulgarians taking advantage of his absence with his troops, had recovered most of their towns, and seemed well prepared to resist the encroachments of a foreign power. They fell on Sviatoslaf as he approached the walls of Pereiaslavatz, and began the attack with so much fury, that at first the Russians were defeated with great slaughter. They, however, soon rallied, and taking courage from despair, renewed the battle with so much success, that they in their turn became masters of the field. Sviatoslaf took possession of the town, and soon recovered all that he had lost.

During these transactions the emperor Nicephorus had been assassinated, and John Zemisches, his murderer, had succeeded to the imperial diadem. The new emperor sent ambassadors to the Russian monarch, requiring him to comply with the stipulations of his treaty with Nicephorus, and evacuate Bulgaria, which he had agreed to occupy as an ally, but not as a master. Sviatoslaf refused to give up his newly acquired possessions, and prepared to decide the contest by force of arms. The particulars of this campaign, and the numbers of the contending armies, are very differently related by the Russian annalists, and the historians of the Grecian empire; the former stating that Sviatoslaf had not more than 10,000 men, and yet was victorious over the troops of Zemisches; while the Grecian historians affirm that the Russians amounted to 300,000, but were defeated, and compelled to abandon Bulgaria by the superior skill and discipline of the imperial troops. As far as respects the issue of the war, the Grecian writers are probably correct, for it is certain that Sviatoslaf retreated towards Russia with the shattered remains of his army. He did not, however, live to reach the capital, for having, contrary to the advice of his most experienced officers, attempted to return to Kief, up the dangerous navigation of the Dnieper, he was intercepted by the Petchenegans near the rocks that form the cataracts of that river. After remaining on the defensive during winter, exposed to all the horrors of famine and disease, he on the return of spring attempted to force his way through the ranks of the enemy; but his troops were defeated, and himself killed in the battle.

It is said that Sviatoslaf extended the boundaries of the Russian dominions by his conquests in Bulgaria; but if his expeditions in that quarter terminated in the manner which we have related, this extension must have been merely temporary, and seems to have had little effect in increasing the power and resources of his successors.

46
An. 973.
Succession
of Yaropolk.

Yaropolk the sovereign of Kief may be considered as the successor of Sviatoslaf on the Russian throne; but his reign was short and turbulent. A war took place between him and his brother Oleg, on account of a base assassination committed by the latter on the son of his father's friend and privy counsellor Svenaid. Oleg was defeated and slain, and the other brother, Vladimir, dreading the increased power and ambitious disposition of Yaropolk, abandoned his dominions, which were quickly seized on by the Kievian prince. Vladimir had retired among the Varagians, from whom he

I

soon procured such succours as enabled him to make effectual head against the usurper. While his natural courage was thus increased, his enmity against Yaropolk received an additional spur from an affront put on him by a lady whom he had sought in marriage, but who despising the meanness of his birth, as being the son of a slave, had rejected his proposals, and offered her hand to Yaropolk. The vindictive Vladimir, on being informed of this insult, attacked the possessions of the lady's father, put both him and his two sons to the sword, and obliged the prince to accept his hand, yet reeking with the blood of her father. He now advanced towards Kief, where Yaropolk was by no means prepared to oppose him. The Kievian prince had indeed been lulled into security by the treacherous reports of one of his voyevodes, who was in the interest of Vladimir, and who not only prevented Yaropolk from taking effectual measures for his safety, but found means to raise suspicions in his breast against the inhabitants of his capital, which he thus induced him to abandon. The Kievians, left without a leader, opened their gates to Vladimir; and the wretched Yaropolk, still misled by the treachery of his adviser, determined to throw himself on the mercy of his brother. It is probable that this would have availed him little, as Vladimir seems to have determined on his death; but before he could reach the arms of his revengeful brother, Yaropolk was assassinated by some of his Varagian followers.

By this murder, which had probably been planned by Vladimir, the conqueror acquired the undivided possession of all his father's territories, and maintained the sovereignty during a long reign, respected at home, and feared abroad. Indeed, had not the commencement of his reign been stained with the blood of his father-in-law and his brother, we might place him among the most distinguished monarchs of the age in which he lived, as he not only extended and enriched his empire, but was the means of establishing in his dominions on a firm and lasting basis, the Christian religion, which though introduced by Olga, appears hitherto to have made but a very trifling progress.

The commencement of Vladimir's reign formed but a continuation of those enormities which had conducted him to the throne. He began with removing Blude, the treacherous voyevode, by whom his brother had been betrayed into his power, and to whom he had promised the highest honours and dignities. Accordingly for three days he suffered Blude to live in all the splendour of a prince. At the end of that period he thus addressed him. "I have fulfilled my promise; I have treated thee as my friend; the honours thou hast received exceed thy most sanguine wishes. To day, as the judge of crimes, and the executor of justice, I condemn the traitor, and punish the assassin of his prince." Having uttered these words, he caused Blude to be put to death.

He displayed still more the perfidiousness of his character in his behaviour towards the Varagians, who had assisted in reinstating him on the throne of his ancestors; for on their requesting permission to go and seek their fortune in Greece, he granted their request, but privately advertised the emperor of their approach, and caused them to be arrested and secured.

Vladimir engaged in numerous wars, and subjected several of the neighbouring states to his dominion. He seized

Russia.

47
An. 981.48
Reign of
Vladimir
the Great.

Russia. seized on part of the Polish territories, and compelled the Bulgarians who dwell in the districts that now form the government of Kazan, to do him homage. He subdued the Petchenegans and Khazares, who lay in the immediate neighbourhood of the Kievan state; he reduced to his authority Halitsch and Vladimir, countries which are now called Galicia and Lubomiria; he conquered Lithuania as far as to Memel, and took possession of a great part of the modern Livonia.

⁴⁹ Originally a devout Pagan. His conduct after these successes by no means prognosticated his future zeal for the Christian religion. None of the Russian monarchs appear to have been more devout in the adoration of their heathen deities than Vladimir. It was usual for him to return thanks to the gods for the success which they had granted to his arms; and to shew his gratitude by offering on their altars a part of the prisoners he had taken in war. On one occasion his piety extended so far, that he resolved on selecting one of his own subjects as the object of his sacrifice, thinking that he should thus more worthily testify his gratitude for the signal favours he had received from heaven. His choice fell on a young Varagian, the son of a Christian, and who had been brought up in the new faith. The unhappy father refused the demanded victim; the people enraged at deeming their prince and their religion insulted by the refusal, assailed the house of the Christian, and having burst open the doors, butchered both the father and the son, folded in mutual embraces.

⁵⁰ Establishes Christianity in Russia. Yet this furious Pagan, and bloody warrior, afterwards became a most zealous Christian, and a shining example to his subjects of charity and benevolence. The circumstances that led to these important changes are, as well as the martial achievements of this favourite prince, related with great minuteness by the Russian annalists, and give this part of their chronicles the air rather of a historical romance, than a narrative of facts. We are told that the fame of Vladimir's military exploits had rendered him so formidable to the neighbouring nations, that each courted his alliance, and strove to render this more lasting by engaging him in the ties of the same religion with themselves. In particular the Grecian emperors sent to him a philosopher, whose exhortations, though they did not at first induce Vladimir to embrace the Greek ritual, at least succeeded in giving him a favourable opinion of it; so that the philosopher was entertained with respect, and returned home loaded with presents. We are also told, that, determined to act in the most impartial manner with respect to the several religions which he had been invited to embrace, he dispatched persons remarkable for their wisdom and sagacity, to visit the surrounding nations, observe the religious tenets and ceremonies that distinguished them, and report to him the result of their observations. On the return of these deputies, the report of those who had visited the churches of Constantinople, and witnessed the imposing splendour of religious adoration, and the gorgeous decorations of the Greek priests, in the superb basilicum of St Sophia, proved so satisfactory to Vladimir, that he determined on embracing the Christian religion according to the observances of the Greek church. Though he resolved on baptism, he was too proud to seek from the Greek emperor a priest, by whom the solemn ordinance might be performed. With a savage ferocity worthy

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Russia. of the times in which he lived, he determined to gain by conquest what his haughty soul disdained to acquire by request. He assembled an army selected from all the nations of which his empire was composed, and marching to Taurida, laid siege to Theodosia, a town even then of great repute, and which commanded the whole Chersonesus. On sitting down before the walls of this place, he is said to have offered up the following characteristic prayer: "O God grant me thy help to take this town, that I may carry from it Christians and priests, to instruct me and my people, and convey the true religion into my dominions." His prayer was at length granted; and, rather by stratagem than force, he made himself master of the town, and through it, of the whole Crimea. He might now have received baptism; but his desire of being initiated into the Christian faith seems to have been excited more by ambition, than by true devotion. His ruling passion promised to be amply gratified by an alliance with the Grecian emperors, as he would thus acquire some legal claim on the territories which they possessed. He therefore demanded in marriage, Anna, the sister of Basilus and Constantine, who jointly held the imperial dignity, threatening, that if they refused his proffered alliance, he would lay siege to Constantinople. After some deliberation, the emperors complied, on condition, that Vladimir and his people should become Christians; and these conditions being accepted, the Russian monarch was baptized, took the name of Basilus, received the Grecian princess, and, as the reward of his victories, carried off several popes and archimandrites, together with sacred vessels and church books, images of saints, and consecrated relicks.

⁵¹ His latter character. Whatever might have been the considerations that swayed with Vladimir in his conversion to the Christian faith, it is certain that his new religion had the happiest influence on his future life and conduct. He not only abjured idolatry himself, and destroyed the idols which he had caused to be raised in his dominions, but used every exertion to persuade and compel his subjects to follow his example. Before his conversion, he is said to have possessed five wives, and 800 concubines, but after he became a Christian, he maintained an unshaken fidelity towards the imperial princess. As a Pagan he had been lavish of human blood, and set but a trifling value on the life of a man; but after he had adopted the religion of Jesus, he could scarcely be persuaded to sentence to death a single highway robber. His former delight had been in storming towns and gaining battles; but he now found his greatest pleasure in building churches, and endowing seminaries of education. He encouraged the raising of new cities and towns; peopled the waste districts of his country with the prisoners whom he had taken in war; and not only conducted himself as a sovereign who consulted the welfare of his dominions, but displayed many amiable qualities that highly endeared him to his subjects. On great festivals, he was accustomed to give entertainments to the inhabitants of the capital, and to send refreshments to those who were prevented, by sickness or infirmity, from attending the public feast. By these marks of regard to the general and individual interests of his people, he contributed to win them from the old religion, and to give them a taste for the new doctrines which he professed. By showing that Christianity had made him both

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Russia.

a milder and a wiser prince, he inspired from his people a respect for the new religion, while the striking example of the sovereign and his nobles could not fail to influence the minds of the inferior orders. Having one day issued a proclamation, ordering all the inhabitants of Kief to repair next morning to the banks of the river to be baptized, the people cheerfully obeyed the order, observing that if it were not good to be baptized, the prince and the boyars would never submit to the ceremony.

An. 1015.
52
Death and character of Vladimir.

The establishment of Christianity in the Russian dominions, forms one of the most prominent features in the reign of Vladimir, and gives him a much juster claim to the title of *Great*, which has been bestowed on him by historians, than all his numerous victories. We have therefore dwelt on it with the greater minuteness. Indeed the latter transactions of his reign afford but little interest. His last days were embittered by domestic vexations; his wife and one of his favourite sons died long before him, and another of his sons, Yaroslav, on whom he had bestowed the government of Novgorod, refused to acknowledge him as his liege, and applied to the Varangians for assistance against his father. The aged Vladimir, compelled to march against a rebellious son, died with grief upon the road, after a long and glorious reign of 35 years.

The character of this monarch may be easily collected from the account we have given of the transactions that marked his reign. He had certainly great, if not amiable qualities; and if he failed in communicating to his subjects the zeal for civilization and improvement which he himself possessed, it was the fault rather of the times, than of the instructor. His country remained barbarous, because barbarism was the characteristic of the age, and the monarch himself rose but little above the character of a barbarian, because the times in which he lived did not admit of superior refinement. It has been well observed by an ingenious writer on the history of Russia, that it is scarcely possible for a man to rise far above his cotemporaries, and that had Vladimir lived in the 17th century, the civilization and refinement of Russia might have been imputed to him, as it is now imputed to Peter the Great.

53
His improvement of the Russian monarchy.

Notwithstanding the circumstances we have noticed, the improvement which Russia owed to this prince was great and permanent. With the Christian religion he imported from Greece the arts which then flourished in that empire, and almost entirely new-modelled the language of his country, by engrafting on it the more refined dialect of the Greeks, and adopting, in a great measure, the letters of their alphabet. See PHILOLOGY.

The dominions of Russia, which at first consisted of two principalities, that of Novgorod, bordering on the Baltic, and that of Kief, occupying no very large space on the eastern bank of the Dniepr, were, by the victories of Vladimir, extended westward along the shores of the Baltic, into Lithuania and Poland; southward along the shores of the Euxine, so as to include the Crimea and great part of the Bulgarian territories; while to the east it extended to the Oka, the Don and the Volga. He still maintained the seat of government at Kief, of which he was styled grand prince, while the other districts were either tributary to that principality, or held of it as their superior.

Before his death, Vladimir had divided his extensive territories among his twelve sons, reserving to himself and his immediate heir, the grand principality of Kief. The consequences of this ill-judged distribution were disunion, contention, and almost perpetual warfare among the brothers. The most respectable, and in the end the most powerful of these, was Yaroslav, or as he is commonly called Jarislaus, prince of Novgorod. This prince finding that Sviatopolk, who had raised himself to the sovereignty of Kief after his father's death, attempted by assassination, or force of arms, to take possession of the neighbouring principalities, determined to resist him in his encroachments. Collecting an army of Novgorodians, he in 1016, drove Sviatopolk from Kief, and forced him to seek an asylum, with his father-in-law, Boleslaus, duke of Poland. Boleslaus was easily persuaded to engage in the cause of his son-in-law, as he hoped to reap advantage from the quarrels among the descendants of Vladimir, and not only regain that part of his dominions which had been conquered by that prince, but enlarge his territory by encroachments on the Russian borders. He therefore accompanied Sviatopolk into Russia with an army, retook Kief, and obliged the Novgorodian prince to retire with precipitation. While he was endeavouring to collect fresh forces to renew the war with Boleslaus and Sviatopolk, the latter, by the treachery and perfidy with which he treated his Polish allies, contributed to his own downfall. He caused great numbers of the Poles to be secretly massacred, a transaction by which Boleslaus was so incensed, that he plundered Kief, made himself master of several places on the Russian frontiers, and then left his perfidious son-in-law to shift for himself. Sviatopolk now sought assistance from the Petchenegans, and with an army of these auxiliaries, offered battle to Yaroslav, not far from the place, where he had, four years before, caused one of his brothers to be murdered. The contest was long and bloody, but terminated in favour of Yaroslav. Sviatopolk was put to flight, and died soon after.

By this victory Yaroslav acquired possession of the greater part of his father's dominions, and testified his gratitude for the assistance given him by the Novgorodians, by the attention which he paid to the particular improvement of that state. He drew up for it a code of laws, which are still known by the appellation of the municipal law of Novgorod. He also exerted himself for the welfare of other towns, and of the country at large.

Yaroslav did not neglect the advancement of the Christian religion. He established a metropolitan in Kief, and thus gave to the Russian clergy a head, who might watch over the morals of the inferior pastors, and provide for the general dissemination of the Christian doctrine. He collected several books in the Greek religion, and caused many of them to be translated into the Russian language.

This monarch is supposed to have died in 1054, and to have reigned 35 years. He followed the example of his father, in dividing his territories among his sons, though he endeavoured to prevent the dissensions which he himself had witnessed from such a partition, by exhorting them on his deathbed, to the most intimate concord, and endeavouring to convince them that they would be respected by their subjects, and feared by their enemies,

Russia.
54
Partition of his dominions among his sons.

55
Reign of Yaroslav.

An. 1051.

An. 1054.

Russia. enemies, only while they continued to act with unanimity.

56
Diffusions
among the
successors
of Yaroslav.

We know little of the proceedings of Yaroslav's successors, except that Isiafak, his eldest son, and grand prince of Kief, had frequent disputes with his brothers, in which he was assisted by the Poles, and supported by the influence of the Roman pontiff. During these disputes he was once expelled from his dominions, but again recovered them, and reigned till 1078.

From the death of Isiafak to the beginning of the 13th century, the history of Russia comprises little else than a continued series of intestine commotions and petty wars with the neighbouring states. The same system of dismemberment was continued by the succeeding princes, and was attended with the same result. There were during this period not fewer than 17 independent principalities, though these were at length reduced to seven, viz. those of Kief, Novgorod, Smolensk, Vladimir, Tver, Halitch, and Moskva (Moscow). Of these, Kief and Novgorod long continued to be the most powerful, though they could not always maintain their superiority over the other principalities; and towards the latter end of the period which we have mentioned, the district of Vladimir erected itself into a grand principality, and became at least as powerful as Kief and Novgorod.

57
Origin of
the modern
division of
Russia.

In the supremacy of these three great principalities, we may trace the division of European Russia into Great, Little, and White Russia, a distinction which long maintained its ground, and in later times gave to the sovereign of this empire the title of monarch or emperor of all the Russias. Great Russia comprehended the principality of Novgorod, and extended northward to the White sea, eastward to the river Dvina, and the entrance of the Petchora into the Uralian mountains; while to the south it bordered on the district of Vladimir, as far as the Volga and the mouth of the Medveditza, and to the west on Lithuania and Prussia, including the tributary tribes on the Baltic, as far as Memel. Its capital was Novgorod. Little Russia extended along the river Ager to the north above the Donetz and the Oka, on the east to the Polovtzes and the Petchenegans, while to the south it stretched as far as the Taurican Chersonesus, or the Crimea, and to the west along the banks of the river Goryn. This was the principality of Kief, and in that city was held the seat of government. The principality of Vladimir received the name of White Russia. It extended northward along the Volga, to the southern boundary of Great Russia; to the east it bordered on the possessions of the Ugres, and the territory of the Mordvines, stretching down the Volga to the mouth of the Oka; to the south it extended along the Oka to the principality of Riazan, and the Bulgarian territory. The metropolis of this division was at first Shuia, afterwards Rostof, Sufdal, and Vladimir, till at length the seat of government was transferred to Moscow.

58
State of
Novgorod.

The principality of Novgorod appears, during this interval, to have been the most respectable for its commercial intercourse with the neighbouring nations, and for the independent spirit of its internal government. This, though nominally monarchical, seems to have possessed much of a republican character. The princes were evidently dependent on the people, and some ludicrous instances of this dependence are related by the old histori-

ans. One of the grand princes had so much displeased his people, that they refused to pay him their usual obedience. As the prince seems to have been aware of the little influence which he possessed in the state, he employed the metropolitan of the principality to negotiate a reconciliation. This prelate accordingly wrote to the Novgorodians in the following terms. "The grand prince has acted wrong towards you, but he is sorry for it, desires you to forgive him, and will behave better for the future. I will be surety for him, and beseech you to receive him with honour and dignity. *"

Russia.

* Tooke's
Russia,
vol. 1.
p. 236.

During the intestine broils that attended the dismemberment of the Russian monarchy, the ambition of its neighbours, and partly the folly of the contending princes, who solicited their assistance against their rivals, contributed to diminish the strength and resources of the empire. In particular the Poles and the Hungarians availed themselves of these circumstances. Invited into Russia by the rival princes, and allured by the hope of plunder, they readily lent their aid to any of the parties. By ravaging the towns and villages, carrying off the captives into slavery, and making a prey of whatever appeared most useful, they quickly recompensed themselves for their assistance. The Poles seem to have been most successful in their depredations, and to have fully revenged themselves for their former humiliation.

Inroads of
the Poles,
&c.

60

It is not surprising that a state of anarchy and confusion, such as we have described, should hold out a temptation to any powerful nation to attempt at acquiring the dominion of a people who showed that they were incapable of governing themselves. Not far from the confines of Vladimir and Kief, viz. in the neighbourhood of the sea of Aral, the wandering hordes of Mongols, or Mongol Tartars, had taken up their residence. These people appear to have descended from the ancient Scythians, and to have long dwelt on the confines of the Chinese empire. Hence they gradually marched westward, and about 1223 arrived on the shores of the sea of Aral, under the conduct of Tufchi, son of the famous Tschinghis Khan, chief of the Mogul empire, many of whose warlike exploits have been recounted under the article MOGUL. From the Aral, Tufchi conducted his horde along the shores of the Caspian, and gradually approached the Dniepr. In his course he attacked and overcame the Tscherkesses, or Circassians, who on his approach had joined with the Polovtzes, to resist the terrible enemy. The defeated Polovtzes gave notice to their neighbours the Russians, of the approaching storm, and invited them to form a common cause against the enemy. In the mean time the Tartars had sent ambassadors to the Russians, hoping to prevent their alliance with the Polovtzes, and thus the more easily subdue the disunited nations. For this time, however, the Russians were true to their own interest, and proved firm to their alliance. In concert with the Polovtzes, they assembled an army, and prepared to resist the incursions of the Tartars. Both parties met near the small river Kalka, which flows into the sea of Asof, and a furious engagement took place. The Russians fought with great intrepidity, but the Polovtzes thrown into consternation at the furious onset of the Tartars, suddenly betook themselves to flight. As they formed the van-guard, their flight put the Russian army, which was drawn up behind them, into such complete disorder,

Russia.

disorder, that a total route ensued. The prince of Kief, who had kept himself aloof during the engagement, attempted to resist the victorious Tartars, but his army was attacked and defeated with great slaughter.

Had the princes who then shared among them the Russian territories firmly united against the common enemy, there is little doubt that they might have stemmed the torrent, which soon, from their state of rivalry and disunion, burst in and overwhelmed them. About 13 years after the defeat on the Kalka, another horde of Tartars, headed by Baaty Khan, the grandson of Tschinghis-khan, penetrated into Russia, after having attacked and defeated their neighbours the Bulgarians. The Tartars soon spread far and wide the terror of their name. Wherever they came, the whole face of nature was laid waste; towns and villages were destroyed by fire; all the men capable of bearing arms were put to the sword, and the children, women, and old men, carried into captivity. If the inhabitants of the towns to which they approached offered a compromise, the faithless barbarians affected to receive their submission; but immediately broke the agreement, and treated those who surrendered to their mercy with as much rigour as those who had endeavoured to defend themselves, and had been overcome. If the inhabitants of the open towns and villages came out to meet them, and to receive them as conquerors and friends; death, torture, or the most ignominious bondage, was the reward of their spontaneous submission.

The first state which they attacked was Riazan, the prince of which applied for assistance to Yury, commonly called by historians, George Sevoloditch, grand prince of Vladimir, who was then chief of the Russian princes. He sent them a few auxiliaries, but they either came too late, or their number was too small. The principality of Riazan fell, and its fall was succeeded by that of Pereiaslavl, Rostof, Sufdal, and several others. Like a furious torrent rushing down the mountain's side, and irresistibly carrying with it all that impedes its progress, these barbarous hordes rolled their rapid course, carrying in their train fire and sword, ravages and desolation, torments and death, and sweeping all before them in one common devastation. They now approached the principality of Vladimir, and no army appeared to resist them on the frontiers. They advanced unimpeded to the capital, which, left to its fate by the grand prince, had nothing to expect, but the same cruel treatment which the neighbouring cities had received. Yury, with unpardonable negligence, was celebrating a marriage feast, when he ought to have been employed in collecting the means of defence against the enemy, of whose approach to his borders he had received timely intimation. The city of Vladimir, which contained the prince and two of her sons, was left to the protection of a chieftain, totally unqualified for its defence, and the inhabitants seemed to share the pusillanimity of their governor. Instead of annoying the enemy by occasional excursions, and preparing the means of defending the walls against a sudden attack, they gave themselves up to terror and despair; and as they conceived death to be inevitable, they prepared for it, by taking the habits of monks and nuns, in order to insure to themselves a blissful departure. A prey to fear and despondency, the city soon fell into the hands of the Tartars. They one morning scaled the walls, and meeting with little

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opposition, quickly made themselves masters of the place; when they cast aside every feeling of humanity, and like beasts of prey, glutted their appetite for blood among the wretched inhabitants. The grand prince, and other ladies of distinction, dreading the brutality of the relentless conquerors, had taken refuge in the choir of a church, an asylum which all the assurances of the Tartars that they should suffer no injury, could not prevail on them to abandon. It was therefore set on fire by the barbarians, who feasted their ears with the shrieks and groans of the women, as the flames surrounded them.

Yury, incensed almost to desperation, at the fate of his capital, and the horrible death of his wife and children, was determined to take signal vengeance on the assailants. He assembled all the forces which he could draw together, and though his army was greatly inferior in numbers to the Tartars, he marched against the enemy, and attacked them with the most determined valour. The struggle was short, but bloody; the Tartars were victorious, and the body of Yury was found among the slain.

This appears to have been the only vigorous stand made by the Russian princes. The Tartars pushed forward with rapidity, and successively overpowered the principalities of Novgorod and Kief. In the latter city they found immense booty; but this circumstance did not prevent them from repeating here the same bloody scenes which they had acted in the other capitals. The governor was preserved from the cruelties that had been inflicted on the inhabitants, by the courage he had displayed in defence of the city; and his noble demeanour, when he fell into the hands of the conqueror, acquired the esteem and affection of that chief, and enabled him to obtain a temporary repose to his country.

The Tartars had now established themselves in the Russian territories, and their khan or chief, though he did not himself assume the nominal sovereignty, reigned as paramount lord, and placed on the throne any of the native princes whom he found most obsequious to his will, or who had ingratiated themselves by the magnificence of their presents. The throne was successively occupied by Yaroslav II. Alexander Yaroslavitch, Yaroslav Yaroslavitch, Vasilii Yaroslavitch, Dimitri Alexandrovitch, Andrei, Danul, both brothers of Dimitri, Mikaila Yaroslavitch, Yury Danilovitch, Alexander Mikailovitch, Ivan Danilovitch, Simeon Ivanovitch, and Ivan Ivanovitch.

Among the princes whom we have enumerated, we must particularly notice Alexander the son of Yaroslav II. This prince was installed grand prince of Russia by the Tartar khan in 1252, and continued to reign till 1264. He is remarkable chiefly for a decisive victory gained by him over the Danes on the banks of the Neva;—a victory which procured him the honourable surname of Neffsky (*the conqueror*). This victory is said to have taken place in 1239, while Alexander was governor of Novgorod, under his father Yaroslav, who then reigned at Vladimir. After his accession to the throne on the death of his father, he engaged in a successful war with Sweden. This prince is held in great veneration by the Russians, and several miracles are attributed to him. In particular it is said, that when the prayer of absolution was offered to his corpse previous to interment (a practice long customary in Russia), the

61
Succession
of Russian
princes under
the
Tartars.

62
St Alexan-
der Neffsky.

hand

Russia. hand of the dead body opened to receive it. His reputation for sanctity occasioned him to be ranked among the tutelary saints of the Greek church, where he still holds a distinguished place, by the title of St Alexander Neffsky.

63
Subjugation of Russia by the Poles.

During these several reigns, which all historians have passed over for want of records concerning them, the miseries of a foreign yoke were aggravated by all the calamities of intestine discord and war; whilst the knights of Livonia, or brothers of the short-sword, as they are sometimes called, a kind of military order of religious, on one side, and the Poles on the other, catching at the opportunity, attacked Russia, and took several of its towns, and even some considerable countries. The Tartars and Russians, whose interests were in this case the same, often united to oppose their common enemy; but were generally worsted. The Livonians took Pleskow, and the Poles made themselves masters of Black Russia, the Ukraine, Podolia, and the city of Kief. Casimir the Great, one of their kings, carried his conquests still farther. He asserted his pretensions to a part of Russia, in right of his relation to Boleslaus duke of Kalitz, who died without issue, and forcibly possessed himself of the duchies of Perzemyslia, Kalitz, and Luckow, and of the districts of Sanock, Lubakzow, and Trebowla; all which countries he made a province of Poland.

The newly-conquered Russians were ill disposed to endure the government of the Poles, whose laws and customs were more contrary to their own than those of the Tartars had been. They joined the latter to rid themselves of the yoke, and assembled an army numerous enough to overwhelm all Poland, but destitute of valour and discipline. Casimir, undaunted by this deluge of barbarians, presented himself at the head of a few troops on the borders of the Vistula, and obliged his enemies to retire.

An. 1362.
64
Reign and Successes of Dimitri Ivanovitch

About the year 1362 Dimitri Ivanovitch received the sovereignty from the Tartar chief, and established the seat of his government at Mosco. This prince possessed considerable ambition, and contrived to inspire the other Russian princes with so much respect for his person and government, that they consented to hold their principalities as fiefs under Dimitri. This increased the consequence of the Russian prince, excited the jealousy of Mammai the Tartar khan, who determined to take measures for maintaining his superiority. He began by demanding an increase of tribute, but when Dimitri seemed to demur at consenting to this new encroachment, the khan not only insisted on his demand, but required the grand prince to appear before him in person. This requisition Dimitri thought proper to refuse, and prepared to support his refusal by force of arms. The terror with which the Tartars had inspired the inhabitants of Russia had now considerably subsided, while the hatred which the Russians bore these haughty masters, was kept alive by the barbarity of their manners, and the difference of their religion. The Christian ministers, justly dreading that the Tartars, in their furious progress, might extirpate Christianity, contributed all in their power to confirm the spirit of revolt among the people; and they promised the crown of martyrdom to such as should fall in battle against the infidels. Thus, the contest into which the grand prince determined to enter in support of his authority, became in

some measure a holy war, undertaken in defence of the national religion. This combination of favourable circumstances operated so strongly in favour of Dimitri, and the princes that had confederated with him, that they soon collected an army of 200,000 men. With this force the grand prince left Mosco, and marched towards the Don, on the southern bank of which the Tartars were encamped. Arrived at this river, he left it to the choice of his troops, either to cross the river, and encounter the enemy on the other side, or to await the attack where they were. The general voice declared for passing over to the assault. The grand prince accordingly transported his battalions across the river, that he might cut off all hope of escaping by retreat. The fight now commenced, and though the numbers of the foe far exceeded their own, the Russians defended themselves valiantly against the furious onset of the Tartars; but as these barbarians were continually relieved by fresh reinforcements, they appeared to be gaining ground. Indeed, nothing but the impossibility of retreating across the river, and the firm persuasion that death would immediately transport them to the mansions of eternal bliss, restrained the Russians from a general flight. At the moment when the day seemed entirely lost, a detachment of the grand prince's army which he had stationed in reserve, and had remained out of the view of the enemy, came up with unabated force, fell on the rear of the Tartars, threw them into such terror and confusion, that they fled with Mammai at their head, and left the Russians masters of the field. This contest must have been extremely bloody, as we are told that eight days were employed by the remains of the Russian army, in burying the bodies of their slaughtered companions, while those of the Tartars were left uninterred upon the ground.

This glorious victory, which took place in 1380, was attended with numerous advantages to the Russian cause. In particular, it taught the native princes that the Tartars were not unconquerable; that nothing was wanting to relieve them from the galling yoke under which they had long groaned, but mutual union, courage, and prudence. The Tartars appear to have been so much humbled by this defeat, that for a time they left the Russians to enjoy in peace their recovered liberty. This forbearance, however, was not of long duration. Before the death of Dimitri they returned with increased numbers, laid siege to Mosco, which, after an obstinate defence, was at length induced to surrender, and Russia once more submitted to her old masters.

Dimitri died in 1389, and was succeeded by his son An. 1389.
65
Reign of Vasilii.
Vasilii Dimitrievitch. In the reign of this prince a new incursion of the Tartars took place, under the great Timur or Tamerlane, who after having subdued all the neighbouring Tartar hordes, extended his conquests to the Russian territories, carried Mosco by assault, and carried off immense plunder.

66
Comparative state of the Russian principalities at the end of the 14th century.

The grand principality of Vladimir, or as it may now be called, of Mosco, had, at the end of the 14th century, attained its greatest height, while that of Kief had proportionally declined. This latter principality was, at the time of which we are now writing, under the dominion of the Poles, having been seized on in 1320 by Gedemin, duke of Lithuania.

The latter end of the 15th century forms a splendid epoch in the Russian history. At this time, viz. from

Russia.
67
Accession
of Ivan Va-
siliivitch.

1462 to 1505, reigned Ivan Vasiliivitch, or, as he is commonly called, John Basilovitz. This able prince, by his invincible spirit and refined policy, became both the conqueror and deliverer of his country, and laid the first foundation of its future grandeur. Observing with indignation the narrow limits of his power at his accession to the throne, after the death of his father Vasiliis the Blind, he began immediately to resolve within himself the means of enlarging his dominions. Marriage, though he had in reality no regard or inclination for women, seemed to him one of the best expedients he could begin with; and accordingly he demanded and obtained Maria, sister of Michael duke of Twer, whom he soon after deposed, under pretence of revenging the injuries done to his father, and added this duchy to his own territories of Mosco. Maria, by whom he had a son named Ivan, who died before him, did not live long; and upon her death he married Sophia, daughter of Thomas Paleologus, who had been driven from Constantinople, and forced to seek shelter at Rome, where the Pope portioned this princess, in hopes of thus procuring great advantage to the Romish religion; but his expectations were frustrated, Sophia being obliged to conform to the Greek church after her arrival in Russia.

68
Incited by
his wife to
shake off
the Tartar
yoke.

What could induce Ivan to seek a consort at such a distance is nowhere accounted for, unless it be, that he hoped by this means to establish a pretension to the empire of the east, to which her father was the next heir; but however that may be, the Russians certainly owed to this alliance their deliverance from the Tartar yoke. Shocked at the servile homage exacted by these proud victors, her husband going to meet their ambassadors at some distance from the city, and standing to hear what they had to say, whilst they were at dinner; Sophia told him that she was surprised to find that she had married a servant to the Tartars. Nettled at this reproach, Ivan feigned himself ill when the next deputation from the Tartars arrived, and by means of this stratagem, avoided a repetition of the humiliating ceremonial. Another circumstance equally displeasing to this princess was, that the Tartars possessed by agreement within the walls of the palace at Mosco, houses in which their ministers resided, a stipulation which they had made, at once to shew their power, and watch the actions of the grand prince. To rid her husband and herself of these unpleasant neighbours, Sophia sent a formal embassy to the khan, to inform him, that as she had been favoured with a vision from above, commanding her to build a temple in the place where then stood the houses of the Tartar ministers, her mind could not be at ease till she had fulfilled the divine command; she therefore desired his leave to pull them down, and give his people others. The khan consented; the houses within the Kremlin (D) were demolished, and no new ones being provided, the Tartar residents were obliged to leave Mosco, an affront which their prince was not able to revenge, as he was then engaged in a war with the Poles.

69
His suc-
cesses a-
gainst the
Tartars.

Ivan taking advantage of this circumstance, and having gradually increased his forces, now openly disclaimed all subjection to the Tartars, attacked their territo-

ries, and made himself master of Kazan. Here he was solemnly crowned with a diadem which is said to be the same that is still used in the coronation of the Russian sovereigns. This took place about the year 1470, and led to a complete emancipation of Russia from the Tartar dominion. Ivan afterwards carried his arms against the neighbouring states. The province of Permia, with Asiatic Bulgaria, and great part of Lapland, soon submitted to him, and the great Novgorod, a city then so famous that the Russians were accustomed to intimate their idea of its importance by the proverbial expression, Who can resist God and the great Novgorod? was reduced by his generals after a seven years siege, and yielded immense treasure. This place was so wealthy, that Alexander Witold, prince of Lithuania, to whom the Novgorodians were then tributary, derived from it a yearly contribution of 100,000 rubles. The booty carried off by Ivan to Mosco, is said to have consisted of 300 cart loads of gold, silver, and precious stones, with a much greater quantity of furs, cloths, and other merchandise. After he quitted the city, which had been awed by his presence, the discontents excited at his violent measures broke out into acts of mutiny, on which he, in 1485, carried off 50 of the principal families, and distributed them through several of the Russian towns. He afterwards carried off some thousands of the most considerable inhabitants, and replaced them by more loyal subjects from other places. By these proceedings the flourishing commerce of this city received a considerable shock, and it suffered still more by the imprisonment of all the German merchants, and the confiscation of their effects. Indeed from this period Novgorod never recovered its former splendor.

After his reduction of Novgorod, Ivan invaded the territories of Livonia and Esthonia, in consequence, as of Livonia we are told, of an affront offered to him by the inhabitants of Reval. Here, however, he met with a stout resistance, and does not seem to have made much progress. Towards the conclusion of his reign, the Kazanian Tartars, who, though humbled, had continued to inhabit that district, made a hard struggle to shake off the Russian yoke that had been imposed on them; but Ivan had established his authority too firmly for them to accomplish their purpose during his life. He died in 1505, and was succeeded by his son Vasili Ivanovitch, commonly called Basilus III.

The Tartars of Kazan were still suffered to maintain a shew of independency, by electing their own khans; but a Russian noble, under the denomination of voivode, was associated with the khan in the government, and took care that the administration should be conducted in such a manner as to secure the interests of his master. About 14 years after the death of Ivan, however, the Tartars resolved to overturn so humiliating an administration. They murdered the Russian voivode, expelled their nominal khan, and united themselves with their brethren of the Crimea. With their assistance they assembled a mighty force, entered the Russian dominions, and carried their arms even to the gates of Mosco. The grand prince Vasili found himself at that time unable

(D) The Kremlin, or Kreml, is a particular quarter of Mosco, where stands the palace of the tzars, first built of stone by Dimitri Ivanovitch Donski in 1367. See Mosco.

Russia. unable to resist the barbarians, and therefore purchased an exemption from general pillage by great presents, and a promise of renewed allegiance. The Tartars retired, but carried off immense booty, and nearly 300,000 prisoners, the greater part of whom they sent to Theodosia in the Crimea, and sold them to the Turks. This humiliation of Vasilii did not, however, long continue, and he was soon enabled to make head against the Tartars, and to recover possession of the city Kazan, and of Pscove, a city which had been built by the princess Olga, and was the great rival of Novgorod in wealth and commercial importance. Under this prince all the principalities of Russia were once more united, and they have remained ever since under the dominion of one sovereign.

of winter into the district of Kazan, and laid siege to the capital, regardless of the murmurs of his troops, who loudly and openly expressed their dislike to this expedition, declaring that no good commander would think of conducting his forces to sieges and battles during the inclemencies of winter, or attempt at such a season to attack the enemy in their quarters. Exasperated at these murmurs, he determined to punish severely the principal officers who had contributed to foment the discontents of the soldiers, and by this well-timed severity he effectually repressed all opposition to his will.

Russia.

Before entering seriously on the siege of Kazan, he ⁷⁴ His siege of the Tartar capital built several forts on the frontiers of the Tartar territories, by which he hoped to awe these barbarians, and prevent them from disturbing the peace of his dominions. He then invested Kazan, and in the year 1552, made himself master of it by the new, and, to the Tartars, unheard-of method of springing a mine below the walls. We are told by some historians, that the city had made an obstinate defence, and that, during the siege, which lasted above seven years, another alarming mutiny broke out in the besieging army; that Ivan was in great danger of his life, and was obliged for a time to abandon the enterprise, and retire to Mosco, where he made an example of the chief mutineers, and again returned to the siege of Kazan. How far this statement is to be relied on, it is difficult now to determine; but perhaps this mutiny is confounded with that which we have already noticed, as having taken place at the commencement of the enterprise.

As Kazan was taken by storm, the inhabitants were treated with much rigour; and the slaughter was so dreadful, that even the stony heart of Ivan is said to have relented at the heaps of dead bodies which struck his sight on entering the city. The inhabitants that escaped slaughter, and the remains of the Tartars, were offered mercy on condition that they should embrace the Christian faith. By this important conquest the dominion of the Tartars, which had oppressed the Russians for more than three centuries, was completely and permanently overthrown.

About two years after he had abolished the power of the Tartars, he extended his conquests eastward to the shores of the Caspian, and took possession of the territory that lay on the right bank of the Volga, round the city of Astracan, which was also inhabited by the Tartar hordes.

Ivan, as well as his grandfather, had found it necessary to chastise the inhabitants of Novgorod; but in the year 1570, this city being suspected of forming a plot for delivering itself and the surrounding territory into the hands of the king of Poland, felt still more severely the effects of his vengeance. All who had been in any degree implicated in the conspiracy, to the number of 25,000, suffered by the hands of the executioner. The city of Pscove was threatened with a similar proscription; but Ivan, on their voluntary submission, contented himself with the execution of a few monks, and the confiscation of the property of the most opulent inhabitants. It is not surprising that acts like these should have given to this prince the names of *terrible* and *tyrant*, by which historians have occasionally distinguished him; though it is not a little extraordinary, that he ⁷⁶ His severe treatment of Novgorod. should

An. 1533.
72
Ivan Vasilivitch II.

It was under the son and successor of Vasilii, Ivan IV. or, as he is styled by the Russian historians, Ivan Vasilivitch II. that Russia completely emancipated herself from her subjection to the Tartars, and acquired a vast accession of territory, which extended her empire into the north-east of Asia, and rendered her, for the first time, superior in extent to any state that had appeared since the Roman empire. Vasilii died in 1533, having reigned 28 years, and lived 55. His son Ivan was only three years old when he succeeded to the throne, and the queen-mother was appointed regent during his minority. During her administration the state became a prey to anarchy and confusion. She seems to have had no talents for government, and devoted herself entirely to the pursuit of pleasure, so that the ambitious nobles, and in particular the uncles of the young prince, had the most favourable opportunity for aggrandizing themselves at the expence of the sovereign. The queen-mother died in 1538; and though the names and characters of those who assumed the regency after her death are not known, it appears that they must have conducted the administration with considerable prudence and circumspection, as, when Ivan attained his 17th year, he was enabled to assume the reins of government without opposition; and from the important transactions in which he immediately engaged, must have been possessed of considerable resources.

An. 1547.
73
His character.

In taking into his own hands the government of the state, Ivan displayed so much prudence and manly fortitude, as soon raised him very high in the estimation of his subjects. At the same time he shewed marks of a tyrannical disposition, and irritability of temper, which made him rather feared than admired by his friends, while they rendered him an object of terror to his neighbours and his enemies. He saw himself surrounded on all sides by contending factions, and to suppress these was the first object of his care. In the choice of means for effecting this, he does not seem to have been very scrupulous, provided they tended to the accomplishment of his aim; and in punishing the offences of those who opposed his purpose, his violence of temper not unfrequently led him to confound the innocent with the guilty. He was, however, successful in his great design, and having secured the domestic tranquillity of his dominions, he had leisure to direct his attention to the more remote, but not less predominant objects of his ambition. He resolved to attempt liberating his country for ever from the dominion of the Tartars, and he succeeded. In 1551, he marched an army in the depth

Russia. should have retained so much interest in the affections of his subjects, that when, to try their attachment, he, in 1575, abdicated the government, and retained only the title of Prince of Mosco, the majority of the nation loudly expressed their wish for him to resume the administration of affairs. We can account for this, only by considering the measures which he had adopted for the improvement and civilization of his people. These were of such a nature as in a great measure to obliterate the remembrance of his cruelty and oppression. He promulgated a new code of laws, composed partly of such ancient statutes as still were in force, and were capable of improvement, and partly of new regulations, which he either contrived himself, or adopted from the neighbouring states. He found it necessary, however, to render many of these laws extremely severe, though their execution was most frequently exemplified in the persons of his nobles, whose perverseness and obstinacy seemed unconquerable by more lenient measures.

77
Cultivates an intercourse with the neighbouring states.

Ivan cultivated an intercourse with several of the European states, especially with Germany, for which country he seems to have had a very particular esteem. Early in his reign, viz. in 1547, he sent a splendid embassy to the emperor Charles V. requesting him to permit a number of German artists, mechanics, and literary men, to establish themselves in Russia. Charles readily complied with his request, and several hundred volunteers were collected and assembled at Lubeck, whence they were to proceed through Livonia to Mosco. The Lubeckers, however, jealous that the improvement of the Russians in arts and manufactures might render them independent of their neighbours, and diminish the commercial intercourse that had long subsisted between their city and the principal towns of Russia, arrested the Germans in their route, and in concert with the merchants of Reval and Riga, sent a petition to Charles, requesting him to recal the permission he had granted. In consequence of these measures, many of the German artists returned home, but several of them escaped the vigilance of the Lubeckers, and reached Mosco by a circuitous route. Ivan endeavoured to revenge himself on the Livonians by invading their country. This was strenuously defended by the Teutonic knights; and these champions, finding at last that they were unable to maintain their ground, rather than submit to the Russian monarch, put their country under the protection of Poland.

78
War between the Russians and Swedes.

The Swedes also came in for a share of the Livonian territories; and this circumstance gave rise to a war between them and the Russians. Ivan invaded Finland; but that country was bravely defended by William of Furstenberg, grand master of the Livonian knights, with the assistance of the troops of Gustavus Vaza; and it does not appear that Ivan gained much in this expedition, though we are told that the Livonian grand master ended his life in a Russian prison.

An. 1553.

79
First intercourse between England and Russia.

In 1553, an event happened which first led to an intercourse between Russia and England. Some Englishmen who were at that time on a voyage of discovery, landed on the shores of the White sea, where soon after was built the port of Archangel. They were hospitably received by the natives; and intimation of the circumstance being conveyed to Ivan, he sent for the strangers, and was so much pleased with their abilities and

deportment, that he resolved to give every encouragement to the English commerce, and thus open a new channel of intercourse with a highly polished nation, by which his subjects might obtain fresh incitements to activity and industry. We are told, that his affection for the English proceeded so far, as to induce him to form the design of marrying an English lady. He expressed the highest esteem for Queen Elizabeth, and requested by his ambassador, that if the ingratitude of his subjects should ever compel him to quit Russia, (a circumstance by no means improbable), she would grant him an asylum in her dominions. It was in consequence of this accidental communication between the Russians and the English, that England first engaged in a trade to Russia, and promoted this new commerce by the establishment of a company of Russia merchants in London.

Russia.

About twenty years after Astracan had been annexed to the Russian empire, a new acquisition of territory accrued to it from the conquests of a private adventurer, in the unknown regions of Siberia. The steps that led to the acquisition of this immense tract of the Asiatic continent, are thus related by Mr Tooke.

80
Ivan annexes Siberia to the Russian empire.

“ The grand prince, Ivan III. had already sent out a body of men, who penetrated across the Ingrian mountains, and traversed all the districts as far as the river Oby. But, amidst the urgent affairs of government, the discoveries they made insensibly fell into oblivion. Some years afterwards a merchant, named Stroganof, who was proprietor of some salt-works on the confines of Siberia, was curious to gain a farther knowledge of that country, which was likewise inhabited by Tartars, whose khan resided in the capital Sibir. Perceiving, among the persons who came to him on affairs of trade, men who belonged to no nation with which he was acquainted, he put several inquiries to them concerning the place whence they came, and once sent a few of his people with them back to their country. These people brought with them, at their return from the regions they had now explored, and which proved to be this very Siberia, a great quantity of invaluable furs, and thus opened to their master a new road to wealth. However, not so covetous as to wish to keep this treasure to himself, he sent information of it to the court, and the attention of government was once more directed to this country. But the conquest of it, and its conjunction with Russia, was reserved for an adventurer named Timofey Yermak. This Yermak, at the head of a gang of Don Kozaks, had made it his practice to rob and plunder the caravans and passengers that occasionally frequented the roads, as well as the inhabitants, wherever he came, and was so fortunate as to escape the search of the Russian troops that had been sent out against him and his band, which consisted of not fewer than 6000 men. On their flight, he and his people accidentally came to the dwelling of Stroganof, where, hearing much talk about Siberia, and being persons who had nothing to lose, and therefore might put all to the hazard, they soon formed a plan to penetrate farther into that country, and there seek at once their safety and their fortune. After numerous struggles and conflicts with the natives, which greatly reduced their numbers, they at length conquered the capital, and shortly after the whole country. Yermak now presented the fruit

Russia. fruit of his toilsome and perilous victories to his tzar (E) Ivan, in hopes of obtaining thereby a pardon for his former depredations, which was granted him accordingly. By the building of several towns, and constructing a number of forts, the possession of this country was soon permanently secured. The less and the greater Kabardey were also added to Russia in the reign of Ivan. This tzar, however, not only enlarged the circumference of his empire, partly by force of arms and partly by accident, but he resolved to reform his people, to render them more polished, more skilful, and industrious; but this he found to be the most arduous enterprise he could possibly have undertaken. The insuperable impediments which threw themselves in the way of the execution of this grand work, were the principal incitements to those frequent acts of cruelty and despotism which have covered his memory with so deep a stain."

81
His victories over the Tartars.

Towards the close of Ivan's reign, a prodigious army of Turks and Tartars entered Russia, with a design to subdue the whole country. But Zerebrinoff, the tzar's general, having attacked them in a defile, put them to flight with considerable slaughter. They then retired towards the mouth of the Volga, where they expected a considerable reinforcement; but being closely pursued by the Russians and Tartars in alliance with them, they were again defeated and forced to fly towards Azof on the Black sea. But when they came there, they found the city almost entirely ruined by the blowing up of a powder magazine. The Russians then attacked their ships there, took some, and sunk the rest; by which means almost the whole army perished with hunger or by the sword of the enemy.

82
Destruction of Mosco by the Tartars.

From this time the empire of Russia became so formidable, that none of the neighbouring nations could hope to make a total conquest of it. The Poles and Swedes indeed continued to be very formidable enemies; and, by the instigation of the former, the Crim Tartars, in 1571, again invaded the country with an army of 70,000 men. The Russians, who might have prevented their passing the Volga, retired before them till they came within 18 miles of the city of Mosco, where they were totally defeated. The tzar no sooner heard this news, than he retired with his most valuable effects to a well-fortified cloyster; upon which the Tartars entered the city, plundered it, and set fire to several churches. A violent storm which happened at the same time soon spread the flames all over the city; which was entirely reduced to ashes in six hours, though its circumference was upwards of 40 miles. The fire likewise communicated itself to a powder magazine at some distance from the city; by which accident upwards of 50 rods of the city wall, with all the buildings upon it, were destroyed; and, according to the best historians, upwards of 120,000 citizens were burnt or buried in the ruins, besides women, children, and foreign-

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ers. The castle, however, which was strongly fortified, could not be taken; and the Tartars, hearing that a formidable army was coming against them under the command of Magnus duke of Holstein, whom Ivan had made king of Livonia, thought proper to retire. The war, nevertheless, continued with the Poles and Swedes; and the tzar being defeated by the latter after some trifling success, was reduced to the necessity of suing for peace; but the negotiations being broken off, the war was renewed with the greatest vigour. The Livonians, Poles, and Swedes, having united in a league against the Russians, gained great advantages over them; and in 1579, Stephen Battori, who was then raised to the throne of Poland, levied an army expressly with a design of invading Russia, and of regaining all that Poland had formerly claimed, which indeed was little less than the whole empire. As the Poles understood the art of war much better than the Russians, Ivan found his undisciplined multitudes unable to cope with the regular forces of his enemies; and their conquests were so rapid, that he was soon obliged to sue for peace, which, however, was not granted; and it is possible that the number of enemies which now attacked Russia might have overcome the empire entirely, had not the allies grown jealous of each other. The consequence of this was, that in 1582 a peace was concluded with the Poles, in which the Swedes were not comprehended. However, the Swedes finding themselves unable to effect any thing of moment after the desertion of their allies, were obliged to conclude a truce; shortly after which the tzar, having been worsted in an engagement with the Tartars, died in the year 1584.

The eldest son of the late tzar, Feodor (or as he is commonly called, Theodore) Ivanovitch, was by no means fitted for the government of an empire so extensive, and a people so rude and turbulent as had devolved to him by the death of his father. Ivan had seen the incapacity of his son, and had endeavoured to obviate its effects, by appointing three of his principal nobles as administrators of the empire; while to a fourth he committed the charge of his younger son Dimitri. This expedient, however, failed of success; and partly from the mutual jealousy of the administrators, partly from the envy which their exaltation had excited in the other nobles, the affairs of the empire soon fell into confusion. The weak Feodor had married a sister of Boris Gudonof, a man of considerable ambition, immense riches, and tolerable abilities. This man had contrived to make himself agreeable to Feodor, by becoming subservient to his capricious desires and childish amusements; and the wealth he had acquired through his interest with the sovereign, enabled him to carry on his ambitious designs. He had long directed his wishes towards the imperial dignity, and he began to prepare the way for its attainment by removing Dimitri the brother of Feodor. This young prince suddenly disappeared; and there is every

Russia.

An. 1584.
83
Reign of Feodor Ivanovitch

3 A

reason

(E) Previous to the reign of Vasilii, the predecessor of the monarch whose transactions we are now relating, the Russian sovereigns had held the title of Velikii Kniaz, which has been translated great duke, though it more properly denotes grand prince; and by this latter appellation we have accordingly distinguished the preceding monarchs. Vasilii, near the conclusion of his reign, adopted the title of tzar, or emperor; but this title was not fully established till the successes and increasing power of his son Ivan enabled the latter to confirm it both at home and abroad; and since his time it has been universally acknowledged.

Russia.

reason to believe that he was assassinated by the order of Boris. Feodor did not long survive his brother, but died in 1598, not without suspicion of his having been poisoned by his brother-in-law. We are told that the tsaritzza, Irene, was so much convinced of this, that she never after held any communication with her brother, but retired to a convent, and assumed the name of Alexandra.

84
Accession
of Boris,
and termi-
nation of
the dynasty
of Ruric.

With Feodor ended the last branch of the family of Ruric, a dynasty which had enjoyed the supreme power in Russia ever since the establishment of the principality by the Varagian chief, viz. during a period of above 700 years. On the death of Feodor, as there was no hereditary successor to the vacant throne, the nobles assembled to elect a new tzar; and the artful Boris having, through the interest of the patriarch, a man elevated by his means, and devoted to his views, procured a majority in his favour, he was declared the object of their choice. Boris pretended unwillingness to accept the crown, declaring that he had resolved to live and die in a monastery; but when the patriarch, at the head of the principal nobles, and attended by a great concourse of people, bearing before them the cross, and the effigies of several saints, repaired to the convent, where the artful usurper had taken up his residence, he was at length prevailed on to accompany them to the palace of the tzars, and suffer himself to be crowned.

Boris affords another example, in addition to the numerous instances recorded in history, of a sovereign who became beneficial to his subjects, though he had procured the sovereignty by unjustifiable means. If we give implicit credit to the historians of those times, Boris was a murderer and a usurper, though he had the voice of the people in his favour; but by whatever means he attained the imperial power, he seems to have employed it in advancing the interests of the nation, and in improving the circumstances of his people. He was extremely active in his endeavours to extend the commerce, and improve the arts and manufactures of the Russian empire; and for this purpose he invited many foreigners into his dominions. While he exerted himself in securing the tranquillity of the country, and defending its frontiers by forts and ramparts, against the incursions of his neighbours, he made himself respected abroad, received ambassadors from almost all the powers of Europe; and after several attempts to enlarge his territories at the expence of Sweden, he concluded with that kingdom an honourable and advantageous alliance.

An. 1601.
85
Dreadful
famine at
Mosco.

Soon after the commencement of his reign, the city of Mosco was desolated by one of the most dreadful famines recorded in history. Thousands of people lay dead in the streets and roads; and in many houses the fattest of their inmates was killed, to serve as food for the rest. Parents are said to have eaten their children, and children their parents; and we are told by one of the writers of that time (Petrius), that he saw a woman bite several pieces out of her child's arm as she was carrying it along. Another relates, that four women having desired a peasant to come to one of their houses, on pretence of paying him for some wood, killed and devoured both him and his horse. This dreadful calamity lasted three years; and notwithstanding all the exertions of Boris to provide for the necessities of the inhabitants

of Mosco, we are assured that not fewer than 500,000 perished by the famine. Russia.

During these distresses of the capital, the power of Boris was threatened with annihilation by an adventurer who suddenly started up, and pretended to be the young prince Dimitri, whom all believed to have been assassinated, or, as Boris had given out, to have died of a malignant fever. This adventurer was a monk named Otrepief, who learning that he greatly resembled the late Dimitri, conceived the project of passing for that prince, and endeavouring, in that character, to ascend the Russian throne. He retired from Russia into Poland, where he had the dexterity to ingratiate himself with some of the principal nobles, and persuaded them that he was really Prince Dimitri, the lawful heir to the crown of Russia. The better to insure to himself the support of the Poles, he learned their language, and professed a great regard for the Catholic religion. By this last artifice he both gained the attachment of the Catholic Poles, and acquired the friendship of the Roman pontiff, whose blessing and patronage in his great undertaking he farther secured, by promising that, as soon as he should have established himself on the throne, he would make every exertion to bring the Russians within the pale of the Catholic church. To the external graces of a fine person, the pretended Dimitri added the charms of irresistible eloquence; and by these accomplishments he won the affections of many of the most powerful among the Polish nobility. In particular the voivode of Sandomir was so much captivated by his address, that he not only espoused his cause, but promised to give him his daughter in marriage, as soon as he should be placed on the throne of his fathers. This respectable man exerted himself so warmly in behalf of his intended son-in-law, that he brought over even the king of Poland to his party. The Kozaks of the Don, who were oppressed by Boris, hoped to gain at least a temporary advantage by the disturbance excited in favour of the adventurer, and eagerly embraced the opportunity of declaring in his favour. The news of Prince Dimitri being still alive, soon penetrated into Russia; and though Boris did all in his power to destroy the illusion, by prohibiting all intercourse between his subjects and the Poles, and by appealing to the evidence of the murdered prince's mother in proof of his death, the cause of the pretender continued to gain ground. Many circumstances concurred to interest the Russian people in favour of Otrepief. He had prepared a manifesto, which he caused to be dispersed through the empire, and in which he affirmed himself to be the son of Ivan, and asserted his right to the throne then usurped by Boris. The courtiers of the usurper, who had long been jealous of his elevation, pretended to believe these assertions; while those who were persuaded that the young prince had been murdered by order of the present tzar, regarded this event as a judgement from heaven. The greater part of the nation appear to have been persuaded, that the pretender was the real Dimitri; and as they believed that he had been miraculously preserved, they piously resolved to concur with the hand of Providence in assisting him to recover his just rights. Thus, before he set foot in Russia, a numerous party was formed in his behalf. He soon made his appearance on the frontiers with a regiment of Polish troops, and a body of Kozaks. Boris sent an army

to

⁸⁷ **Russia.** to oppose him; but though the number of these troops greatly exceeded the small force of Dimitri, these latter were so animated by the eloquence of their leader, and the intrepidity and personal bravery which he displayed in the field of battle, that, after a bloody conflict, the army of Boris was defeated, and the pretended Dimitri remained master of the field.

His succes- This victory, over a superior army, served still further to strengthen the belief, that Dimitri was favoured by heaven, and consequently could not be an impostor. To confirm the good opinion which he had evidently acquired, the victor treated his prisoners with great kindness; caused the dead to be decently interred, and gave strict injunctions to his troops to behave with humanity in the towns through which he passed. This gentle behaviour, when contrasted with the horrible excesses committed by the soldiers of Boris, wherever the people appeared to shew any inclination towards the cause of the invader, gained Dimitri more adherents than even the persuasion that he was the lawful sovereign of the country. Unluckily for Boris, the superstition of the Russians was about this time directed against him, by the appearance of a comet, and by more than usual coruscations of the aurora borealis, phenomena which were immediately regarded as manifest demonstrations that the Almighty was pouring out his phials of wrath on the devoted country. It was almost universally believed, that the awful effects of these alarming appearances could be averted only by supporting the cause of Dimitri, who had hitherto been so signally protected, and brought to light by the hand of heaven. Boris, unable to resist the torrent of public opinion in favour of his rival, is said to have taken poison, and thus hastened that fate which he foresaw awaited him, if he should fall into the hands of his enemies.

An. 1603. The death of Boris took place in the year 1603; and though the principal nobility at Mosco placed his son Feodor on the throne, the party of Dimitri was now so strong, that Feodor was dethroned and sent to prison with his mother and sister, within six weeks after his accession.

⁸⁸ **He ascends the Russian throne.** The successful monk had now attained the summit of his ambitious hopes, and made his entry into Mosco with the utmost magnificence, attended by his Russian adherents, and his Polish friends. Not deeming himself secure, however, while the son of Boris remained alive, he is said to have caused him to be strangled, together with one of his sisters. The new tzar, though he evidently possessed great abilities, seems to have been deficient in point of prudence. Instead of conciliating the favour of his subjects, by attention to their interests, and by conferring on the chief men among them the titles and honours that were at his disposal, he openly displayed his predilection for the Poles, on whom he conferred high posts and dignities, and even connived at the extravagance and enormities which they committed. This impolitic conduct, together with his partiality for the Catholic religion; his marked indifference towards the public worship of the national church, and his want of reverence for the Greek clergy; his marrying a Polish lady; his affectation of Polish manners; his inordinate voluptuousness, and the contempt with which he treated the principal nobility; so irritated and exasperated the

Russians, that discontents and insurrections arose in every quarter of the empire; and the joy with which he had been at first received, was converted into indifference, contempt, and detestation. The Russians soon discovered, from a curious circumstance, that their new sovereign could not be sprung from the blood of their ancient tzars. These had been always lifted on their horses, and rode along with a slow and solemn pace, whereas Dimitri bestrode a furious stallion, which he mounted without the help of his attendants. In addition to these sources of discontent, it was rumoured that a timber fort, which Dimitri had caused to be constructed before Mosco, was intended to serve as an engine of destruction to the inhabitants, and that at a martial spectacle which the tzar was preparing for the entertainment of his bride, the Poles, and other foreigners that composed his body guard, were, from this building to cast firebrands into the city, and then slaughter the inhabitants. This rumour increased their hatred to fury, and they resolved to wreak their vengeance on the devoted tzar. The populace were still farther incensed by the clergy, who declaimed against Dimitri as a heretic, and by Schuiskoy, a nobleman who had been condemned to death by the tzar, but had afterwards been pardoned. This nobleman put himself at the head of the enraged mob, and led them to attack the tzarian palace. This they entered by assault, put to the sword all the Poles whom they found within its walls, and afterwards extended their massacre to such as were discovered in other parts of the city. Dimitri himself, in attempting to escape, was overtaken by his pursuers, and thrust through with a spear, and his dead body being brought back into the city, lay for three days before the palace, exposed to every insult and outrage that malice could invent, or rage inflict. His father-in-law and his wife escaped with their lives, but were detained as prisoners, and the tzaritzza was confined at Yaroslavl.

⁸⁹ **Unsettled state of Russia.** Schuiskoy, who had pretended to be actuated by no other motives than the purest patriotism, now aspired to the vacant throne, and had sufficient interest to carry his election. His reign was short and uninteresting, and indeed from this time till the accession of the house of Romanof in 1613, the affairs of Russia have little to gratify the curiosity of our readers. Schuiskoy's short reign was disturbed by the pretensions of two fictitious Dimitris, who successively started up, and declared themselves to be either the late tzar, or the prince whom he had personated; and his neighbours the Swedes and Poles, taking advantage of the internal dissensions in the empire, made many successful incursions into Russia, set fire to Mosco, and massacred above 100,000 of the people. The Russians, dissatisfied with the reigning prince, treated with several of the neighbouring potentates for the disposal of the imperial crown. They offered it to Vladislaf, or Uladislav, son of Sigismund, king of Poland, on condition that he should adopt the Greek persuasion; but as he rejected this preliminary, they turned their eyes, first on a son of Charles IX. of Sweden, and lastly, on a young native Russian, Mikhail Feodorovitch, of the house of Romanof, a family distantly related to their ancient tzars, and of which the head was then metropolitan of Rostof, and was held in great estimation. Thus, after a long series of confusion and disaster, there ascended the Russian throne a

Russia. new family, whose descendants have raised the empire to a state of grandeur and importance unequalled in any former period.

We have seen the calamities brought upon the empire by the partitions of its early monarchs, and the wars to which these partitions gave birth; by the invasions and tyranny of the Tartars; and lastly, by the disturbances that prevailed from the machinations of the false Dimitris. We have observed the depression which the empire suffered under these calamities. We are now to witness its sudden elevation among the powers of Europe, and to accompany it in its hasty strides towards that importance which it has lately assumed. But before we enter on the transactions that have enriched the pages of the Russian annals since the accession of the house of Romanof, it may not be improper or uninteresting, to take a general view of the state of the empire at the beginning of the 17th century.

90
State of the
Russian
empire at
the begin-
ning of the
17th cen-
tury.

At this period the government of Russia may be considered as a pure aristocracy, as all the supreme power rested in the hands of the nobles and the superior clergy. In particular the boyars, or chief officers of the army, who were also the privy counsellors of the prince, possessed a very considerable share of authority. The election of the late princes Boris, Dimitri, and Schuisikoy, had been conducted principally by them, in concert with the inhabitants of Mosco, where was then held the seat of government. The common people, especially those of the inferior towns, though nominally free, had no share in the government, or in the election of the chief ruler. The boors, or those peasants who dwelt on the noblemen's estates, were almost completely slaves, and transferable with the land on which they dwelt. An attempt to do away this barbarous vassalage had been made, both by Boris and Schuisikoy, but from the opposition of the nobles it was abandoned.

The laws in force at the time of which we are now speaking, consisted partly of the municipal laws drawn up for the state of Novgorod by Yaroslav, and partly of an amended code, called *sudebnik*, promulgated by Ivan Vasilievitch II. By this *sudebnik* the administration of the laws was made uniform throughout the empire, and particular magistrates were appointed in the several towns and districts, all subject to the tzar as their chief. The *sudebnik* consisted of 97 articles, all containing civil laws, as the penal statutes are only briefly mentioned in some articles, so as to appear either connected with the civil, or as serving to illustrate them. The criminal laws were contained in a separate code, called *gubnaia gramota*, which is now lost, but is referred to in the civil code. In neither of these codes is there any mention of ecclesiastical affairs; but these were regulated by a set of canons drawn up in 1542, under the inspection of Ivan Vasilievitch, in a grand council held at Mosco. In the civil statutes of the *sudebnik*, theft was punished in the first instance by restitution, or, if the thief were unable to restore the property stolen, he became the slave of the injured party, till by his labour he had made sufficient compensation. Of murder nothing is said, except where the person slain was a lord or master, when the murderer was to be punished with death. There is no mention of torture, except in cases of theft.

Before the accession of the house of Romanof, the

Russia. commercial intercourse which the cities of Novgorod and Pskove formerly held with the Hans towns, had entirely ceased; but this was in some degree compensated by the newly established trade between Russia and England, the centre of which was Archangel. This trade had been lately increased by the products derived from the acquisition of Siberia, in exchange for which the English principally supplied the Russians with broad cloth. In 1568, an English counting-house was established at Mosco, and about the same time the Russian company was incorporated. Previous to the 15th century, the trade of the Russians had been carried on merely by barter, but during that century the coinage of money commenced at Novgorod and Pskove; and from this time their commerce was placed on an equal footing with that of the other European nations.

Except in the article of commerce, the Russians were deplorably behind the rest of Europe; and though attempts had been made by Ivan I. Ivan Vasilievitch II. and Boris, to cultivate their manners and improve the state of their arts and manufactures, these attempts had failed of success. The following characteristic features of the state of Russia in the 16th century, are given by Mr Tooke.

The houses were in general of timber, and badly constructed, except that in Mosco and other great towns, there were a few houses built of brick.

That contempt for the female sex, which is invariably a characteristic of defective civilization, was conspicuous among the Russians. The women were kept in a state of perfect bondage, and it was thought a great instance of liberality, if a stranger were but permitted to see them. They durst seldom go to church, though attendance on divine worship was considered of the highest importance. They were constantly required to be within doors, so that they very seldom enjoyed the fresh air.

The men of the middle ranks always repaired about noon to the market, where they transacted business together, conversed about public affairs, and attended the courts of judicature to hear the causes that were going forward. This was undoubtedly a practice productive of much good, as the inhabitants of the towns by these means improved their acquaintance, interchanged the knowledge they had acquired, and thus their patriotic affections were nourished and invigorated.

In agreements and bargains the highest asseveration was, "If I keep not my word, may it turn to my infamy," a custom extremely honourable to the Russians of those days, as they held the disgrace of having forfeited their word to be the deepest degradation.

If the wife was so dependent on her husband, the child was still more dependent on his father; for parents were allowed to sell their children.

Masters and servants entered into a mutual contract respecting the terms of their connection, and a written copy of this contract was deposited in the proper court, where, if either party broke the contract, the other might lodge his complaint.

Single combat still continued to be the last resource in deciding a cause; and to this the judge resorted in cases which he knew not otherwise to determine: but duels out of court were strictly prohibited; and when these took place, and either party fell, the survivor was regarded

Russia. regarded as a murderer, and punished accordingly. Personal vengeance was forbidden under the strictest penalties.

The nobles were universally soldiers, and were obliged to appear when summoned, to assist the prince in his wars.

Till the end of the 16th century, the boor was not bound to any particular master. He tilled the ground of a nobleman for a certain time on stated conditions. Thus, he either received part of the harvest or of the cattle, a portion of wood, hay, &c. ; or he worked five days for the master, and on the sixth was at liberty to till a piece of ground set apart for his use. At the expiration of the term agreed on, either party might give up the contract to the other ; the boor might remove to another master, and the master dismiss the boor that did not suit him.

91
Circumstances that led to the election of Mikhail Romanof.

During the troubles and dissensions in which the empire had been involved, since the death of Feodor Ivanovitch, the chief men of the state were divided into several parties. Of these, one sought to elevate to the throne a Polish prince, while another rather favoured the succession of a Swede. A third, and by far the strongest party, were desirous to place upon the throne a native Russian ; and they soon turned their eyes on Mikhail Romanof, a distant relation of the ancient family of the tzars, whose father was metropolitan of Rostof. The clergy seemed particularly interested in this choice, as they justly concluded, that a Russian, born and brought up in the orthodox Greek faith, would most effectually prevent the poison of Catholic opinions or Protestant heresy, the introduction of which was to be feared from the accession of a Polish or a Swedish monarch. Accordingly, the voice of a single ecclesiastic decided the electors in favour of Mikhail. A metropolitan declared in the hall of election, that it had been announced to him by divine revelation, that the young Romanof would prove the most fortunate and prosperous of all the tzars who had filled the Russian throne. This revelation had an immediate effect on the electors, as their reverence for the superior clergy was so great, that none could presume to doubt the veracity of a person of such exalted rank and sacred function. The revelation once made public, the people too expressed so decidedly their desire to have the young Romanof for their sovereign, that all soon united in their choice. The young man himself, however, refused the proffered honour, and his mother, dreading the fate that might arise from so dangerous an elevation, with tears implored the deputies to depart. The modest refusal of Mikhail served only to persuade the people, that he was the most worthy object on which they could fix their choice ; and at length the deputies returned to Mosco, bringing with them the consent of the monarch elect. The coronation took place on the 11th of June 1613, and thus the views of Poland and of Sweden, as well as the designs of Marina, the widow of the first pretender Dimitri, who still contrived to keep a party in her favour, were entirely frustrated.

An. 1613.
92
He makes peace with the Swedes and Poles.

At the accession of Mikhail, the Swedes and Poles were in possession of several parts of the empire ; and to dislodge these invaders was the first object of the new czar. Aware of the difficulty of contending at once with both these formidable enemies, he began by negotiating a treaty of peace with Sweden. This was not

effected without considerable sacrifices. Mikhail agreed to give up Ingria and Karilia, and to evacuate Esthonia and Livonia. Thus freed from his most dangerous enemy, Mikhail prepared to oppose the Poles, of whom a numerous body had entered Russia, to support the claims of their king's son, Vladislaf. Mikhail proceeded, however, in a very wary manner, and instead of opposing the invaders in the open field, he entrapped them by ambuscades, or allured them into districts already desolated, where they suffered so much from cold and hunger, that in 1619 they agreed to a cessation of hostilities for fourteen years and a half, on condition that the Russians should cede to Poland the government of Smolensk.

Thus freed from external enemies on terms which, ⁹³ though not very honourable, were the best that the ^{His prudent} conduct. then posture of his affairs admitted, Mikhail set himself to arrange the internal affairs of his empire. He began by placing his father at the head of the church, by conferring on him the dignity of patriarch, which had become vacant. The counsels of this venerable man were of great advantage to Mikhail, and contributed to preserve that peace and tranquillity by which the reign of this monarch was in general distinguished. The czar's next step was to form treaties of alliance with the principal commercial states of Europe. He accordingly sent ambassadors to England, Denmark, Holland, and the German empire ; and Russia, which had hitherto been considered rather as an Asiatic than a European power, became so respectable in the eyes of her northern neighbours, that they vied with each other in forming with her commercial treaties.

Mikhail also began those improvements of the laws which we shall presently see more fully executed by his son and successor ; but the tide of party ran so high, that he could do but little in the way of reformation. He was also obliged to put his frontiers in a state of defence, to provide for the expiration of the truce with Poland, which now drew nigh ; and as no permanent peace had been established, both parties began to prepare for a renewal of hostilities. Indeed the armistice was broken by the Russians, who, on the death of Sigismund, king of Poland, appeared before Smolensk, and justified the infringement of the treaty, on the pretext that it was concluded with Sigismund, and not with his successors. Nothing of consequence, however, was done before Smolensk ; and the Russian commander, after having lain there in perfect indolence, with an army of 50,000 men, for two years, at length raised the siege. Mikhail attempted to engage the Swedes in an alliance with him against Poland ; but failing in this negotiation, patched up a new treaty, which continued unbroken till his death. This happened in 1645.

Mikhail was succeeded by his son Alexei ; but as the ^{An. 1646.} young prince was only 15 years of age at his father's death, a nobleman named Morosof had been appointed ⁹⁴ his governor, and regent of the empire. This man ^{Accession of Alexei} possessed all the ambition, without the prudence and ^{Mikhailovitch.} ad- drcfs of Boris, and in attempting to raise himself and his adherents to the highest posts in the state, he incurred the hatred of all ranks of people. Though Morosof, by properly organizing the army, provided for the defence of the empire against external enemies, he shamefully neglected internal policy, and connived at the most flagrant enormities in the administration of justice.

Ruffia.

justice. These abuses went so far, that the populace once stopped the czar as he was returning from church to his palace, calling aloud for righteous judges. Though Alexei promised to make strict enquiry into the nature and extent of their grievances, and to inflict deserved punishment on the guilty, the people had not patience to await this tardy process, and proceeded to plunder the houses of those nobles who were most obnoxious to them. They were at length pacified, however, on condition that the author of their oppression should be brought to condign punishment. One of the most nefarious judges was put to death; and the principal magistrate of Mosco fell a victim to their rage. The life of Morosof was spared at the earnest entreaty of the czar, who engaged for his future good behaviour.

Similar disturbances had broken out at Novgorod and Pskove; but they were happily terminated, chiefly through the exertions of the metropolitan Nikon, a man of low birth, but who, from a reputation for extraordinary piety and holiness, had raised himself to the patriarchal dignity, and was high in favour with Alexei.

These commotions were scarcely assuaged, when the internal tranquillity of the empire was again threatened by a new pretender to the throne. This man was the son of a linendraper, but gave himself out at one time for the son of the emperor Dimitri, at another for the son of Schuiszkoy. Fortunately for Alexei the Poles and Swedes, whose interest it was to have fomented these intestine disturbances, remained quiet spectators of them, and the pretender meeting with few adherents, was soon taken and hanged.

The pacific conduct of the neighbouring states did not long continue, though indeed we may attribute the renewal of hostilities to the ambition of the czar.

95
War with
Poland and
Sweden.

The war with Poland was occasioned by Alexei's supporting the Kozaks, a military horde, who had left the northern shores of the Dniepr, and retired further to the south. Here they had established a military democracy, and during the dominion of the Tartars in Russia, had been subject to the khan of those tribes; but after the expulsion or subjugation of the Tartars, the Kozaks had put themselves under the guardianship of Poland, to which kingdom they formerly belonged. As the Polish clergy, however, attempted to impose on them the Greek faith, they threw off their allegiance to the king of Poland, and claimed the patronage of Russia. Alexei, who seems to have sought for a pretext to break with Poland, gladly received them as his subjects, as he hoped, with their assistance, to recover the territories that had been ceded to Poland by his father. He began by negociation, and sent an embassy to the king of Poland, complaining of some Polish publications, in which reflections had been cast on the honour of his father, and demanding that by way of compensation, the Russian territories formerly ceded to Poland should be restored. The king of Poland of course refused so arrogant a demand, and both parties prepared for war. The Russians, assisted by the Kozaks, were so successful in this contest, that the king of Sweden became jealous of Alexei's good fortune, and apprehensive of an attack. He therefore determined to take an active part in the war, especially as the Lithuanians, who were extremely averse to the Russian dominion, had sought his protection. The war with Sweden commenced in 1656, and continued for two years, without any important advan-

tage being gained by either party. A truce was concluded in 1658, for three years, and at the termination of this period, a solid peace was established. In the mean time the war with Poland continued, but was at length terminated by an armistice, which was prolonged from time to time, during the remainder of Alexei's reign.

The reign of this monarch is as remarkable for turbulence, as that of his predecessor had been for tranquillity. No sooner was peace established with the neighbouring states than fresh commotions shook the empire from within. The Don Kozaks, who now formed a part of the Russian population, felt themselves aggrieved by the rigour with which one of their officers had been treated, and placing at their head Radzin, the brother of the deceased, broke out into open rebellion. Allured by the spirit of licentiousness, and the hopes of plunder, vast numbers both of Kozaks and inferior Russians flocked to the standard of Radzin, and formed an army of nearly 200,000 men. This force, however, was formidable merely from its numbers. Radzin's followers were without arms, without discipline, and were quite unprepared to stand the attack of regular troops. Radzin himself seems to have placed no reliance on the courage or fidelity of his followers, and eagerly embraced the first opportunity of procuring a pardon by submission. Having been deceived into a belief that this pardon would be granted on his surrendering himself to the mercy of the czar, he set out for Mosco, accompanied by his brother; but when he was arrived within a short distance of the capital, whither notice of his approach had been sent, he was met by a cart containing a gallows, on which he was hanged without ceremony. His followers, who had assembled at Astracan, were surrounded by the czar's troops, taken prisoners, and 12,000 of them hung on the gibbets in the highways. Thus this formidable rebellion, which had threatened to subvert the authority of Alexei, was crushed almost at its commencement.

The influence which Alexei had obtained over the Donkoi Kozaks, excited the jealousy of the Sublime Porte, who justly dreaded the extension of the Russian territory on the side of the Crimea, a peninsula which at that time belonged to Turkey. After a successful attempt on the frontiers of Poland, a Turkish army entered the Ukraine, and the Russians made preparations to oppose them. Alexei endeavoured to form a confederacy against the infidels among the Christian potentates of Europe; but the age of crusading chivalry was over, and the czar was obliged to make head against the Turks, assisted by his single ally the king of Poland. The Turkish arms were for some years victorious, especially on the side of Poland, but at length a check was put to their successes by the Polish general Sobieski, who afterwards ascended the throne of that kingdom. Hostilities between the Turks and Russians were not, however, terminated during the reign of Alexei, and the czar left to his successor the prosecution of the war.

The reign of Alexei is most remarkable for the improvements introduced by him into the Russian laws. Before his time the *emannoï ukases*, or personal orders of the sovereign, were almost the only laws of the country. These edicts were as various as the opinions, prejudices, and passions of men; and before the days of Alexei they produced endless contentions. To remedy this

Ruffia.

96
Commence-
ment of a
war with
Turkey.

97
Alexei's
improvements of
the laws.

Russia.

this evil, he made a selection from all the edicts of his predecessors, of such as had been current for 100 years; presuming that these either were founded in natural justice, or during so long a currency had formed the minds of the people to consider them as just. This digest, which he declared to be the common law of Russia, and which is prefaced by a sort of institute, is known by the title of the *Ulogeniè* or *Selection*, and was long the standard law book; and all edicts prior to it were declared to be obsolete. He soon made his new code, however, more bulky than the *Selection*; and the additions by his successors are beyond enumeration. This was undoubtedly a great and useful work; but Alexei performed another still greater.

Though there were many courts of judicature in this widely extended empire, the emperor was always lord paramount, and could take a cause from any court immediately before himself. But as several of the old nobles had the remains of principalities in their families, and held their own courts, the sovereign or his ministers, at a distance up the country, frequently found it difficult to bring a culprit out of one of these hereditary feudal jurisdictions, and try him by the laws of the empire. This was a very disagreeable limitation of imperial power; and the more so, that some families, claimed even a right of replevance. A lucky opportunity soon offered of settling the dispute, and Alexei embraced it with great ability.

Some families on the old frontiers were taxed with their defence, for which they were obliged to keep regiments on foot; and as they were but scantily indemnified by the state, it sometimes required the exertion of authority to make them keep up their levies. When the frontiers by the conquest of Kazan were far extended, those gentlemen found the regiments no longer burdensome, because by the help of false musters, the formerly scanty allowance much more than reimbursed them for the expence of the establishment. The consequence was, that disputes arose among them about the right of guarding certain districts, and law suits were necessary to settle their respective claims. These were tedious and intricate. One claimant showed the order of the court, issued a century or two back, to his ancestor, for the marching of his men, as a proof that the right was then in the family. His opponent proved, that his ancestors had been the real lords of the marches; but that, on account of their negligence, the court had issued an *emmancy ukase* to the other, only at that particular period. The emperor ordered all the family archives to be brought to Mosco, and all documents on both sides to be collected. A time was set for the examination; a fine wooden court-house was built, every paper was lodged under a good guard; the day was appointed when the court should be opened and the claims heard; but that morning the house, with all its contents, was in two hours consumed by fire. The emperor then

said, "Gentlemen, henceforward your ranks, your privileges, and your courts, are the nation's, and the nation will guard itself. Your archives are unfortunately lost, but those of the nation remain. I am the keeper, and it is my duty to administer justice for all and to all. Your ranks are not private, but national; attached to the services you are actually performing. Henceforward Colonel Buturlin (a private gentleman) ranks before Captain Viazemsky (an old prince)." (F)

The Russians owe more to this prince than many of their historians seem willing to acknowledge; and there seems no doubt that some of the improvements attributed to Peter the Great, were at least projected by his father. Under Alexei a considerable trade was opened with China, from which country silks, and other rich stuffs, rhubarb, tea, &c. were brought into Russia, and exchanged for the Siberian furs. The exportation of Russian products to other countries was also increased; and we are assured that Alexei had even projected the formation of a navy, and would have executed the design, had he not been perpetually occupied in foreign wars and domestic troubles.

Alexei died in 1676, leaving three sons and six daughters. Two of the sons, Feodor and Ivan were by a first marriage; the third, Peter, by a second. The two former, particularly Ivan, were of a delicate constitution, and some attempts were made by the relations of Peter, to set them aside. These attempts, however, proved unsuccessful, and Feodor was appointed the successor of Alexei.

The reign of this prince was short, and distinguished rather for the happiness which the nation then experienced, than for the importance of the transactions that took place. He continued the war with the Turks for four years after his father's death, and at length brought it to an honourable conclusion, by a truce for 20 years, after the Turks had acknowledged the Russian right of sovereignty over the Kozaks. Feodor died in 1682, but before his death nominated his half-brother Peter his successor.

The succession of Peter, though appointed by their favourite czar Feodor, was by no means pleasing to the majority of the Russian nobles, and it was particularly opposed by Galitzin, the prime minister of the late czar. This able man had espoused the interest of Sophia, the sister of Feodor and Ivan, a young woman of eminent abilities, and the most insinuating address. Sophia, upon pretence of asserting the claims of her brother Ivan, who, though of a feeble constitution and weak intellects, was considered as the lawful heir of the crown, had really formed a design of securing the succession to herself; and, with that view, had not only insinuated herself into the confidence and good graces of Galitzin, but had brought over to her interests the Strelitzes (G). These licentious soldiers assembled for the purpose, as was pretended, of placing on the throne Prince Ivan, whom they

Russia.

98
He extends the commerce of Russia.

An. 1676.
99
Reign of Feodor.

An. 1682:
100
Intrigues of the princess Sophia.

(F) This transaction is, by most historians, placed under the reign of Alexei, as we have related it; but Mr Tooke, in his history of Russia (vol. ii. p. 37.), attributes the burning of the records of service, by which the nobles and chief courtiers held their offices, to Feodor.

(G) The Strelitzes composed the standing army of Russia, and formed the body guard of the tzars. At this time they amounted to about 14,000, and of course became a formidable engine in the hands of the enterprising princes.

Russia. they proclaimed tzar by acclamation. During three days they roved about the city of Mosco, committing the greatest excesses, and putting to death several of the chief officers of state, who were suspected of being hostile to the designs of Sophia. Their employer did not, however, entirely gain her point; for as the new tzar entertained a sincere affection for his half-brother Peter, he insisted that this prince should share with him the imperial dignity. This was at length agreed to; and on the 6th of May 1682, Ivan and Peter were solemnly crowned joint emperors of all the Russias, while the princess Sophia was nominated their copartner in the government.

101
Joint reign
of Ivan
and Peter
2.

From the imbecility of Ivan and the youth of Peter, who was now only 10 years of age, the whole power of the government rested in Sophia and her minister Galitzin, though till the year 1687 the names of Ivan and Peter only were annexed to the imperial decrees. Scarcely had Sophia established her authority than she was threatened with deposition, from an alarming insurrection of the Strelitzes. This was excited by their commander Prince Kovanskoi, who had demanded of Sophia that she would marry one of her sisters to his son, but had met with a mortifying refusal from the princess. In consequence of this insurrection, which threw the whole city of Mosco into terror and consternation, Sophia and the two young tzars took refuge in a monastery, about 12 leagues from the capital; and before the Strelitzes could follow them thither, a considerable body of soldiers, principally foreigners, was assembled in their defence. Kovanskoi was taken prisoner, and instantly beheaded; and though his followers at first threatened dreadful vengeance on his executioners, they soon found themselves obliged to submit. From every regiment was selected the tenth man, who was to suffer as an atonement for the rest; but this cruel punishment was remitted, and only the most guilty among the ringleaders suffered death.

An. 1687.
102
The party
of Peter
gains
ground.

The quelling of these disturbances gave leisure to the friends of Peter to pursue the plans which they had formed for subverting the authority of Sophia; and about this time a favourable opportunity offered, in consequence of a rupture with Turkey. The Porte was now engaged in a war with Poland and the German empire, and both these latter powers had solicited the assistance of Russia against the common enemy. Sophia and her party were averse to the alliance; but as there were in the council many secret friends of Peter, these had sufficient influence to persuade the majority, that a Turkish war would be of advantage to the state. They even prevailed on Galitzin to put himself at the head of the army, and thus removed their principal opponent. It is difficult to conceive how a man, so able in the cabinet as Galitzin, could have suffered his vanity so far to get the better of his good sense, as to accept a military command, for which he certainly had no talents. Assembling an army of nearly 300,000 men, he marched towards the confines of Turkey, and here consumed two campaigns in marches and countermarches, and lost nearly 40,000 men, partly in unsuccessful skirmishes with the enemy, but chiefly from disease.

While Galitzin was thus trifling away his time in the south, Peter, who already began to give proofs of those great talents which afterwards enabled him to act so conspicuous a part in the theatre of the north, was

strengthening his party among the Russian nobles. His ordinary residence was at a village not far from Mosco, and here he had assembled round him a considerable number of young men of rank and influence, whom he called his play-mates. Among these were two foreigners, Lefort a Genevese, and Gordon a Scotchman, who afterwards signalized themselves in his service. These young men had formed a sort of military company, of which Lefort was captain, while the young tzar, beginning with the situation of drummer, gradually rose through every subordinate office. Under this appearance of a military game, Peter was secretly establishing himself in the affections of his young companions, and effectually lulled the suspicions of Sophia, till it was too late for her to oppose his machinations.

Russia.

About the middle of the year 1689, Peter, who had now attained his seventeenth year, determined to make an effort to deprive Sophia of all share in the government, and to secure to himself the undivided sovereignty. On occasion of a solemn religious meeting that was held; Sophia had claimed the principal place as regent of the empire; but this claim was strenuously opposed by Peter, who, rather than fill a subordinate situation, quitted the place of assembly, and, with his friends and adherents, withdrew to the monastery of the Holy Trinity, which had formerly sheltered him and his copartners from the fury of the Strelitzes. This was the signal for an open rupture. Sophia, finding that she could not openly oppose the party of the tzar, attempted to procure his assassination; but as her design was discovered, she thought proper to solicit an accommodation. This was agreed to, on condition that she should give up all claim to the regency, and retire to a nunnery. The commander of the Strelitzes, who was to have been her agent in the assassination of Peter, was beheaded, and the minister Galitzin sent into banishment to Archangel.

An. 1689.
103
Peter obtains the undivided sovereignty.

Peter now saw himself in undisputed possession of the imperial throne; for though Ivan was still nominally tzar, he had voluntarily resigned all participation in the administration of affairs, and retired to a life of obscurity. The first object to which the tzar directed his attention was the establishment of a regular and well-disciplined military force. He had learned by experience how little dependence was to be placed on the Strelitzes, and these regiments he determined to disband. He commissioned Lefort and Gordon to levy new regiments, which, in their whole constitution, dress, and military exercises, should be formed on the model of other European troops. He next resolved to carry into execution the design which had been formed by his father, of constructing a navy. For this purpose he first took a journey to Archangel, where he employed himself in examining the operations of the shipwrights, and occasionally taking a part in their labours; but as he learned that the art of ship-building was practised in greater perfection in Holland, and some other maritime countries of Europe, he sent thither several young Russians to be initiated into the best methods of constructing ships of war. The other measures taken by Peter for establishing a navy, and the success with which they were attended, have been already related under his life*, * See Peter to which we may refer our readers for several circumstances relating to his life and character; as our object here is not to write a biography of this extraordinary man,

104
He establishes a military and naval force.

Russia. man, but briefly to narrate the transactions of his reign.

105
His suc-
cesses a-
gainst the
Turks.

The war with Turkey still languished, but Peter was resolved to prosecute it with vigour, hoping to get possession of the town of Azof, and thus open a passage to the Black sea. He placed Gordon, Lefort, and two of his nobles at the head of the forces destined for this expedition, and himself attended the army as a private volunteer. The success of the first campaign was but trifling, and Peter found that his deficiency of artillery, and his want of transports, prevented him from making an effectual attack on Azof. These difficulties, however, were soon surmounted. He procured a supply of artillery and engineers from the emperor and the Dutch, and found means to provide a number of transports. With these auxiliaries he opened the second campaign, defeated the Turks on the sea of Azof, and made himself master of the town. Peter was so elated with these successes, that on his return from the seat of war, he marched his troops into Mosco in triumphal procession, in which Lefort, as admiral of the transports, and Scheim as commander of the land forces, bore the most conspicuous parts, while Peter himself was lost without distinction in the crowd of subaltern officers.

He now resolved to form a fleet in the Black sea; but as his own revenues were insufficient for this purpose, he issued a *ukase*, commanding the patriarch and other dignified clergy, the nobility and the merchants, to contribute a part of their income towards fitting out a certain number of ships. This proclamation was extremely unpopular, and, together with the numerous innovations which Peter was every day introducing, especially his sending the young nobles to visit foreign countries, and his own avowed intention of making the tour of Europe, contributed to raise against him a formidable party. The vigilance and prudence of the tzar, however, extricated him from the dangers with which he was threatened, and enabled him to carry into execution his proposed journey. See PETER I.

An. 1700.
106
Peter en-
gages in a
war with
Charles XII.
of Sweden.

On his return to his own dominions, Peter passed through Rawa, where Augustus king of Poland then was. The tzar had determined, in conjunction with Augustus and the king of Denmark, to take advantage of the youth and inexperience of Charles XII. who had just succeeded to the Swedish throne; and in this interview with Augustus, he made the final arrangements for the part which each was to take in the war. Augustus was to receive Livonia as his part of the spoil, while Frederick king of Denmark had his eye on Holstein, and Peter had formed designs on Ingria, formerly a province of the Russian empire.

107
Is defeated
by the
Swedes.

In the middle of the year 1700, Charles had left his capital, to oppose these united enemies. He soon compelled the king of Denmark to give up his designs on Holstein, and sign a treaty of peace; and being thus at liberty to turn his arms against the other members of the confederacy, he resolved first to lead his army against the king of Poland; but on his way he received intelligence that the tzar had laid siege to Narva with 100,000 men. On this he immediately embarked at Carlscrona, though it was then the depth of winter, and the Baltic was scarcely navigable; and soon landed at Pernaw in Livonia with part of his forces, having ordered the rest to Reval. His army did not exceed 20,000 men, but it was composed of the best soldiers in

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Europe, while that of the Russians was little better than an undisciplined multitude. Every possible obstruction, however, had been thrown in the way of the Swedes. Thirty thousand Russians were posted in a defile on the road, and this corps was sustained by another body of 20,000 drawn up some leagues nearer Narva. Peter himself had set out to hasten the march of a reinforcement of 40,000 men, with whom he intended to attack the Swedes in flank and rear; but the celerity and valour of Charles baffled every attempt to oppose him. He set out with 4000 foot, and an equal number of cavalry, leaving the rest of the army to follow at their leisure. With this small body he attacked and defeated the Russian armies successively, and pushed his way to Peter's camp, for the attack of which he gave immediate orders. This camp was fortified by lines of circumvallation and contravallation, by redoubts, by a line of 150 brass cannons placed in front, and defended by an army of 80,000 men; yet so violent was the attack of the Swedes, that in three hours the entrenchments were carried, and Charles, with only 4000 men, that composed the wing which he commanded, pursued the flying enemy, amounting to 50,000, to the river Narva. Here the bridge broke down with the weight of the fugitives, and the river was filled with their bodies. Great numbers returned in despair to their camp, where they defended themselves for a short time, but were at last obliged to surrender. In this battle 30,000 were killed in the intrenchments and the pursuit, or drowned in the river; 20,000 surrendered at discretion, and were dismissed unarmed, while the rest were totally dispersed. A hundred and fifty pieces of cannon, 28 mortars, 151 pairs of colours, 20 standards, and all the Russian baggage, fell into the hands of the Swedes; and the duke de Croy, the prince of Georgia, and seven other generals were made prisoners. Charles behaved with the greatest generosity to the conquered. Being informed that the tradesmen of Narva had refused credit to the officers whom he detained prisoners, he sent 1000 ducats to the duke of Croy, and to every other officer a proportionable sum.

Peter was advancing with 40,000 men to surround the Swedes, when he received intelligence of the dreadful defeat at Narva. He was greatly chagrined; but comforting himself with the hopes that the Swedes would in time teach the Russians to beat them, he returned to his own dominions, where he applied himself with the utmost diligence to the raising of another army. He evacuated all the provinces which he had invaded, and for a time abandoned all his great projects, thus leaving Charles at liberty to prosecute the war against Poland.

As Augustus had expected an attack, he endeavoured to draw the tzar into a close alliance with him. The two monarchs had an interview at Birsen, where it was agreed that Augustus should lend the tzar 50,000 German soldiers, to be paid by Russia; that the tzar should send an equal number of his troops to be trained up to the art of war in Poland; and that he should pay the king 3,000,000 of rixdollars in the space of two years. Of this treaty Charles had notice, and, by means of his minister Count Piper, entirely frustrated the scheme.

After the battle of Narva, Charles became confident and negligent, while the activity of Peter increased with his losses. He supplied his want of artillery by melting

Russia.

108

Renewed
Peter.
exertions of

Russia. down the bells of the churches, and constructed numerous small vessels on the lake of Ladoga, to oppose the entrance of the Swedes into his dominions. He took every advantage of Charles's negligence, and engaged in frequent skirmishes, in which, though often beaten, he was sometimes victorious. Thus, he proved to his soldiers, that the Swedes though conquerors, were not invincible, and kept up the spirit of his troops by liberally rewarding every instance of courage and success. He contrived to make himself master of the river Neva, and captured Nyenschantz, a fortress at the mouth of that river. Here he laid the foundation of that city which he had long projected, and which was to become the future metropolis of his empire. At length in 1704 he became master of Ingria, and appointed his favourite Prince Menzikoff to be viceroy of that province, with strict orders to make the building of the new city his principal concern. Here already buildings were rising in every quarter, and navigation and commerce were increasing in vigour and extent.

109
The Swedes
defeated.

In the mean time Augustus king of Poland, though treating with Charles for the surrender of his dominions, was obliged to keep up the appearance of war, which he had neither ability nor inclination to conduct. He had been lately joined by Prince Menzikoff with 30,000 Russians; and this obliged him, contrary to his inclination, to hazard an engagement with Meyerfeldt, who commanded 10,000 men, one half of whom were Swedes. As at this time no disparity of numbers whatever was reckoned an equivalent to the valour of the Swedes, Meyerfeldt did not decline the combat, though the army of the enemy was four times as numerous as his own. With his countrymen he defeated the enemy's first line, and was on the point of defeating the second, when Stanislaus, with the Poles and Lithuanians, gave way. Meyerfeldt then perceived that the battle was lost; but he fought desperately, that he might avoid the disgrace of a defeat. At last, however, he was oppressed by numbers, and forced to surrender; suffering the Swedes for the first time to be conquered by their enemies. The whole army were taken prisoners excepting Major-general Kraffau, who having repeatedly rallied a body of horse formed into a brigade, at last broke through the enemy, and escaped to Poesnania. Augustus had scarcely sung *Te Deum* for this victory, when his plenipotentiary returned from Saxony with the articles of the treaty, by which he was to renounce all claim to the crown of Poland in favour of his rival Stanislaus. The king hesitated and scrupled, but at last signed them; after which he set out for Saxony, glad at any rate to be freed from such an enemy as the king of Sweden, and from such allies as the Russians.

110
Augustus
obliged to
resign the
crown of
Poland.

* See Patkul.

111
Peter de.
termines to
continue
the war.

The czar Peter was no sooner informed of this extraordinary treaty, and the cruel execution of his plenipotentiary Patkul,* than he sent letters to every court in Christendom, complaining of this gross violation of the law of nations. He entreated the emperor, the queen of Britain, and the States General, to revenge this insult on humanity. He stigmatized the compliance of Augustus with the opprobrious name of pusillanimity; exhorted them not to guarantee a treaty so unjust, but to despise the menaces of the Swedish bully. So well, however, was the prowess of the king of Sweden known, that none of the allies thought proper to irritate him, by refusing to guarantee any treaty he

thought proper. At first, Peter thought of revenging Patkul's death by massacring the Swedish prisoners at Mosco; but from this he was deterred, by remembering that Charles had many more Russian prisoners than he himself had of Swedes. Giving over all thoughts of revenging himself in this way, therefore, in the year 1707 he entered Poland at the head of 60,000 men. Advancing to Leopold, he made himself master of that city, where he assembled a diet and solemnly deposed Stanislaus with the same ceremonies which had been used with regard to Augustus. The country was now reduced to the most miserable situation; one party, through fear, adhered to the Swedes; another was gained over, or forced by Peter to take part with him; a violent civil war took place between the two, and great numbers of people were butchered; while cities, towns, and villages, were laid in ashes by the frantic multitude. The appearance of a Swedish army under King Stanislaus and General Lewenhaupt, put a stop to these disorders, Peter himself not caring to stand before such enemies. He retired, therefore, into Lithuania, giving out as the cause of his retreat, that the country could not supply him with provision and forage necessary for so great an army.

Russia.
An. 1707,
112
Peter enters
Poland.

During these transactions Charles had taken up his residence in Saxony, where he gave laws to the court of Vienna, and in a manner intimidated all Europe. At last, fatiated with the glory of having dethroned one king, set up another, and struck all Europe with terror and admiration, he began to evacuate Saxony in pursuit of his great plan, the dethroning the czar Peter, and conquering the vast empire of Russia. While the army was on full march in the neighbourhood of Dresden, he took the extraordinary resolution of visiting King Augustus with no more than five attendants. Though he had no reason to imagine that Augustus either did or could entertain any friendship for him, he was not uneasy at the consequences of thus putting himself entirely in his power. He got to the palace door of Augustus before it was known that he had entered the city. General Fleming having seen him at a distance, had only time to run and inform his master. What might be done in the present case immediately occurred to the minister, but Charles entered the elector's chamber in his boots before the latter had time to recover from his surprise. He breakfasted with him in a friendly manner, and then expressed a desire of viewing the fortifications. While he was walking round them, a Livonian, who had formerly been condemned in Sweden, and served in the troops of Saxony, thought he could never have a more favourable opportunity of obtaining pardon. He therefore begged of King Augustus to intercede for him, being fully assured that his majesty could not refuse so slight a request to a prince in whose power he then was. Augustus accordingly made the request, but Charles refused it in such a manner, that he did not think proper to ask it a second time. Having passed some hours in this extraordinary visit, he returned to his army, after having embraced and taken leave of the king he had dethroned.

113
Charles
visits Au-
gustus.

The armies of Sweden, in Saxony, Poland, and Finland, now exceeded 70,000 men; a force more than sufficient to have conquered all the power of Russia, had they met on equal terms. Peter, who had his army dispersed in small parties, instantly assembled it on receiving

114
and
marches
against the
Russians.

Russia. receiving notice of the king of Sweden's march, was making all possible preparations for a vigorous resistance, and was on the point of attacking Stanislaus; when the approach of Charles struck his whole army with terror. In the month of January 1708 Charles passed the Niemen, and entered the south gate of Grodno just as Peter was quitting the place by the north gate. Charles at this time had advanced some distance before the army, at the head of 600 horse.

115
The Russians again defeated.

The czar having intelligence of his situation, sent back a detachment of 2000 men to attack him, but these were entirely defeated; and thus Charles became possessed of the whole province of Lithuania. The king pursued his flying enemies in the midst of ice and snow, over mountains, rivers, and morasses, and through obstacles, which to surmount seemed impossible to human power. These difficulties, however, he had foreseen, and had prepared to meet them. As he knew that the country could not furnish provisions sufficient for the subsistence of his army, he had provided a large quantity of biscuit, and on this his troops chiefly subsisted, till they came to the banks of the Berizine, in view of Borislow. Here the czar was posted, and Charles intended to give him battle, after which he could the more easily penetrate into Russia. Peter, however, did not think proper to come to an action, but retreated towards the Dniepr, whither he was pursued by Charles, as soon as he had refreshed his army. The Russians had destroyed the roads, and desolated the country, yet the Swedish army advanced with great celerity, and in their march defeated 20,000 Russians, though entrenched to the very teeth. This victory, considering the circumstances in which it was gained, was one of the most glorious that ever Charles had achieved. The memory of it is preserved by a medal struck in Sweden with this inscription; *Sylva, paludes, aggeres, hostes, victi.*

116
Peter attempts to make peace, but is unsuccessful.

When the Russians had re-passed the Dniepr, the czar, finding himself pursued by an enemy with whom he could not cope, resolved to make proposals for an accommodation; but Charles answered his proposals with this arrogant reply; "I will treat with the czar at Mosco;" a reply which was received by Peter with the coolness of a hero. "My brother Charles, said he, affects to play the Alexander, but he shall not find in me a Darius." He still, however, continued his retreat, and Charles pursued so closely, that daily skirmishes took place between his advanced guard and the rear of the Russians. In these actions the Swedes generally had the advantage, though their petty victories cost them dear, by contributing to weaken their force in a country where it could not be recruited. The two armies came so close to each other at Smolensk, that an engagement took place between a body of Russians composed of 10,000 cavalry and 6000 Kalmuks, and the Swedish vanguard, composed of only six regiments, but commanded by the king in person. Here the Russians were again defeated, but Charles having been separated from the main body of his detachment, was exposed to great danger. With one regiment only, he fought with such fury as to drive the enemy before him, when they thought themselves sure of making him prisoner.

An. 1708.
117
Charles advances towards Mosco.

By the 3d of October 1708, Charles had approached within 100 leagues of Mosco; but Peter had rendered the roads impassable, and had destroyed the villages

on every side, so as to cut off every possibility of subsistence to the enemy. The season was far advanced, and the severity of winter was approaching, so that the Swedes were threatened with all the miseries of cold and famine, at the same time that they were exposed to the attacks of an enemy greatly superior in number, who, from their knowledge of the country, had almost constant opportunities of harassing and attacking them by surprise. For these reasons the king resolved to pass the Ukraine, where Mazeppa, a Polish gentleman, was general and chief of the nation. Mazeppa having been affronted by the czar, readily entered into a treaty with Charles, whom he promised to assist with 30,000 men, great quantities of provisions and ammunition, and with all his treasures, which were immense. The Swedish army advanced towards the river Dina, where they had to encounter the greatest difficulties; a forest above 40 leagues in extent, filled with rocks, mountains, and marshes. To complete their misfortunes, they were led 30 leagues out of the right way; all the artillery was sunk in bogs and marshes; the provision of the soldiers, which consisted of biscuit, was exhausted; and the whole army spent and emaciated when they arrived at the Dina. Here they expected to have met Mazeppa with his reinforcement; but instead of that, they perceived the opposite banks of the river covered with a hostile army, and the passage itself almost impracticable. Charles, however, was still undaunted; he let his soldiers by ropes down the steep banks; they crossed the river either by swimming, or on rafts hastily put together; drove the Russians from their post, and continued their march. Mazeppa soon after appeared, leaving with him about 6000 men, the broken remains of the army he had promised. The Russians had got intelligence of his designs, defeated and dispersed his adherents, laid his town in ashes, and taken all the provisions collected for the Swedish army. However, he still hoped to be useful by his intelligence in an unknown country; and the Kozaks, out of revenge, crowded daily to the camp with provisions.

Greater misfortunes still awaited the Swedes. When Charles entered the Ukraine, he had sent orders to General Lewenhaupt to meet him with 15000 men, 6000 of whom were Swedes, and a large convoy of provisions. Against this detachment Peter now bent his whole force, and marched against him with an army of 65,000 men. Lewenhaupt had received intelligence that the Russian army consisted of only 24,000, a force to which he thought 6000 Swedes superior, and therefore disdained to entrench himself. A furious contest ensued, in which the Russians were defeated with the loss of 15,000 men. Now, however, affairs began to take another turn. The Swedes, elated with victory, prosecuted their march into the interior; but from the ignorance or treachery of their guides, were led into a marshy country, where the roads were made impassable by felled trees and deep ditches. Here they were attacked by the czar with his whole army. Lewenhaupt had sent a detachment to dispute the passage of a body of Russians over a morass; but finding his detachment likely to be overpowered, he marched to support them with all his infantry. Another desperate battle ensued; the Russians were once more thrown into disorder, and were just on the point of being totally defeated, when Peter gave orders to the Kozaks and Kalmuks to fire upon

Russia.

upon all that fled; "Even kill me, said he, if I should be so cowardly as to turn my back." The battle was now renewed with great vigour; but notwithstanding the tzar's positive orders, and his own example, the day would have been lost, had not General Bauer arrived with a strong reinforcement of fresh Russian troops. The engagement was once more renewed, and continued without intermission till night. The Swedes then took possession of an advantageous post, but were next morning attacked by the Russians. Lewenhaupt had formed a sort of rampart with his waggons, but was obliged to set fire to them to prevent their falling into the hands of the Russians, while he retreated under cover of the smoke. The tzar's troops, however, arrived in time to save 500 of these waggons, filled with provisions destined for the distressed Swedes. A strong detachment was sent to pursue Lewenhaupt; but so terrible did he now appear, that the Russian general offered him an honourable capitulation. This was rejected with disdain, and a fresh engagement took place, in which the Swedes, now reduced to 4000, again defeated their enemies, and killed 5000 on the spot. After this, Lewenhaupt was allowed to pursue his retreat without molestation, though deprived of all his cannon and provisions. Prince Menzikoff was indeed detached with a body of forces to harass him on his march; but the Swedes were now so formidable, even in their distress, that Menzikoff dared not attack them, so that Lewenhaupt with his 4000 men arrived safe in the camp of Charles, after having destroyed nearly 30,000 of the Russians.

This may be said to have been the last successful effort of Swedish valour against the troops of Peter. The difficulties which Charles's army had now to undergo, exceeded what human nature could support; yet still they hoped by constancy and courage to subdue them. In the severest winter known for a long time, even in Russia, they made long marches, clothed like savages in the skins of wild beasts. All the draught horses perished; thousands of soldiers dropt down dead through cold and hunger; and by the month of February 1709, the whole army was reduced to 18,000. Amidst numberless difficulties these penetrated to Pultava, a town on the eastern frontier of the Ukraine, where the tzar had laid up magazines, and of these Charles resolved to obtain possession. Mazeppa advised the king to invest the place, in consequence of his having correspondence with some of the inhabitants, by whose means he hoped it would be surrendered. However, he was deceived; the besieged made an obstinate defence, the Swedes were repulsed in every assault, and 8000 of them were defeated, and almost entirely cut off, in an engagement with a party of Russians. To complete his misfortunes, Charles received a shot in his heel from a carbine, which shattered the bone. For six hours after, he continued calmly on horseback, giving orders, till he fainted with the loss of blood; after which he was carried into his tent.

118
Battle of
Pultava.

For some days the tzar, with an army of 70,000 men, had lain at a small distance, harassing the Swedish camp, and cutting off the convoys of provision; but now intelligence was received, that he was advancing as if with a design of attacking the lines. In this situation, Charles, wounded, distressed, and almost surrounded

by enemies, is said to have, for the first time, assembled a grand council of war, the result of which was, that it became expedient to march out and attack the Russians. Voltaire, however, totally denies that the king relaxed one jot of his wonted obstinacy and arbitrary temper; but that, on the 7th of July, he sent for General Renschild, and told him, without any emotion, to prepare for attacking the enemy next morning.

The 8th of July 1709 is remarkable for the battle which decided the fate of Sweden. Charles having left 8000 men in the camp to defend the works and repel the sallies of the besieged, began to march against his enemies by break of day with the rest of the army, consisting of 26,000 men, of whom 18,000 were Kozaks. The Russians were drawn up in two lines behind their entrenchments, the horse in front, and the foot in the rear, with chafms to suffer the horse to fall back in case of necessity. General Slippenbach was dispatched to attack the cavalry, which he did with such impetuosity that they were broken in an instant. They, however, rallied behind the infantry, and returned to the charge with so much vigour, that the Swedes were disordered in their turn, and Slippenbach made prisoner. Charles was now carried in his litter to the scene of confusion. His troops, re-animated by the presence of their leader, returned to the charge, and the battle became doubtful, when a blunder of General Creuk, who had been dispatched by Charles to take the Russians in flank, and a successful manœuvre of Prince Menzikoff, decided the fortune of the day in favour of the Russians. Creuk's detachment was defeated, and Menzikoff, who had been sent by Peter with a strong body to post himself between the Swedes and Pultava, so as to cut off the communication of the enemy with their camp, and fall upon their rear, executed his orders so much success, as to cut off a corps de reserve of 3000 men. Charles had ranged his remaining troops in two lines, with the infantry in the centre, and the horse on the two wings. They had already twice rallied, and were now again attacked on all sides with the utmost fury. Charles in his litter, with a drawn sword in one hand, and a pistol in the other, seemed to be everywhere present; but new misfortunes awaited him. A cannon ball killed both horses in the litter; and scarcely were these replaced by a fresh pair, when a second ball broke the litter in pieces, and overturned the king. The Swedish soldiers believing him killed, fell back in consternation. The first line was completely broken, and the second fled. Charles, though disabled, did every thing in his power to restore order; but the Russians, emboldened by success, pressed so hard on the flying foe, that it was impossible to rally them. Renschild and several other general officers were taken prisoners, and Charles himself would have shared the same fate, had not Count Poniatofski (father of the future favourite of Catharine II.) with 500 horse, surrounded the royal person, and with desperate fury cut his way through ten regiments of the Russians. With his small guard the king arrived on the banks of the Dniepr, and was followed by Lewenhaupt with 4000 foot, and all the remaining cavalry. The Russians took possession of the Swedish camp, where they found a prodigious sum in specie; while Prince Menzikoff pursued the flying Swedes; and as they were in want of boats to cross the Dniepr, obliged them

Russia.

Russia. to surrender at discretion. Charles escaped with the utmost difficulty, but at length reached Oichakof on the frontiers of Turkey. See SWEDEN.

By this decisive victory, Peter remained in quiet possession of his new acquisitions on the Baltic, and was enabled to carry on, without molestation, the improvements which he had projected at the mouth of the Neva. His haughty rival, so long and so justly dreaded, was now completely humbled, and his ally the king of Poland was again established on his throne. During the eight years that had elapsed from the battle of Narva to that of Pultava, the Russian troops had acquired the discipline and steadiness of veterans, and had at length learned to beat their former conquerors. If Peter had decreed triumphal processions for his trifling successes at Azof, it is not surprising that he should commemorate a victory so glorious and so important as that of Pultava by similar pageants. He made his triumphal entry into Mosco for the third time, and the public rejoicings on this occasion far exceeded all that had before been witnessed in the Russian empire.

An. 1711. The vanquished Charles had, in the mean time, found a valuable friend in the monarch in whose territories he had taken refuge. Achmet II. who then filled the Ottoman throne, had beheld with admiration the warlike achievements of the Swedish hero, and, alarmed at the late successes of his rival, determined to afford Charles the most effectual aid. In 1711, the Turkish emperor assembled an immense army, and was preparing to invade the Russian territories, when the tzar, having intimation of his design, and expecting powerful support from Cantemir, hospodar of Moldavia, a vassal of the Porte, resolved to anticipate the Turks, and to make an inroad into Moldavia. Forgetting his usual prudence and circumspection, Peter crossed the Dniepr, and advanced by rapid marches as far as Yassy or Jassy, the capital of that province, situated on the river Pruth; but his temerity had nearly cost him his liberty, if not his life. The particulars of his dangerous situation, with the manner in which he was extricated from it, by the prudent counsel of his consort Catharine, and the advantageous treaty of the Pruth, which was the result of that counsel, have been already related under CATHERINE I.

An. 1721. By this treaty, in which the interests of Charles had been almost abandoned, Peter saw himself delivered from a dangerous enemy, and returned to his capital, to prosecute those plans for the internal improvement of his empire which justly entitled him to the appellation of GREAT. Before we enumerate these improvements, however, we must bring the Swedish war to a conclusion. The death of Charles, in 1718, had left the Swedish government deplorably weakened, by the continual drains of men and money, occasioned by his mad enterprises, and little able to carry on a war with a monarch so powerful as Peter. At length, therefore in 1721, this ruinous contest, which had continued ever since the commencement of the century, was brought to a conclusion by the treaty of Nystadt, by which the Swedes were obliged to cede to Russia, Livonia, Esthonia, Ingria, a part of Karelia, the territory of Vyborg, the isle of Oesel, and all the other islands in the Baltic, from Courland to Vyborg; for which concessions they received back Finland, that had been conquered by Peter, together with 2,000,000 of dollars, and the liberty of

exporting duty free, from Riga, Reval, and Arensburg, Russia. corn to the annual amount of 50,000 rubles. In consequence of this great accession to the Russian empire, Peter received from his senate the title of *emperor and autocrat of all the Russias*, and the ancient title of tzar fell into disuse.

The improvements introduced by Peter into the internal policy of the empire, must be acknowledged to have been numerous and important. He organized a new the legislative assembly of the state; he greatly ameliorated the administration of justice; he new-modelled the national army; entirely erected the Russian navy; rendered the ecclesiastical government milder and less intolerant; zealously patronised the arts and sciences; erected an observatory at St Petersburg, and by publicly proclaiming the approach of an eclipse, and the precise time at which it was to take place, taught his subjects no longer to consider such a phenomenon as an omen of disaster, or an awful menace of divine judgement. He enlarged the commerce of his empire, and gave every encouragement to trade and manufactures. He formed canals, repaired the roads, instituted regular posts, and laid down regulations for a uniformity of weights and measures. Lastly, he in some measure civilized his subjects, though it is evident that he could not civilize himself.

It is the province of the historian to delineate the characters of the princes whose transactions he relates. Various have been the characters given of Peter the Great, by those who have detailed the events of his reign. It is certain that to him the Russian empire is indebted for much of that splendour with which the now shines among the powers of Europe. As a monarch, therefore, he is entitled to our admiration, but as a private individual we must consider him as an object of detestation and abhorrence. His tyranny and his cruelty admit of no excuse; and if we were to suppose that in sacrificing the heir of his crown he emulated the patriotism of the elder Brutus, we must remember that the same hand which signed the death warrant of his son, could, with pleasure, execute the sentence of the law, or rather of his own caprice, and, in the moments of dissipation and revelry, could make the axe of justice an instrument of diabolical vengeance, and of cool brutality.

Peter was succeeded by his consort Catharine, in whose favour he had, some years before his death, altered the order of succession. As the character of this princess, and the transactions of her short reign, have been fully detailed under her life*, we shall here only * See Catherine I. notice in the most cursory manner the events that took place.

From the commencement of her reign, Catharine conducted herself with the greatest benignity and gentleness, and thus secured the love and veneration of her subjects, which she had acquired during the life of the emperor. She reduced the annual capitation tax; ordered the numerous gibbets which Peter had erected in various parts of the country to be cut down, and had the bodies of those who had fallen victims to his tyranny decently interred. She recalled the greater part of those whom Peter had exiled to Siberia; paid the troops their arrears; restored to the Kozaks those privileges and immunities of which they had been deprived during the late reign; and she continued in office most of the servants of Peter, both civil and military. She concluded

Russia.

a treaty with the German emperor, by which it was stipulated that in case of attack from an enemy, either party should assist the other with a force of 30,000 men, and should each guarantee the possessions of the other. In her reign the boundaries of the empire were extended by the submission of a Georgian prince, and the voluntary homage of the Kubinskian Tartars. She died on the 17th of May 1727, having reigned about two years. She had settled the crown on Peter the son of the tzarovitch Alexei, who succeeded by the title of Peter II.

An. 1727.
124
Reign
of Peter II.

Peter was only 12 years of age when he succeeded to the imperial throne, and his reign was short and uninteresting. He was guided chiefly by Prince Menzikoff, whose daughter Catharine had decreed him to marry. This ambitious man who, from the mean condition of a pye-boy, had risen to the first offices of the state, and had, during the late reign, principally conducted the administration of the government, was now, however, drawing towards the end of his career. The number of his enemies had greatly increased, and their attempts to work his downfall now succeeded. A young nobleman of the family of the Dolgorukis, who was one of Peter's chief companions, was excited by his relations, and the other enemies of Menzikoff, to instil into the mind of the young prince, sentiments hostile to that minister. In this commission he succeeded so well, that Menzikoff and his whole family, not excepting the young empress, were banished to Siberia, and the Dolgorukis took into their hands the management of affairs. These artful counsellors, instead of cultivating the naturally good abilities of Peter, encouraged him to waste his time and exhaust his strength in hunting, and other athletic exercises, for which his tender years were by no means calculated. It is supposed that the debility consequent on such fatigue increased the natural danger of the small-pox, with which he was attacked in January 1730, and from which he never recovered.

An. 1730.
125
Anne
duchess of
Courland
succeeds to
the imperial
throne.

Notwithstanding the absolute power with which Peter I. and the empress Catharine had settled by will the succession to the throne, the Russian senate and nobility, upon the death of Peter II. ventured to set aside the order of succession which those sovereigns had established. The male issue of Peter was now extinct; and the duke of Holstein, son to Peter's eldest daughter, was by the destination of the late empress entitled to the crown; but the Russians, for political reasons, filled the throne with Anne duchess of Courland, second daughter to Ivan, Peter's eldest brother; though her eldest sister the duchess of Mecklenburg was alive. Her reign was extremely prosperous; and though she accepted the crown under limitations that some thought derogatory to her dignity, yet she broke them all, asserted the prerogative of her ancestors, and punished the aspiring Dolgoruki family, who had imposed upon her limitations, with a view, as it is said, that they themselves might govern. She raised her favourite Biren to the duchy of Courland; and was obliged to give way to many severe executions on his account. Few transactions of any importance took place during the reign of Anne. She followed the example of her great predecessor Peter, by interfering in the affairs of Poland, where she had sufficient interest to establish on the throne Augustus III. This interference had nearly involved her in a war with France, and she had already sent a considerable army to

Russia.

the banks of the Rhine, for the purpose of acting against that power, when the conclusion of a treaty of peace rendered them unnecessary. She entered into a treaty with the shah of Persia, by which she agreed to give up all title to the territories that had been seized by Peter I. on the shores of the Caspian, in consideration of certain privileges to be granted to the Russian merchants.

In 1735, a rupture took place between Russia and Turkey, occasioned partly by the mutual jealousies that had subsisted between these powers, ever since the treaty on the Pruth, and partly by the depredations of the Tartars of the Crimea, then under the dominion of the Porte. A Russian army entered the Crimea, ravaged part of the country, and killed a considerable number of Tartars; but having ventured too far, without a sufficient supply of provisions, was obliged to retreat, after sustaining a loss of nearly 10,000 men. This ill success did not discourage the court of St Petersburg; and in the following year another armament was sent into the Ukraine, under the command of Marshal Munich, while another army under Lascy proceeded against Azof. Both these generals met with considerable success; the Tartars were defeated, and the fort of Azof once more submitted to the Russian arms. A third campaign took place in 1737, and the Russians were now assisted by a body of Austrian troops. Munich laid siege to Otchakof which soon surrendered, while Lascy desolated the Crimea.

No material advantages were, however, gained on either side; and disputes arose between the Austrian and Russian generals. At length in 1739, Marshal Munich having crossed the Bog at the head of a considerable army, defeated the Turks in a pitched battle near Stavutshan, made himself master of Yassy, the capital of Moldavia, and before the end of the campaign reduced the whole of that province under his subjection. These successes of the Russian arms induced the Porte to propose terms of accommodation; and in the latter end of 1739, a treaty was concluded, by which Russia again gave up Azof and Moldavia, and to compensate the loss of above 100,000 men, and vast sums of money, gained nothing but permission to build a fortress on the Don.

Upon the death of Anne, which took place in 1740, Ivan, the son of her niece the princess of Mecklenburg was, by her will, entitled to the succession; but being no more than two years old, Biron was appointed to be administrator of the empire during his minority. This nomination was disagreeable to the princess of Mecklenburg and her husband, and unpopular among the Russians. Count Munich was employed by the princess of Mecklenburg to arrest Biron, who was tried, and condemned to die, but was sent into exile to Siberia.

The administration of the princess Anne of Mecklenburg and her husband was upon many accounts disagreeable, not only to the Russians, but to other powers of Europe; and notwithstanding a prosperous war they carried on with the Swedes, the princess Elizabeth, daughter by Catharine to Peter the Great, formed such a party that in one night's time she was declared and proclaimed empress of the Russias; and the princess of Mecklenburg, her husband, and son, were made prisoners. The fate of this unhappy family was peculiarly severe. All but Ivan were sent into banishment, to an island

An. 1740.
126
Accession
and imprisonment
of
Ivan VI.

Russia. Island at the mouth of the Dvina, in the White sea, where the princess Anne died in child-bed in 1747. Ivan's father survived till 1775, and at last ended his miserable career in prison. The young emperor Ivan was for some time shut up in a monastery at Oranienburg, when, on attempting to escape, he was removed to the castle of Schlüsselburg, where he was, as will hereafter be related, cruelly put to death.

An 1741. The chief instrument in rousing the ambition of Elizabeth, and procuring her elevation to the throne, was her physician and favourite Leitoc, who, partly by his insinuating address, and partly by the assistance of the French ambassador, brought over to Elizabeth's interest most of the royal guards. By their assistance she made herself mistress of the imperial palace, and of the persons of the young emperor and his family, and in a few hours was established without opposition on the throne of her father.

During the short regency of Anne of Mecklenburg, a new war had commenced between Russia and Sweden; and this war was carried on with considerable acrimony and some success, by Elizabeth. The Russian forces took possession of Abo, and made themselves masters of nearly all Finland. But at length in 1743, in consequence of the negotiations that were carrying on relative to the succession of the Swedish crown, a peace was concluded between the two powers, on the condition that Elizabeth should restore the greater part of Finland.

An. 1742. Soon after her accession, Elizabeth determined to nominate her successor to the imperial throne, and had fixed her eyes on Charles Peter Ulrich, son of the duke of Holstein Gottorp, by Anne, daughter of Peter the Great. This prince was accordingly invited into Russia, persuaded to become a member of the Greek church, and proclaimed grand duke of Russia, and heir of the empire. The ceremony of his baptism was performed on the 18th November, 1742, and he received the name of Peter Feodorovitch. He was at this time only fourteen years of age; but before he had attained his sixteenth year, his aunt had destined him a consort in the person of Sophia Augusta Frederica, daughter of Christian Augustus prince of Anhalt-Zerbst-Dornburg. It is unnecessary for us here to relate the circumstances that led to this marriage, and the unhappy consequences that resulted from it during the life of Elizabeth, as they have already been sufficiently detailed*.

* See Catherine II. 129. Elizabeth engages in the seven years war.

Having thus settled the order of succession, Elizabeth began to take an active part in the politics of Europe. The death of Charles VI. emperor of Germany had left his daughter, Maria Theresa queen of Hungary, at the mercy of the enterprising king of Prussia, till a formidable party, more from jealousy of that monarch's military fame than regard to the interests of an injured princess, was formed in her behalf. To this confederacy the empress of Russia acceded, and in 1747 sent a considerable body of troops into Germany, to the assistance of the empress queen. The events of this long and bloody contest have been fully detailed under the article PRUSSIA, from N^o 18 to 64, and they comprise the greater part of those transactions in the reign of Elizabeth that do not particularly regard the internal policy of the empire. The more private transactions of the court of St Petersburg, as far as they are connected with the intrigues of her niece Catharine and the follies

of the grand duke Peter, have also been related in our life of CATHERINE II. Elizabeth died on the 5th January 1762, the victim of disease brought on by intemperance. With her character as a private woman we have little business here. Her merits as a sovereign will appear from the following summary drawn by Mr Tooke.

Elizabeth, as empress, governed but little of herself; it being properly her ministers and favourites who dictated her regulations and decrees. Of this number, besides Bestuchef, was also Bazumofsky, to whom, it been said, the empress was even privately married. At the beginning of her reign, it is true, she went a few times to the sitting of the senate; but the matters transacted there were by much too serious for her mind; and, accordingly, she very soon left off that practice altogether, contenting herself by confirming with her signature the resolutions of that assembly, and the determinations of her minister, or the conference, which supplied the place of the council.

Her character in general was mild, as was evident from the tears it cost her whenever she received accounts from Prussia even of victories gained by her own army, on account of the human blood by which they must necessarily have been purchased. Yet even this delicate sensibility did not restrain her from prosecuting the war into which she had entered from a species of revenge, and for the purpose of humbling the king of Prussia, and even on her death-bed from exhorting the persons who surrounded her to the most vigorous continuation of it. It also proceeded from this sensibility, that immediately on her accession to the government she made the vow never to put her signature to a sentence of death. A resolution which she faithfully kept; though it cannot be averred to have been for the benefit of the empire; since in consequence of it the number of malefactors who deserved to die was every day increasing, inasmuch that even the clergy requested the empress to retract her vow, at the same time urging proofs that they could release her from it. All the arguments they could use, however, were of no avail to move the conscientious monarch; she would not give effect to any sentence of death, although the commanders in the army particularly would have been glad that her conscience had yielded a little on that point. They declared that the soldiers were not to be restrained from their excesses by the severest corporal punishments they could employ; whereas such was their dread of a solemn execution, that a few examples of that nature would have effectually kept them in awe.

Commerce and literature, arts, manufactures, handicrafts, and the other means of livelihood, which had been fostered by the former sovereigns, continued their course under Elizabeth with increasing prosperity. The country products were obtained and wrought up in greater quantities, and several branches of profit were more zealously carried on. The sum appointed for the support of the academy of sciences founded by Peter I. at St Petersburg, was considerably augmented by Elizabeth: and she moreover established in 1758 the academy still subsisting for the arts of painting and sculpture, in which a number of young persons are brought up as painters, engravers, statuaries, architects, &c. At Moscow she endowed a university and two gymnasia.

The empress Elizabeth herself having a good voice, music.

Russia.

130 Character of Elizabeth.

131 Her improvements in the empire.

Russia.

music, which Anne had already much encouraged, found under her administration a perpetual accession of disciples and admirers; so that even numbers of persons of distinction at St Petersburg became excellent performers. The art of acting plays was now also more general among the Russians. Formerly none but French or Italian pieces were performed on the stage of St Petersburg, whereas now Sumarokof obtained celebrity as a dramatic poet in his native language, and in 1756 Elizabeth laid the foundation of a Russian theatre in her residence. Architecture likewise found a great admirer and patroness in her, St Petersburg and its vicinity being indebted to her for great embellishments, and numerous structures.

The magnificence which had prevailed under Anne at the court of St Petersburg was not diminished during her reign, and the court establishment therefore amounted to extraordinary sums. Elizabeth, indeed, in this respect did not imitate her great father; and accordingly in the seven years war the want of a well-stored treasury was already very sensibly felt.

The population of the empire was considerably increased under her reign; and so early as 1752, according to the statement in an account published by an official person, it was augmented by one-fifth.

Elizabeth continued the practice of her predecessors in encouraging foreigners to come to settle in her empire. Emigrant Servians cultivated a considerable tract of land, till then almost entirely uninhabited, on the borders of Turkey, where they built the town of Elizabethgorod, and multiplied so fast, that in the year 1764 a particular district was formed of these improvements, under the name of New Servia. Only the Jews Elizabeth was no less resolute not to tolerate than her father had been; inasmuch that, so early in her reign as 1743, they were ordered to quit the country on pain of death.

The army was augmented under Elizabeth, but certainly not improved. There were now no longer at the head of it such men as the foreigners Munich, Keith, or Loevendal, who, besides their personal courage and intrepidity, possessed the soundest principles of the art of war; and, what is of no less consequence in a commander, kept up a strict discipline, and took care that the laws of subordination were punctually observed. The excessive licence which the regiments of guards, particularly the life company of the Preobajerskoy guards, presumed to exercise, under the very eyes of the empress in St Petersburg, afforded no good example to the rest of the army; and Elizabeth, in appointing those soldiers of that life company, who had been most guilty of flagrant disorders, and the basest conduct, to be officers in the marching regiments, gives us no very high idea of what was required in an officer, but rather serves easily to explain whence it arose that such frequent complaints were made of insubordination. A great number of excellent regulations that had been introduced into the army, and always enforced by foreigners, especially by Munich, were suffered by the Russian generals to fall into total disuse. The bad effects of this negligence were very soon perceived; and it was undoubtedly a circumstance highly favourable to the Russian troops, that for several years successively, in the war which we have had occasion so often to mention, they had to engage with such a master in the military art as

the king of Prussia, and by their conflicts with him, as well as by their connection with the Austrians, and in the sequel with the Prussian soldiery, they had an opportunity of learning so many things, and of forming themselves into regular combatants.

Elizabeth tarnished her reign, however, by the institution of a political court of inquisition, under the name of a secret state chancery, empowered to examine into and punish all such charges as related to the expression of any kind of displeasure against the measures of government. This, as is usual in such cases, opened a door to the vilest practices. The lowest and most profligate of mankind were now employed as spies and informers, and were rewarded for their denunciations and calumnies against the most virtuous characters, if these happened by a look, a shrug of the shoulders, or a few harmless words, to signify their disapprobation of the proceedings of the sovereign*.

The grand duke ascended the throne by the name of Peter III. This prince's conduct has been variously represented. He entered on the government possessed of an enthusiastic admiration of the virtues of the king of Prussia, with whom he immediately made peace, and whose principles and practice he seems to have adopted as patterns for his imitation. He might have surmounted the effects even of those peculiarities, unpopular as they then were in Russia; but it is said that he aimed at reformation in his dominions, which even Peter the Great durst not attempt; and that he even ventured to cut off the beards of his clergy. He was certainly a weak man, who had no opinions of his own, but childishly adopted the sentiments of any person who took the trouble to teach him. His chief amusement was buffoonery; and he would sit for hours looking with pleasure at a merry-Andrew singing drunken and vulgar songs. He was a stranger to the country, its inhabitants, and their manners; and suffered himself to be persuaded by those about him, that the Russians were fools and beasts unworthy of his attention, except to make them, by means of the Prussian discipline, good fighting machines. These sentiments regulated his whole conduct, and prepared the way for that revolution which improprieties of a different kind tended to hasten.

Becoming attached to one of the Vorontzoff ladies, His imprudences. 134
sister to the princess Dashkoff, he disgusted his wife, who was then a lovely woman in the prime of life, of great natural talents and great acquired accomplishments; whilst the lady whom he preferred to her was but one degree above an idiot. The princess Dashkoff, who was married to a man whose genius was not superior to that of the emperor, being *dame d'honneur* and lady of the bed-chamber, had of course much of the empress's company. Similarity of situations knit these two illustrious personages in the closest friendship. The princess being a zealous admirer of the French *economistes*, could make her conversation both amusing and instructive. She retailed all her statistical knowledge; and finding the empress a willing hearer, she spoke of her in every company as a prodigy of knowledge, judgement, and philanthropy. Whilst the emperor, by his buffoonery and attachment to foreign manners, was daily incurring more and more the odium of his subjects, the popularity of his wife was rapidly increasing; and some persons about the court expressed their regret, that so much knowledge of government, such love of humanity, and such

Russia.

132
She establishes a political inquisition.

* See
Tooke's
Hist. Russ. vol. ii. p. 330.

An. 1762.

133
Accession of Peter III.

Russia. such ardent wishes for the prosperity of Russia, should only furnish conversations with Catharina Romanovna (the princess Dashkoff). The empress and her favourite did not let these expressions pass unobserved, they continued their studies in concert; and whilst the former was employed on her famous code of laws, for a great empire, the latter always reported progress, till the middling circles of Mosco and St Peterburgh began to speak familiarly of the blessings which they might enjoy if these speculations could be realized.

Meanwhile Peter III. was giving fresh cause of discontent. He had recalled from Siberia Count Munich, who was indeed a sensible, brave, and worthy man; but as he was smarting under the effects of Russian despotism, and had grounds of resentment against most of the great families, he did not much discourage the emperor's unpopular conduct, but only tried to moderate it and give it a system. Peter, however, was impatient. He publicly ridiculed the exercise and evolutions of the Russian troops; and hastily adopting the Prussian discipline, without digesting and fitting it for the constitution of his own forces, he completely ruined himself by disgust-ing the army.

135
Roused to temporary reformation by a speech of Gudovitch.

In the midst of these imprudences, however, Peter was sometimes disturbed by the advice of virtuous counsellors. Among these Gudovitch, the vice-chamberlain, is said to have reproached him in the following spirited address:

"Peter Feodorovitch, I now plainly perceive that you prefer to us the enemies of your fame. You are irrecoverably subservient to them; you acknowledge them to have had good reason for saying that you were more addicted to low and degrading pleasures, than fit to govern an empire. Is it thus that you emulate your vigilant and laborious grandsire, that Peter the Great whom you have so often sworn to take for your model? Is it thus that you persevere in the wise and noble conduct, by which, at your accession to the throne, you merited the love and the admiration of your people? But that love, that admiration, is already forgotten. They are succeeded by discontent and murmurs. Petersburg is anxiously enquiring whether the tzar has ceased to live within her walls? The whole empire begins to fear that it has cherished only vain speculations of receiving laws that shall revive its vigour and increase its glory. The malevolent alone are triumphant; and soon will the intrigues, the cabals, which the first moments of your reign had reduced to silence, again raise their heads with redoubled insolence. Shake off then this disgraceful lethargy, my tzar! hasten to shew and to prove, by some resplendent act of virtue, that you are worthy of realizing those hopes that have been formed and cherished of you."

136
Catharine forms a party in her favour.

These remonstrances, however, produced only a temporary gleam of reformation, and Peter soon relapsed into his accustomed sensuality. What he lost in popularity was soon gained by the emissaries of Catharine. Four regiments of guards, amounting to 8000 men, were instantly brought over by the three brothers Orloff, who had contrived to ingratiate themselves with their officers. The people at large were in a state of indifference, out of which they were roused by the following means. A little manuscript was handed about, containing principles of legislation for Russia, founded on natural rights, and on the claims of the different

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classes of people which had insensibly been formed, and became so familiar as to appear natural. In that performance was proposed a convention of deputies from all the classes, and from every part of the empire, to converse, but without authority, on the subjects of which it treated, and to inform the senate of the result of their deliberations. It passed for the work of her majesty, and was much admired.

Russia.

While Catharine was thus high in the public esteem and affection, the emperor took the alarm at her popularity, and in a few days came to the resolution of confining her for life, and then of marrying his favourite. The servants of that favourite betrayed her to her sister, who imparted the intelligence to the empress. Catharine saw her danger, and instantly formed her resolution. She must either tamely submit to perpetual imprisonment, and perhaps a cruel and ignominious death, or contrive to hurl her husband from his throne. No other alternative was left her, and the consequence was what was undoubtedly expected. The proper steps were taken; folly fell before abilities and address, and in three days the revolution was accomplished.

When the emperor saw that all was lost, he attempted to enter Cronstadt from Oranienbaum, a town on the gulf of Finland, 30 versts, or nearly 26 miles, from St Petersburg. The sentinels at the harbour presented their muskets at the barge; and though they were not loaded, and the men had no cartridges, he drew back. The English sailors called from ship to ship for some person to head them, declaring that they would take him in and defend him; but he precipitately withdrew. Munich received him again, and exhorted him to mount his horse, and head his guards, swearing to live and die with him. He said, "No, I see it cannot be done without shedding much of the blood of my brave Holsteiners. I am not worthy of the sacrifice." It is unnecessary for us to be more particular in detailing the progress of the revolution that placed Catharine on the throne of Russia, as the principal circumstances attending this event are given under the life of CATHERINE; but as the conclusion of the tragedy has been there omitted, we shall relate it from the most authentic sources which we have been able to procure.

137
Peter de- throned;

Six days had already elapsed since the revolution, and that great event had been apparently terminated without any violence that might leave odious impressions on the mind of the public. Peter had been removed from Peterhof to a pleasant retreat called Ropscha, about 30 miles from St Petersburg; and here he supposed he should be detained but a short time previous to his being sent into Germany. He therefore sent a message to Catharine, desiring permission to have for his attendant a favourite negro, and that she would send him a dog, of which he was very fond, together with his violin, a bible, and a few romances, telling her that, disgusted with the wickedness of mankind, he was resolved henceforth to devote himself to a philosophical life. However reasonable these requests, not one of them was granted, and his plans of wisdom were turned into ridicule.

138
and put to death.

In the mean time the soldiers were amazed at what they had done; they could not conceive by what fascination they had been hurried so far as to dethrone the grandson of Peter the Great, in order to give his crown to a German woman. The majority, without plan or

3 C

sentiment

Russia. sentiment of what they were doing, had been mechanically led on by the movements of others; and each individual now reflecting on his baseness, after the pleasure of disposing of a crown had vanished, was filled only with remorse. The sailors, who had never been engaged in the insurrection, openly reproached the guards in the tippling houses with having sold their emperor for beer. Pity, which justifies even the greatest criminals, pleaded irresistibly in every heart. One night a band of soldiers attached to the empress took the alarm, from an idle fear, and exclaimed that their mother was in danger, and that she must be awaked, that they might see her. During the next night there was a fresh commotion more serious than the former. So long as the life of the emperor left a pretext for inquietude, it was thought that no tranquillity was to be expected.

On the sixth day of the emperor's imprisonment at Ropscha, Alexey Orloff, accompanied by an officer named Teploff, came to him with the news of his speedy deliverance, and asked permission to dine with him. According to the custom of that country, wine glasses and brandy were brought previous to dinner; and while the officer amused the czar with some trifling discourse, his chief filled the glasses, and poured a poisonous mixture into that which he intended for the prince. The czar, without any distrust, swallowed the potion, on which he immediately experienced the most severe pains; and on his being offered a second glass, on pretence of its giving him relief, he refused it, with reproaches against him that offered it.

He called aloud for milk, but the two monsters offered him poison again, and pressed him to take it. A French valet-de-chambre, greatly attached to him, now ran in. Peter threw himself into his arms, saying, in a faint tone of voice, "It was not enough then to prevent me from reigning in Sweden, and to deprive me of the crown of Russia! I must also be put to death."

The valet-de-chambre presumed to intercede for his master; but the two miscreants forced this dangerous witness out of the room, and continued their ill-treatment of the czar. In the midst of this tumult the younger of the princes Baratin'sky came in, and joined the two former. Orloff, who had already thrown down the emperor, was pressing upon his breast with both his knees, and firmly griping his throat with his hand. The unhappy monarch, now struggling with that strength which arises from despair, the two other assassins threw a napkin round his neck, and put an end to his life by suffocation.

It is not known with certainty what share the empress had in this event; but it is affirmed that on the very day on which it happened, while the empress was beginning her dinner with much gaiety, an officer (supposed to be one of the assassins) precipitately entered the apartment with his hair dishevelled, his face covered with sweat and dust, his clothes torn, and his countenance agitated with horror and dismay. On entering, his eyes, sparkling and confused, met those of the empress. She arose in silence, and went into a closet, whither he followed her; a few moments afterwards she

Russia. sent for Count Panin (the former governor of Peter), who was already appointed her minister, and she informed him that the emperor was dead, and consulted him on the manner of announcing his death to the public. Panin advised her to let one night pass over, and to spread the news next day, as if they had received it during the night. This counsel being approved, the empress returned with the same countenance, and continued her dinner with the same gaiety. On the day following, when it was published that Peter had died of an hæmorrhoidal colic, she appeared bathed in tears, and proclaimed her grief by an edict.

The corpse was brought to St Petersburg, there to be exposed. The face was black, and the neck excoriated. Notwithstanding these horrible marks, in order to assuage the commotions which began to excite apprehension, and to prevent impostors from hereafter disturbing the empire, he was left three days, exposed to all the people, with only the ornaments of a Holstein officer. His soldiers, disbanded and disarmed, mingled with the crowd; and, as they beheld their sovereign, their countenances indicated a mixture of compassion, contempt, and shame. They were soon afterwards embarked for their country; but, as the sequel of their cruel destiny, almost all of these unfortunate men perished in a storm. Some of them had saved themselves on the rocks adjacent to the coast; but they again fell a prey to the waves, while the commandant of Cronstadt dispatched a messenger to St Petersburg to know whether he might be permitted to assist them (N).

Thus fell the unhappy Peter III. in the 34th year of his age, after having enjoyed the imperial dignity only six months. Whatever may have been his faults or follies, it must be allowed that he suffered dearly for them. Of the violent nature of his death there can scarcely be a doubt, though there appear to be grounds for believing that, however much Catharine must have wished for his removal, she did not take an active part in his death.

On her accession, Catharine behaved with great magnanimity and forbearance towards those who had opposed her elevation, or were the declared friends of the deceased emperor. She gave to Prince George, in exchange for his title of duke of Courland conferred on him by Peter, the government of Holstein. She reinstated Biren in his dukedom of Courland; received into favour Marshal Munich, who had readily transferred his fidelity from the dead to the living, and even pardoned her rival, the Countess Vorontzoff, and permitted her to retain the tokens of her lover's munificence. She permitted Gudovitch, who, as we have seen, was high in the confidence of Peter, and had incurred her particular displeasure, to retire to his native country. Perhaps the most unexpected part of her conduct towards the friends of Peter, was her adhering to the treaty of peace which that monarch had concluded with the king of Prussia six months before. The death of his inveterate enemy Elizabeth had relieved Frederick from a load of solicitude, and had extricated him from his dangerous situation. He now, as he thought, saw himself

(N) The above account of Peter's assassination is taken chiefly from M. Rulhiere's *Histoire ou Anecdotes sur la Revolution de Russie*, with some modifications from Tooke's *Life of Catherine II.*

Russia. self again involved in a war with the same formidable power; but to his great joy he found that Catharine, from motives of policy, declined entering on a war at the commencement of her reign.

An. 1764.
140
Assassination of the dethroned czar.

In one particular the empress showed her jealousy and her fears. She increased the vigilance with which the young prince Ivan was confined in the castle of Schlusfelburg, from which Peter III. had expressed a resolution to release him. Not long after her accession, this unfortunate prince was assassinated; though whether this event was to be imputed to the empress or her counsellors, cannot be determined. The circumstances of the assassination are thus related by Mr Tooke, from documents supplied by a manifesto published by the court of Petersburg, and supposed to be written by the empress herself.

"A lieutenant, named Mirovitch, thinking himself neglected as an officer, conceived a plan to revenge himself on the empress Catharine II. by delivering the captive Ivan from his dungeon, and replacing him on the throne: a plan which, besides the extraordinary difficulties with which it must be attended, seemed unlikely to succeed, as the manner of life to which that prince had all along been condemned, disqualified him forever for the station of a ruler. Yet Mirovitch, capable of any attempt, however inconsiderate, to which he was prompted by his vindictive spirit, found means to gain over a few accomplices to his rash design. The empress having gone on a journey into Livonia in 1764, and he happening to have a command at Schlusfelburg, for strengthening the guard at that fortress, whereby he had frequent opportunities of making himself thoroughly acquainted with the place of Ivan's confinement, caused the soldiers of his command to be roused in the night, and read to them a pretended order from the empress commissioning him to set the prince at liberty.

"The soldiers thus taken by surprise, were induced by threats, promises, and intoxicating liquors, to believe what, however, on the slightest reflection, must have struck them as the grossest absurdity. Headed by Mirovitch, they proceeded to the cell of Ivan. The commandant of the fortress, waked out of his sleep by the unexpected alarm, immediately on his appearing, received a blow with the butt end of a musket, which struck him to the ground; and the two officers that had the guard of the prisoner were ordered to submit. Here it is to be observed, that the officers whose turn it was to have the custody of him, had uniformly, from the time of Elizabeth, secret orders given them, that if any thing should be attempted in favour of the prince, rather to put him to death than suffer him to be carried off. They now thought themselves in that dreadful predicament; and the prince who, when an infant of nine weeks, was taken from the calm repose of the cradle to be placed on an imperial throne, was likewise fast locked in the arms of sleep when that throne was taken from him only one year afterwards, and now also enjoying a short respite from misery by the same kind boon of nature, when he was awakened—by the thrust of a sword; and, notwithstanding the brave resistance which he made, closed his eyes for ever by the frequent repetition of the stroke. Such was the lamentable end of this unfortunate prince! of this Russian monarch! The event excited great animadversion throughout the residence; every unbiassed person bewailed the youth so innocently

put to death; and incessant crowds of people flocked to see his body in the church of the fortress of Schlusfelburg. The government was at length obliged to steal it away by night for inhumation in a monastery at a considerable distance from town. Mirovitch paid the forfeit of this enterprise with his head †."

Russia.
† Tooke's
Hist. of Rus-
sia, vol. ii.
p. 283.

Were we to offer a detailed account of the principal transactions that took place during the long reign of Catharine, we should far exceed the limits within which this article must be confined, and should at the same time repeat much of what has already been given under other articles. As the events that distinguished the life of Catharine, however, are too important to be wholly omitted, we shall present our readers with the following chronological sketch of them, referring for a more particular account to Mr Tooke's *Life of Catherine II.* and to the articles CATHERINE II. BRITAIN, FRANCE, POLAND, PRUSSIA, SWEDEN, and TURKEY, in this work.

141
Chronolo-
gical sketch
of the af-
fairs of Rus-
sia during
the reign
of Catha-
rine II.

The year 1766, presented at St Petersburg the grandest spectacle that perhaps was ever seen in Europe. An entertainment, which the empress chose to name a carousal, the principal nobility appeared in the most sumptuous dresses sparkling with diamonds, and mounted on horses richly caparisoned, in a magnificent theatre erected for that purpose. Here all that has been read of the ancient jousts and tournaments was realized and exceeded in the presence of thousands of spectators, who seemed to vie with each other in the brilliancy of their appearance.

An. 1766.

In 1768, the empress composed instructions for a new code of laws for her dominions; and the same year she submitted to the danger of inoculation, in order that her subjects, to whom the practice was unknown, might be benefited by her example; and the experiment, under Baron Dimidale, having happily succeeded, it was commemorated by an annual thanksgiving.

An. 1768.
142
Establish-
ment of a
code of
laws.

In the same year a war broke out with the Ottoman Porte. The various events of this long and important conflict, which continued for seven years, must here be only briefly enumerated, as they will hereafter be more particularly noticed under the article TURKEY. In this war, our countryman Greig, then an admiral in the Russian service, highly distinguished himself by his conduct in a naval engagement with the Turks, in the harbour of Tschesme in the Archipelago, in which the Turkish fleet was entirely defeated, and their magazines destroyed. This took place on the 4th of November 1772.

143
War with
the Turks.

In the beginning of the year 1769, the khan of the Crimea made an attack on the territory of Bachmut on the river Bog, where he was several times bravely repulsed, with his army of Tartars and Turks, by Major-general Romanus and Prince Proserofskoi. At the same time were fought the battles of Zekanofca and Soroca on the Dniepr, when the large magazines of the enemy were burned. In February the Polish Kozaks in the voyvodship of Bracslau put themselves under the Russian sceptre. In the same month the Nisovian Saparogian Kozaks gained a battle in the deserts of Krim. In March the Polish rebels were subdued, and their town taken by Major-general Ismailof. April 2. the fort of Taganrock, on the sea of Azof, was taken. On the 15th the Russian army, under the general in chief Prince Galitzin, crossed the Dniestr. On the 19th a victory was gained by Prince Galitzin near Chotzim. On the 21st the Turks were defeated

An. 1769.
144
Progress
and conclu-
sion of the
war with
Turkey.

Russia.

not far from Chotzim by Lieutenant-general Count Soltikof. The 29th, an action was fought between the Russian Kalmucks and the Kuban Tartars, to the disadvantage of the latter. June 8th, the Turks were defeated at the mouth of the Dniepr near Otchakof. 19th, An action took place on the Dniepr, when the troops of Prince Prokofskoi forced the Turks to repass the river in great disorder. Chotzim was taken September 19th. Yaffa, in Moldavia, was taken 27th September. Bucharest, in Wallachia, was taken, and the hospodar made prisoner, in November 1770. A victory was gained by the Russians under Generals Podhorilshany and Potemkin, near Fokshany. The town of Shursha was taken by Lieutenant-general Von Stoffeln, Feb. 4. A Russian fleet appeared in the port of Maina in the Morea, Feb. 17. Mistra, the Lacedæmon of the ancients, and several other towns of the Morea, were taken in February. Arcadim in Greece surrendered, and a multitude of Turks were made prisoners, in the same month. The Turks and Tartars were driven from their entrenchments near the Pruth, by Count Romantzof, Prince Repnin, and General Bauer, 11th—16th June. Prince Prokofskoi gained several advantages near Otchakof, June 18. The Russian fleet, under Count Alexey Orlof, gained a complete victory over the Turks near Tscheme, June 24th; the consequence of this victory was the destruction of the whole Turkish fleet, near Tschesme, where it was burned by Admiral Greig, June 26. A battle was fought on the Kagul, in which Count Romantzof defeated the Turkish army, consisting of 150,000 men, took their camp, and all the artillery, July 21. The fortress Bender was taken July 22. The town of Ismail was taken by Prince Repnin, July 26. Kilia by Prince Repnin, August 21. and Ackerman in October. Brailof was taken, November 10. 1771. The fortress of Shursha by General Olitz, on February 23.; the town of Kassa by Prince Dolgoruckof, June 29.; the fort of Kertchi, July 2.; the fort of Yenicali, July 3.; and numberless other victories were obtained by sea and land, till the peace was concluded the 13th January 1775. By this the Crimea was declared independent of the Porte, all the vast tract of country between the Bog and Dniepr was ceded to Russia, besides the Kuban and the isle of Taman, with free navigation in all the Turkish seas, including the passage of the Dardanelles, privileges granted to the most favoured nations, and stipulations in behalf of the inhabitants of Moldavia and Wallachia.

An. 1779.
145
Division of
the empire
into vice-
royalties.

In 1779, the empress intending to divide the empire into viceroyalties, began in January with the viceroyalty of Orlof. March 21. a new treaty was signed at Constantinople between Russia and the Porte. May 13. the treaty of peace between the belligerent powers in Germany, and the French king, was signed under the mediation of her majesty. In June she established an hospital for invalids at Mosco, to be confined to officers. In July, General Bauer received orders to cause a canal to be cut to supply Mosco with wholesome water. In October, a ship built at Taganrock, named the Prince Constantine, sailed to Smyrna with Russian commodities. December 3. the viceroyalty of Voronetsh was institu-

ted; and the 27th, Count Romantzof Zadunaiski opened the viceroyalty of Kurfk with great solemnity.

In 1780, February 28. appeared the memorable declaration of her imperial majesty, relating to the safety of navigation and commerce of the neutral powers. May 9. the empress set out on a journey to White Russia from Zarsoi Selo, visited Narva, Plescof, met the emperor of Germany under the title of Count Falkenstein at Mohilef, and they pursued the journey together to Smolensk. June 6. Count Falkenstein arrived at Mosco. The 17th, the empress returned to Zarsoi Selo, and the count Falkenstein arrived at St Petersburg. July 8. the emperor returned to Vienna.

In 1781, March 1. the empress became mediatrix between England and Holland. April 5. instituted the first public school in St Petersburg. August 27. the grand dukes, Alexander and Constantine, were inoculated by Baron Dimsdale. August 31. the first stone of a cathedral was laid at Cherson, dedicated to St Catherine. September 19. the grand duke, Paul Petrovitch, and his consort, Maria Feodorovna, departed from Zarsoi Selo, through Plescof, Mohilef, and Kief, on a journey into foreign countries, under the title of Count and Countess of the North.

In 1782, by command of her majesty, dated January 18. a Roman Catholic archbishop was installed in the city of Mohilef, with authority over all the Catholic churches and convents in the Russian empire. August 7. the famous equestrian statue of Peter the Great, being finished, was uncovered to the public in presence of the empress, on which occasion she published a proclamation containing pardons for several criminals, &c. (G). November 22. the order of St Vladimir was instituted. The 27th, the empress published a new tariff. November 20. the grand duke and his duchess, having completed their travels through Germany, Italy, France, Holland, the Netherlands, &c. returned to St Petersburg.

In 1783, May 7. the empress instituted a seminary for the education of young persons of quality at Kurfk. June 21. a treaty of commerce concluded with the Ottoman Porte. July, the institution of the other viceroyalties of the empire followed in succession. July 21. the empress published a manifesto by her commander in chief Prince Potemkin, in the Krim, in regard to the taking possession of that peninsula, the Kuban, and the island of Taman. The 24th, a treaty was concluded with Heraclius II. tzar of Kartalinia and Kachetti, by which he submitted himself, his heirs and successors for ever, with his territories and dominions, to the sceptre of her majesty, her heirs and successors. The 29th, account was received from the camp of Prince Potemkin at Karas-Bafar, that the clergy, the beys, and other persons of distinction, with the towns of Karas-Bafar, Bachtshiserai, Achmetchet, Kassa, Kosloff, with the districts of Turkanskoikut and Neubafar, and that of Perokop, in the peninsula of the Krim, together with the hordes of Edissank and Dshamboluk, the sultan Alim Girey, and his vassals, with all the Budshaks and Bashkirs there, and all the tribes dwelling beyond the river Kuban, the sultan Boatur Girey and his vassals, took

Russia.
An. 1780.
146
The emperor
of Germany
many visits
Russia.

An. 1781.
147
Establishment
of public
schools
in St Petersburg.

An. 1782.
148
Statue of
Peter the
Great finished.

An. 1783.
149
Various
accession to
the Russian
empire.

¹⁵⁰ *Russia.* the oath of allegiance to her imperial majesty, and with willing hearts submitted for ever to her glorious sway. The 30th, the hospodar of Wallachia was deposed, and Draco Sutzo set up in his place. September 22. her majesty raised Gabriel, archbishop of Novgorod and St Petersburg, to the dignity of metropolitan. October 21. in the great hall of the Academy of Sciences, the new institution of the Imperial Russian academy was opened, after a most solemn consecration by the metropolitan Gabriel, and others of the clergy, under the presidency of the princess Dashkoff. November 7. the empress became mediatrix for accommodating the differences between the king of Prussia and the city of Dantzic. The school for surgery was opened at St Petersburg on the 18th. December 13. a school commission was instituted for superintending all the public schools. The 28th, an act was concluded with the Ottoman Porte, by which the possession and sovereignty of the Krim, the Kuban, &c. were solemnly made over to the empress.

An. 1784. 1784. January 1. the senate most humbly thanked her majesty for the benefactions which she had graciously bestowed on the whole empire in the preceding year, in a speech by Field-marshal Count Razomofskoi. The 18th, the Roman Catholic archbishop of Mohilef, Stanislaus Tshesrenthevitch of Bogush, constituted by her majesty, was, with a variety of church ceremonies, solemnly invested, in the Roman Catholic church at St Petersburg, with the pallium from his holiness the pope, by the papal ambassador Count Archetti, archbishop of Chalcedon. October 14. the Lesgiers, having crossed the river Alafan, and invaded the dominions of Georgia, were repulsed with great loss by a detachment of Russian troops. December 29. Katolikos Maksim, the serdar and court-marshal Prince Zeretelli, and the chief justice Kuinichese, ambassador from David, tzar of Imeretia, were admitted to a public audience of her majesty, at which they submitted, in the name of the tzar, him, and his subjects, to the will and powerful protection of her imperial majesty, as the rightful head of all the sons of the orthodox eastern church, and sovereign ruler and defender of the Georgian nations.

¹⁵¹ *An. 1785.* 1785. January 1. the senate, in the name of the empire, humbly thanked her majesty for the benefits she had bestowed upon it during the preceding year. The 8th and 15th, the empress in person, held a public examination of the young ladies educated in the Devitza Monastery. The 12th, Mauro Cordato, hospodar of Wallachia, was deposed; and Alexander Mauro Cordato, his uncle, restored to that dignity. The 21st, the empress visited the principal national school, and passed a long time in examining the classes, and the proficiency of the youth in that seminary; on which occasion a marble tablet was fixed in the wall of the fourth class, with this inscription, in gold letters: THOU VISITEST THE VINEYARD WHICH THY OWN HAND HATH PLANTED, Jan. 21. 1785. April 21. the privileges of the nobility were confirmed; and, on the same day, the burghers of towns constituted into bodies corporate, by a particular manifesto. The public school in Voronetk was opened. The 24th of May, her majesty went to inspect the famous sluices at Vishney Volotshok, and other water communications, and from thence proceeded to Mosco. June 19. her majesty returned to St Pe-

¹⁵⁰ Imperial academy of St Petersburg opened.

¹⁵¹ Georgia annexed to the Russian empire.

¹⁵² Several provincial schools established.

tersburgh. July 3. she visited the hardware manufactories at Sisterbeck, in Finland. 14th, A manifesto was issued, granting full liberty of religion and commerce, to all foreigners settling in the regions of Mount Caucasus, under the Russian government. September 15. the public school at Nishney Novgorod was opened. October 12. the Jesuits in White Russia, in a general assembly, elected a vicar-general of their order. November 1. a treaty of commerce was concluded with the emperor of Germany. The 24th, the Russian consul, in Alexandria, made his public entry on horseback (an honour never before granted to any power); erected the imperial standard on his house, with discharge of cannon, &c. December 28. a Russian mercantile frigate, fully freighted, arrived at Leghorn from Constantinople.

An. 1786. 1786. January 1st, the senate returned thanks for the benefits conferred on the empire. From the 11th to the 16th the new election of persons to the offices in the Petersburg government, ending with masquerade and illuminations, took place. The 29th, the empress confirmed the plan of a navigation school. February 12th, by a decree, the usual slavish subscriptions to petitions were to be discontinued; and, instead of them, only the words *humble or faithful subject*; and, in certain cases, only *subject* were ordained to be used. March 2d, the empress granted the university of Mosco 125,000 rubles, and all the materials of the palace Kremlin for increasing its buildings. The 25th, a decree was passed for making and repairing the roads throughout the whole empire at the sole expence of the crown, and 4,000,000 of rubles were immediately allotted for the road between St Petersburg and Mosco. April 10th, a new war establishment for the army was signed: 23d, the hospodar of Wallachia was deposed, and Mavroyeni set up in his place. June 28th, the empress instituted a loan bank at St Petersburg, to the fund whereof she allotted 22,000,000 to be advanced to the nobility, and 11,000,000 to the burghers of the town, on very advantageous terms. August 5th, there were published rules to be observed in the public schools. October 4th, a large Russian ship, with Russian productions from St Petersburg, arrived at Cadiz. November 24th, the empress erected public schools at Tambof. December 14th, Prince Ypsilanti was appointed hospodar of Moldavia in the room of the deposed Mauro Cordato. December 31st, a treaty of commerce and navigation was concluded between Russia and France.

1787. January 7th, the empress departed from Zarskoi Selo on a journey to her southern dominions: 29th, after having visited the towns of Veleki-Luki, Smolenfk, Sterodub, Novgorod Severfkoi, Beresua, Tshernigof, &c. leaving testimonies of her clemency and bounty in each, arrived at Kief. February 6-7th, the deposed hospodar of Moldavia, Mauro Cordato, thinking his life not safe in Yassi, found an opportunity privately to escape. March, public schools were endowed and opened at Rostof, Uglitsh, Molaga, and Romanof, in the viceroyalty of Yaroslavl; also at Ustiug and Arasovitz in the viceroyalty of Vologda. April 21st, a manifesto was issued for promoting peace and concord among the burghers of the empire. The 22d, her majesty pursued her journey from Kief to the Dniepr. The 25th, the concerted interview between her and the king of Poland, near the Polish town of Konief, took place. The

Russia.

An. 1786.

¹⁵³ The roads repaired at the expence of government.

¹⁵⁴ A loan bank established.

An. 1787.

¹⁵⁵ Progress of Catharine through part of the empire.

Russia. 30th, the empress visited Krementshuk in the viceroyalty of Katarinoslauf. The treaty of commerce with England being expired, the British factory were informed that they must henceforward pay the duties on imports in silver money, like the other nations who had no commercial treaty. May 7th, the empress hearing that the emperor of Germany was at Cherson, proceeded thither, and met him there on the 12th. The 17th, she prosecuted her journey to the Krim. June 2d, the emperor, after travelling with her majesty through the Krim, took leave of her at Borislauff, in the viceroyalty of Katarinoslauf, on his way home. 23d, The empress having returned from the Krim, through Krementshuk, Pultava, Karfk, Orel, and Tula, arrived at the village of Kolomenfk, seven versts from Mosco. June 28th, the 25th anniversary of her reign, she displayed various marks of her bounty. The debtors to the crown were forgiven, prisoners released, imposts taken off, soldiers rewarded, &c. July 4th, returned over Tver, Tula, Valdai, Vishnei-Volotshok, and Novgorod, to Zarkoi-Selo, where she arrived the 11th. The 12th, the new built school at Riga, called *Lyceum*, was solemnly dedicated. August 5th, Bulgakoff, the Russian ambassador, at the Ottoman Porte, was imprisoned in the Seven Towers, contrary to the law of nations, which the empress regarded as a public declaration of war. 21st, The Turkish fleet at Otchakof, attacked the Russian frigate Skorui, and the sloop Bitingi, but was repulsed and put to flight by the bravery of the latter. Many signal advantages were gained over the Turks; several public schools founded in various parts of the empire between this and August following; during which time the war broke out with Sweden.

156
Renewal of
hostilities
with Tur-
key.

An. 1788. 1788. August 12th, in the expedition beyond the Kuban, the Russian troops entirely routed a company of 4000 Arutayans and Alcafnians; 800 of the enemy were slain, and five villages destroyed. 15th, The surrender of the Turkish fortress of Dubitsha took place. 18th, The Turks made a violent sortie from Otchakof, but were repulsed by the Russian yagers; and, after a battle of four hours, were driven back with the loss of 500 men. 23d, A fierce battle was fought between the Russian troops and Sacubanians, in which the latter lost 1000 men. The Russian fleet kept the Swedish blocked up in Sveaborg, ever since the battle of July 6th. The Swedish army left the Russian territory in Finland. September 18th, the town and fortress of Chotzim surrendered to the Russians, with the garrison of 2000 men, 153 cannon, 14 mortars, and much ammunition. 19th—29th, A small Russian squadron from the fleet at Sevastopol, cruising along the coast of Anatolia, destroyed many of the enemy's vessels, prevented the transporting of the Turkish troops, and returned with great booty. 20th, Uffener Shamanachin, chief of the Bsheduehovians, was, on his petition, admitted a subject of Russia. 26th, A numerous host of Kubanians and Turks were beaten on the river Ubin, with the loss of 1500 men. November 7th, Prince Potemkin, at the head of his Kozaks, took the island Berezan, with many prisoners and much ammunition. December 6th, the town and fortress of Otchakof were taken by Prince Potemkin Tavritsheskoï; 9510 of the enemy were killed, 4000 taken prisoners, 180 standards, 310 cannons and mortars. The whole of the inhabitants were taken prisoners, amounting to

25,000; the Russians lost 956 killed and 1824 wounded. December 19th, General Kamenskoy gained considerable advantages over the Turks near Gangur.

1789. April 16th, Colonel Rimkoy Kortakoff was An 1789.
surrounded by the Turks, who were beaten, with great 158
slaughter, by Lieutenant-General Von Derfelden. 17th Numerous
—28th, Some Russian cruisers from Sevastopol effected victories
a landing on Cape Karakarman, burnt six mosques, over the
and carried off great booty. 20th, General Derfelden Turks and
drove the Turks from Galatsh, gained a complete Swedes.
victory, killed 2000, took 1500 prisoners, with the seraskier Ibrahim Pasha, and the whole camp. Several skirmishes took place between the Russians and Swedes in Finland, always to the advantage of the former. May 31st, another victory was gained over the Swedes. June 5th, Sulkof was taken from the Swedes, and fort St Michael on the 8th. July, 15th, Admiral Tchitchagoff engaged the Swedish fleet under the command of the duke of Sudermania; but no ship was lost on either side. 21st, A battle was fought at Fokshany to the great loss of the Turks, and Fokshany was taken. August 13th, the Russian galley fleet fought the Swedish under Count Ehrenschwerdt, the former took a frigate and five other ships, and 2000 prisoners. August 21st, another sea fight took place, and Prince Nassau Siegen made good his landing of the Russian troops in sight of the king of Sweden at the head of his army. September 7th, Prince Repnin attacked the seraskier Hafsan Pasha near the river Seliska, and took his whole camp. 11th, Count Suvaroff and prince of Saxe Cobourg engaged near the river Kymnik the grand Turkish army of nearly 100,000 men, and gained a complete victory; from which Count Suvaroff received the surname Kymnikskoi. 14th, The Russian troops under General Ribbas, took the Turkish citadel Chodshabey, in the sight of the whole of the enemy's fleet. 30th, The fortress Palanka being taken, the town of Belgorod or Akermann surrendered to Prince Potemkin Tavritsheskoï. November 4th, the town and castle of Bender submitted at discretion to the same commander.

1790, April 24. General Numfen gained a victory An. 1790.
over the Swedes near Memel. May 2. a sea fight 159
took place off Reval, in which the Russians took the Peace with
Prince Charles of 64 guns, from the Swedes; and in Sweden.
this engagement those two gallant English officers, captains Trevennin and Denison were killed. 23d, the fleet under Vice admiral Cruse engaged the Swedish fleet near the island Siskar, in the gulf of Finland, without any advantage being gained on either side, though they fought the whole day. 24th, an action was fought at Savataipala, when the Swedes were forced to fly. June 6. the Swedes were defeated by Major Buxhovden, on the island Uranfari. June 22. the whole Swedish fleet, commanded by the duke of Sudermania, was entirely defeated by Admiral Tchishagoff and the prince of Nassau Siegen; on this occasion 5000 prisoners were taken, amongst whom were the centre admiral and 200 officers. 28. General Denisoff defeated the Swedes near Davidoff. July 9th, Admiral Ushakoff obtained a victory over the Turkish fleet commanded by the capudan pasha, at the mouth of the straits of Yenikali. August 3. peace was concluded with Sweden, without the mediation of any other power. August 28, 29. an engagement took place on the Euxine, not far from Chodshabey, between the Russian admiral Ushakoff

Russia. koff and the capudan pashia, when the principal Turkish ship, of 80 guns, was burnt, one of 70 guns, and three taken, the admiral Said Bey being made prisoner, and another ship sunk; the rest made off. September 30, a great victory was obtained over the Turks by General Germann, with much slaughter, and the seraskier Batal Bey, and the whole camp, were taken. October 18. Kilia surrendered to Major Bibbas. November 6, 7. the fortress Culusha and the Turkish flotilla were taken. December 11. the important fortress of Ismail, after a storming for seven hours without intermission, surrendered to Count Suvaroff, with the garrison of 42,000 men: 30,816 were slain on the spot, 2000 died of their wounds, 9000 were taken prisoners, with 265 pieces of cannon, an incredible store of ammunition, &c. The Russians lost only 1815 killed, and 2450 wounded.

An 1791.
160
The Turks
repeatedly
defeated,

1791, March 25—31. the campaign opened by the troops under Prince Potemkin, not far from Brailof, when the Turks were defeated in several battles, in which they lost upwards of 4000 men. June 5. the troops under General Golenitshof Kutusoff, near Tultsha, drove the Turks beyond the Danube, and at Babada entirely routed a body of 15,000 men, of whom 1500 were left dead upon the field. 22. The fortress Anapuas was taken by storm, when the whole garrison, consisting of 25,000 men, were put to the sword, excepting 1000 who were taken prisoners. 28. The troops under Prince Repnin attacked the Turkish army, consisting of nearly 80,000 men, commanded by the grand vizir Yussuf Pasha, eight pashas, two Tartar sultans, and two beys of Anatolia; and after a bloody battle of six hours, entirely routed them: 5000 Turks were killed in their flight. June 28. Sudskuk Kale was taken. July 31. Admiral Ushakoff beat the Turkish fleet on the coasts of Rumelia. Prince Repnin and Yussuf Pasha signed the preliminaries of peace between the Russian empire and the Ottoman Porte, by which the Dniestr was made the boundary of the two empires, with the cession of the countries lying between the Bog and the Dniestr to Russia. August 15, 16. at Pillnitz near Dresden, a congress was held by the emperor of Germany, the king of Prussia, the elector of Saxony, the count d'Artois, &c. &c. One of the most important events in this year was the death of Prince Potemkin at Yassy in Moldavia on the 15th October.

161
and obliged
to make
peace.

An 1792.
162
Fresh inva-
sion of Po-
land.

1792. Early in this year Bulgakoff, the Russian minister at Warsaw, declared war against Poland; and the Polish patriots raised an army in which Thaddeus Kosciusko (or according to some Koschiesky) soon bore a conspicuous part.

In 1788, the diet of Poland had abrogated the constitution which the empress of Russia had, in 1775, compelled that nation to adopt, and had formed an alliance with the king of Prussia, by way of defence against the further encroachments of the Russian despot. Three years after, viz. on the 3d of May 1791, the new constitution which was intended further to destroy the ambitious hopes of Catharine, was decreed at Warsaw. See POLAND, N^o 125. These were affronts which the Russian empress could not forgive, and in one of the *conciliabula*, in which the ministers of state, and the favourite for the time being, sat to regulate the affairs of the north of Europe, and to determine the fate of the surrounding nations, the annihilation of the Polish monarchy was resolved on.

Russia. The declaration of war above mentioned was denounced by Bulgakoff at an assembly of the diet. See POLAND, N^o 148. That body received the declaration with a majestic calmness, and resolved to take measures for the defence of the nation. The generous enthusiasm of liberty soon spread throughout the republic, and even the king pretended to share in the general indignation. An army was hastily collected, and the command of it bestowed on Prince Joseph Poniatofsky, a general whose inexperience and frivolous pursuits were but ill adapted to so important a charge.

In the mean time several Russian armies were preparing to overwhelm the small and disunited forces of the Poles. A body of 80,000 Russians extended itself along the Bog; another of 10,000 was collected in the environs of Kief, and a third of 30,000 penetrated into Lithuania. While these armies were carrying murder and desolation through the Polish territories, Catharine was employing all her arts to induce the neighbouring powers to join in the partition of Poland, and in this she was but too successful. A treaty was accordingly concluded between the empress and the king of Prussia, by which either appropriated to itself a certain share of the remains of Poland. Stanislaus Augustus, the powerless head of that republic, was prevailed on to make a public declaration, that there was a necessity for yielding to the superiority of the Russian arms.

1793. On the 9th of April the Polish confederation of the partizans of Russia assembled at Grodno; and on this occasion the Russian general placed himself under the canopy of that throne which he was about to declare for ever vacant, and the Russian minister Sievers, produced a manifesto, declaring the intention of his mistress to incorporate with her domains all the Polish territory which her arms had conquered. An. 1793-

The Russian soldiers dispersed through the provinces, committed depredations and ravages of which history furnishes but few examples. Warsaw became especially the theatre of their excesses. Their general Igeliom, who governed in that city, connived at the disorders of the soldiers, and made the wretched inhabitants feel the whole weight of his arrogance and barbarity. The patriots of Poland had been obliged to disperse; their property was confiscated, and their families reduced to servitude. Goaded by so many calamities, they once more took the resolution to free their country from the oppression of the Russians, or perish in the attempt. Some of them assembled, and sent an invitation to Kosciusko, to come and lead them on against the invaders of their freedom.

Kosciusko had retired to Leipsic with Kolontay, Zagonchek, and Ignatius Pottocky, all eminent for patriotism and military ardour. These four Poles hesitated not a moment in giving their approbation to the resolution adopted by their indignant countrymen; but they were sensible that, in order to succeed, they must begin by emancipating the peasants from the state of servitude under which they then groaned. Kosciusko and Zagonchek repaired with all expedition to the frontiers of Poland, and the latter proceeded to Warsaw, where he held conferences with the chief of the conspirators, and particularly with several officers who declared their detestation of the Russian yoke. All appeared ripe for a general insurrection, and the Russian commanders whose suspicions had been excited by the appearance of Kosciusko

Russia ciusko on the frontiers, obliged that leader and his confederates to postpone for a time the execution of their plan. To deceive the Russians, Kosciusko retired into Italy, and Zagonchek repaired to Dresden, whither Ignatius Potoski and Kolontay had gone before him. On a sudden, however, Zagonchek appeared again at Warsaw, but was impeached by the king to General Igelstrom, and, in a conference with the general, was ordered to quit the Polish territory. He must now have abandoned his enterprise altogether, or immediately proceeded to open insurrection. He chose the latter.

An. 1794-
165
Attempts of
the patriots
to oppose
the in-
croach-
ments of
Russia.

1794. Kosciusko was recalled from Italy, and arrived at Cracow, where the Poles received him as their deliverer. Here he was joined by some other officers, and took the command of his little army, consisting of about 3000 infantry, and 1200 cavalry. On the 24th of March was published the manifesto of the patriots, in which they declared the motives for their insurrection, and called on their countrymen to unite in the glorious attempt to free the republic from a foreign yoke. Kosciusko was soon joined by 300 peasants armed with scythes, and some other small reinforcements gradually came in. A body of 7000 Russians had collected to oppose the movements of this little army, and a battle took place, in which the patriots were successful.

While the insurrection had thus auspiciously commenced on the frontiers, the confederates of the capital were nearly crushed by the exertions of the Russian general. Hearing at Warsaw of the success of Kosciusko, Igelstrom caused all those whom he suspected to have any concern in the insurrection, to be arrested; but these measures served only to irritate the conspirators. On the 18th of April they openly avowed their confederacy with the patriots of the frontiers, and proceeded in great numbers to attack the Russian garrison. Two thousand Russians were put to the sword, and the general being besieged in his house, proposed a capitulation; but profiting by the delay that had been granted him, he escaped to the Prussian camp, which lay at a little distance from Warsaw.

Wilna, the capital of Lithuania, followed the example of Warsaw, but the triumph of the insurgents was there less terrible, as Colonel Yafinsky, who headed the patriots, conducted himself with so much skill, that he made all the Russians prisoners without bloodshed. The inhabitants of the cantons of Chelm and Lublin, also declared themselves in a state of insurrection, and three Polish regiments who were employed in the service of Russia, espoused the cause of their country. Some of the principal partizans of Russia were arrested, and sentenced to be hanged.

Kosciusko exerted himself to the utmost to augment his army. He procured recruits among the peasants, and to inspire them with the more emulation, he adopted their dress, ate with them, and distributed rewards among such as appeared most to merit encouragement. All his attempts to inspire the lower orders of the Poles with the ardour of patriotism were, however, unavailing. A mutual distrust prevailed between the nobles and the peasants, and this was fomented by the arts of Stanislaus and the other partizans of Russia.

The empress had sent into Poland two of her best generals, Suvaroff and Fersen. For some time Kosciusko succeeded in preventing the junction of these generals,

and several engagements took place between the Russians and patriots, in which the former were generally successful. At length, on the 4th of October the fate of Poland was decided by a sanguinary conflict between Kosciusko and Fersen, at Macieyovitch, a small town of Little Poland, about 60 miles from Warsaw. The talents, the valour, and desperation of Kosciusko, could not prevent the Poles from yielding to superior numbers. Almost the whole of his army was either cut in pieces, or compelled to surrender at discretion, and the hero himself, covered with wounds, fell senseless on the field of battle, and was made prisoner.

The small number that escaped fled to Warsaw, and shut themselves up in the suburb of Praga. Hither they were pursued by Suvaroff, who immediately laid siege to the suburb, and prepared to carry it by storm. On the 2d of November, the brutal Suvaroff gave the assault, and having made himself master of the place, put to the sword both the soldiers and the peaceable inhabitants, without distinction of age or sex. It is computed that 20,000 persons fell victims to the savage ferocity of the Russian general; and, covered with the blood of the slaughtered inhabitants, the barbarian entered Warsaw in triumph.

Thus terminated the feeble resistance of the Polish patriots. The partition of the remaining provinces was soon effected, and Stanislaus Augustus, who had long enjoyed merely the shadow of royalty, and had degraded himself by becoming the instrument of Russian usurpation, retired to Grodno, there to pass the remainder of his days on a pension granted him by the empress.

1795. On the 18th of February, a treaty of defensive alliance between the empress of Russia and his Britannic majesty was signed at St Peterburgh. The ostensible object of this treaty was to maintain the general tranquillity of Europe, and more especially of the north; and by it Russia agreed to furnish Great Britain with 10,000 infantry and 2000 horse in case of invasion; while Great Britain was, under similar circumstances, to send her imperial majesty a squadron consisting of two ships of 74 guns, six of 60, and four of 50, with a complement of 4560 men. On the 18th March was signed the act by which the duchies of Courland and Semigalia, together with the circle of Pilten, all which had lately belonged to the duke of Courland, but had long retained only the shadow of independence, submitted themselves to the Russian dominion.

In this year there took place between the courts of St Petersburg and Stockholm, a dispute which threatened to terminate in a war. Gustavus III. had been assassinated by Ankerstroem at a masquerade, on the 15th March 1791, and the young king Gustavus Adolphus being still a minor, the duke of Sudermania, his uncle, had been appointed regent of the kingdom. The regent had determined to effect a marriage between his nephew and a princess of the house of Mecklenburg; but Catharine publicly declared that the late king had betrothed his son to one of her granddaughters. The misunderstanding hence originating, was increased by the rude and indecorous behaviour of the baron Von Budberg, the Russian *charge des affaires* at Stockholm, and matters seemed tending to an open rupture; when in 1796, a French emigrant named Christin effected a reconciliation, and General Budberg, the baron's uncle, was sent

Russia. sent as ambassador to Stockholm from the Russian court. In consequence of this reconciliation, the young king, attended by the regent, and a numerous train of Swedish courtiers, set out on a visit to St Petersburg, where they arrived on the 24th of August, and an interview took place between the empress and her royal visitors, for the purpose of finally adjusting the projected matrimonial alliance. Gustavus Adolphus was much pleased with the appearance of the grand duchess Alexandra; but informed the empress, that by the fundamental laws of Sweden he could not sign the marriage contract before the princess had abjured the Greek religion; and as neither the solicitations nor the flatteries of Catharine could prevail on the young monarch to depart from the received custom of his country, the negociation ended, and the next day Gustavus and his retinue quitted St Petersburg.

The last transaction of importance in the reign of Catharine was her invasion of the Persian territories, undertaken for the purpose of acquiring certain possessions on the shores of the Caspian. A Russian army entered Daghestan, and made itself master of Derbent, but was afterwards defeated by the Persians under Aga Mahmed.

The death of the empress took place, as we have elsewhere stated, on the 9th of November of this year; and the grand duke Paul Petrovitch ascended the throne under the title of Paul I.

An. 1796. 166
Reign of Paul. Paul Petrovitch had attained his 42d year before the death of his mother placed him on the imperial throne; but for many years before her death, he had lived in a state of comparative obscurity and retirement, and had apparently been considered by the empress as incapable of taking any active part in the administration of affairs. It is well known that Catharine never admitted him to any participation of power, and kept him in a state of the most abject and mortifying separation from court, and in almost total ignorance of the affairs of the empire. Although by his birth he was generalissimo of the armies, president of the admiralty, and grand admiral of the Baltic, he was never permitted to head even a regiment, and was interdicted from visiting the fleet at Cronstadt. From these circumstances it is evident that the empress either had conceived some jealousy of her son, or saw in him some mental imbecillity, that appeared to her to disqualify him for the arduous concerns of government. There is little doubt, from the circumstances which distinguished his short reign, that Catharine had been chiefly influenced in her treatment of the grand duke, by the latter consideration. There were certainly times at which Paul displayed evident marks of insanity, though he occasionally gave proofs of a generous and tender disposition, and even of intellectual vigour.

It is generally believed that, a short time before her death, Catharine committed to Plato Zuboff, her last favourite, a declaration of her will, addressed to the senate, desiring that Paul should be passed over in the succession, and that on her death the grand duke Alexander should ascend the vacant throne. As soon as Zuboff was made acquainted with the sudden death of the empress, he flew to Pavlovsk, about 23 miles from St Petersburg, where Paul occasionally resided, but meeting the grand duke on the road, he, after a short

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Russia. explanation, delivered up the important document. Paul, charmed with his zeal and loyalty, rewarded the late favourite, by permitting him to retain the wealth and honours which had been heaped on him by his mistress, while a general and rapid dispersion soon took place among the other adherents of the late sovereign. On the day following the death of his mother, Paul made his public entry into St Petersburg, amidst the acclamations of all ranks of people.

167
Singular fact. General of Peter III. One of the first measures adopted by the new emperor excited considerable surprise, and divided the opinions of the public with respect to the motives by which it had been suggested; some attributing it to his respect for the memory of his late father; others to a culpable reflection on that of his mother. He ordered the remains of Peter III. to be removed from the sepulchre in which they had been deposited in the church of St Alexander Nefski, and caused them to lie in state for three weeks, while they were watched night and day by the only two remaining conspirators who had assisted at his assassination. After this dreadful mark of his justice on the murderers of his father (surely more terrible to the guilty mind than death itself), he consigned the ashes to the sepulchre of Catharine II. in the cathedral of St Peter and St Paul, obliging the assassins to walk in the procession as chief mourners.

Few political events of any importance marked the reign of Paul previous to the year 1798, when, in consequence of a treaty between Paul and the emperor of Germany, a Russian army of 45,000 men under Field-marshal Suvaroff, joined the imperialists in the Austrian territories in Italy. The progress of Suvaroff, his successes over Moreau, and his final recall by his master, have already been related in the article FRANCE, from 498 to 506.

An. 1799. 168
Treaty of alliance between Russia and Britain. In 1799, Paul entered into a treaty of offensive and defensive alliance with his Britannic majesty. This treaty was signed at St Petersburg on the 22d of June, having been preceded by a provisional treaty between the same powers at the end of the year 1798. By the provisional treaty it had been stipulated that Paul should assist the king of Prussia, if the latter could be persuaded to join his arms to the allied powers against France, with 45,000 men; and that the king of Great Britain should pay to Russia a subsidy of 75,000l. sterling per month; and in case the king of Prussia should refuse to join the coalition, the same number of troops, in consideration of the same subsidy, should be employed as occasion might require, to assist the common cause. By the new treaty, the emperor of Russia, instead of the 45,000 troops, engaged to furnish 17,593, with the necessary artillery, to be employed in an expedition against Holland; and he engaged to furnish six ships, five frigates, and two transports, for the purpose of transporting part of the invading army from Britain to the continent. In consideration of these succours, the court of London engaged to advance to Russia a subsidy of 44,000l. sterling per month; to pay the sum of 58,929l. 10s. sterling for the expences of equipping the fleet; and after the period of three months had elapsed from such equipment, to pay a further subsidy of 19,642l. 10s. sterling per month, so long as the fleet should remain under the command of his Britannic majesty.

In consequence of this treaty, a Russian fleet joined

Russia. that of Britain in Yarmouth roads, and took part in the unfortunate expedition to the coast of Holland, undertaken in the summer of 1799. See BRITAIN, N^o 1069.

An. 1801. In the beginning of the year 1801, all Europe was
169 Paul's chal- thrown into the greatest astonishment by the appearance
lenge to the of a paragraph in the Hamburgh gazette of the 16th of
sovereigns January. The paragraph was dated from Petersburg
of Europe! the 30th December, 1800, and is as follows.

"We learn from Petersburg, that the emperor of Russia, finding that the powers of Europe cannot agree among themselves, and being desirous to put an end to a war which has desolated it for 11 years past, intends to point out a spot, to which he will invite all the other sovereigns to repair and fight in single combat; bringing with them as seconds and squires, their most enlightened ministers, and their most able generals, such as Messrs Thugot, Pitt, Bernstorff, &c. and that the emperor himself proposes being attended by generals count de Pahlen and Khutsof: We know not if this report be worthy of credit; however, the thing appears not destitute of some foundation, and bears strong marks of what he has been often taxed with."

This paragraph was immediately copied or translated into all the public papers, and it was strongly affirmed by many, that it was the composition of Paul himself. This has since been confirmed by the poet Kotzebue, who was employed by the emperor of Russia to translate the original into German, for the express purpose of its being inserted in the Hamburgh gazette (H).

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Other
marks of
the emper-
or's de-
rangement.

This was not the only mark of mental derangement displayed by the unhappy monarch. His favours and his displeasure were alternately experienced by some of his most distinguished courtiers and adherents. Stanislaus, the deposed king of Poland, partook by turns of his beneficence and his severity; and at length on the death of that monarch, Paul assisted at his funeral, commanded in person the guards that attended on the ceremony, and uncovering himself with the utmost emotion, saluted the coffin as it passed. To the memory of the hoary Suvaroff, who is said to have fallen a broken-hearted victim to the distraction of his imperial master, he raised a colossal statue of bronze; and on the days when he reviewed his troops in the square where the statue had been erected, he used to command them to march by in open order, and face the statue. Notwithstanding the important service that had been rendered him by Zuboff, the emperor soon became disgusted with him; spoke of him to his friends with great asperity; at length denounced him as a defaulter to the imperial treasury of half a million of rubles; and convinced of the justice of the allegation, proceeded to sequester the vast estates which belonged to him and his two brothers.

Russia. Driven to desperation by such conduct, the second brother of the favourite one day walked up boldly to the emperor upon the parade, and with manly eloquence represented the injustice of his measures. Paul received him without anger, heard him without interruption, and restored the property; but soon after he ordered Plato Zuboff to reside on his estate. He formed an adulterous connexion with Madame Chevalier, a French actress, through whose influence Zuboff was again recalled to court, and restored to favour.

It is not surprising that these instances of folly and caprice should alarm and disgust many of the nobles. In particular, Count P——, the governor of St Petersburg, a son of the celebrated general P—— P——, who so eminently distinguished himself in the last Turkish war, Prince Y——, with some other men of rank, entered into a confederacy with Zuboff, to prevent the final ruin of their country, by removing the present emperor. In their conferences, which were managed with great prudence and discretion, it was resolved that Paul should die, and the day of the festival called Maslaintza, the eleventh of March O. S. should be the day for executing the awful deed. At the time of this confederacy, the emperor and his family resided in the new palace of St Michael, an enormous quadrangular pile standing at the bottom of the summer gardens. As Paul was anxious to inhabit this palace as soon after he was crowned as possible, the masons, carpenters, and various artificers, toiled with incredible labour by day and by torch light, under the sultry sun of the summer, and in all the severity of a polar winter, and in three years this enormous and magnificent fabric was completed. The whole is moated round, and when the stranger surveys its bastions of granite, and numerous draw bridges, he is naturally led to conclude, that it was intended for the last asylum of a prince at war with his subjects. Those who have seen its massy walls, and the capaciousness and variety of its chambers, will easily admit that an act of violence might be committed in one room, and not be heard by those who occupy the adjoining one; and that a massacre might be perpetrated at one end, and not known at the other. Paul took possession of this palace as a place of strength, and beheld it with rapture, because his imperial mother had never even seen it. While his family were here, by every act of tenderness, endeavouring to soothe the terrible perturbation of his mind, there were not wanting those who exerted every stratagem to inflame and increase it. These people were constantly insinuating that every hand was armed against him. With this impression, which added fuel to his burning brain, he ordered a secret staircase to be constructed,

171
Conspiracy
formed
against the
emperor.

(H) This paragraph is such a curious *morceau* of witty insanity, that we shall here give the original French, as written by Paul himself, and published by Kotzebue, in his account of his exile into Siberia. "On apprend de Petersbourg, que l'Empereur de Russie, voyant que les puissances de l'Europe ne pouvoient s'accorder entr'elles, et voulant mettre fin a une guerre qui la desoloit depuis onze ans, vouloit proposer un lieu ou il inviteroit tous les autres Souverains de se rendre et y combattre en champ clos, ayant avec eux pour écuyer juge de camp et heros des armes leurs ministres les plus éclairés et les généraux les plus habiles, tels, que M. M. Thugot, Pitt, Bernstorff; lui meme se proposant de prendre avec lui les généraux C. de Pahlen et Khutsof. On ne sçait si on doit y ajouter foi; toute fois la chose ne paroît pas destituée de fondement, en portant l'empreinte de ce dont il a souvent été taxé."

Russia. fructed, which, leading from his own chamber, passed under a false stove in the anti-room, and led by a small door to the terrace.

172 His assassi-
nation. It was the custom of the emperor to sleep in an apartment next to the empress's, upon a sofa, in his regimentals and boots, whilst the grand duke and duchess, and the rest of the imperial family, were lodged at various distances, in apartments below the story which he occupied. On the 10th March, 1801, the day preceding the fatal night, whether Paul's apprehension, or anonymous information, suggested the idea, is not known, but conceiving that a storm was ready to burst upon him, he sent to Count P——, the governor of the city, one of the noblemen who had resolved on his destruction: I am informed, P——, said the emperor, that there is a conspiracy on foot against me, do you think it necessary to take any precaution? The count, without betraying the least emotion, replied, Sire, do not suffer such apprehensions to haunt your mind; if there were any combinations forming against your majesty's person, I am sure I should be acquainted with it. Then I am satisfied, said the emperor, and the governor withdrew. Before Paul retired to rest, he, beyond his usual custom, expressed the most tender solicitude for the empress and his children, kissed them with all the warmth of farewell fondness, and remained with them for a considerable time. He afterwards visited the centinels at their different posts, and then retired to his chamber. Soon after the emperor had retired, the guard that was always placed at his chamber door was, by some pretext, changed by the officers who had the command for the night, and who were engaged in the conspiracy. One man only remained. This was a hussar whom the emperor had honoured with particular marks of attention, and who always slept at night in the antichamber, at his sovereign's bed-room door. This faithful soldier it was found impossible to remove, except by force, which at that time the conspirators did not think proper to employ. Silence now reigned throughout the palace, disturbed only by the pacing of the centinels, or by the distant murmurs of the Neva; and only a few straggling lights were to be seen, irregularly gleaming through the windows of the palace. In the dead of the night, Z——, and his friends, amounting to eight or nine persons, passed the draw-bridge, ascended the staircase that led to the emperor's apartments, and met with no opposition till they reached the antichamber, where the faithful hussar, awakened by the noise, challenged them, and presented his fusée. Though they must have admired the brave fidelity of the guard, neither time nor circumstances would admit of an act of generosity, which might have endangered their whole plan of operations. Z—— drew his sabre, and cut the poor fellow down. In the mean time Paul, roused by the unusual bustle, sprang from his couch. At this moment the whole party rushed into his chamber. The unhappy sovereign anticipating their design, at first endeavoured to entrench himself behind the chairs and tables; but soon recovering some share of his natural courage, he assumed a high tone, told them they were his prisoners, and required them to surrender. Finding that they fixed their eyes steadily and fiercely upon him, and continued to advance, he implored them to spare his life, declared his willingness instantly to relinquish the sceptre, and to accept of any terms which

they might dictate. He even offered to make them princes, and to confer on them orders and estates. Regardless alike of his threats and promises, they now began to press on him, when he made a convulsive effort to reach the window, but failed in the attempt; and, indeed, had he succeeded in his endeavour to escape that way, the height from the window to the ground was so great, that the expedient would probably have only put a more speedy period to his existence. As the conspirators drew him back, he grasped a chair, with which he knocked down one of the assailants, and a desperate conflict now took place. So great was the noise, that notwithstanding the massy walls, and double folding doors that divided Paul's apartments from those of the empress, she was disturbed, and began to call for help, when a voice whispered in her ear, commanding her to remain quiet, and threatening that if she uttered another word, she should instantly be put to death.

Paul was now making his last struggle, when the prince Y—— struck him on the temple with his fist, and laid him prostrate on the floor. Recovering from the blow, the unhappy monarch again implored his life. At this moment the heart of one of the conspirators relented, and he was observed to hesitate and tremble, when a young Hanoverian, who was one of the party, exclaimed, We have passed the Rubicon; if we spare his life, we shall, before the setting of to-morrow's sun, become his victims; on saying which he took off his sash, turned it twice round the naked neck of the emperor, and giving one end to Z——, himself drew the other, till the object of their attack expired*.

The assassins retired from the palace without the least molestation, and returned to their respective homes. As soon as the dreadful catastrophe was discovered, medical assistance was called in, in the hope of restoring what might be only suspended animation; but these attempts proved fruitless. At seven o'clock on the morning of the 12th, the intelligence of the death of Paul, and the accession of the grand duke Alexander were announced to the capital. By eight o'clock the principal nobility had paid their homage to the new emperor, in the chapel of the winter palace; and the great officers of state being assembled, Alexander was solemnly proclaimed emperor of all the Russias. The emperor presented himself at the parade on horseback, and was hailed by the troops with loud and cordial acclamations.

The emperor Alexander was in his 24th year when he ascended the throne, and from his amiable disposition had acquired the love and respect of all his subjects. The first measure which he adopted, his proclamation, and his first imperial orders, all tended to encourage and confirm the confidence with which the people beheld him ascend the throne of his forefathers. He solemnly promised to tread in the steps of Catharine II.: he allowed every one to dress according to their own fancy; exonerated the inhabitants of the capital from the trouble and duty of alighting from their carriages on the approach of the imperial family; dismissed the court advocate, who was universally and justly detested; suppressed the secret inquisition that had become the scourge of the country; restored to the senate its former authority; set at liberty the state prisoners, and recalled from Siberia several of the exiles. He even extended his mercy to the assassins of the late emperor. Zuboff was ordered not to approach the imperial resi-

Russia.

* See Carr's
Northern
Summer.

173
Accession
of Alexan-
der Paul-
vitch.

Russia. dence, and the governor of the city was transferred to Riga.

It is not easy to explain the motives that induced Alexander to forego that vengeance which justice seemed to demand on the heads of his father's assassins. It has been attributed by one of his panegyrists to a forlorn and melancholy conviction that the murderers had been prompted to commit the bloody deed, solely by a regard for the salvation of the empire. This conviction might have induced the young monarch to diminish the weight of that punishment which piety and justice called on him to inflict, but can scarcely account for his total forbearance.

174
Amicable disposition of Alexander towards Britain.

The emperor Alexander, on his accession to the throne, appeared desirous to cultivate the friendship of the neighbouring states, and especially that of Great Britain. His late father, among other projects, had procured himself to be elected grand master of the knights of Malta, and had laid claim to the sovereignty of that island. This claim, which had nearly produced a rupture between the courts of London and St Petersburg, Alexander consented to abandon, though he expressed a wish to be elected grand master of the order, by the free suffrages of the knights. In the mean time a confederacy had been formed among the northern powers of Europe, with a view to oppose the British claim to the sovereignty of the seas; but by the spirited interference of the British court, especially with the cabinet of St Petersburg, the good understanding between Britain and the northern states was re-established, and the embargo which had been laid on British vessels in the Russian ports was taken off.

On the 19th of June, Alexander caused to be published the following circular letter, showing his disposition to be on terms of amity with the French republic. "All the relations of policy, commerce, and correspondence with France, which were interrupted, in consequence of the revolution in that country, have not yet been re-established in their full extent; but as at the present moment negotiations are going on to effect a reconciliation with that power by every means consistent with the dignity of the emperor and the interests of his people, his majesty has been pleased to charge his ministers to apprise his foreign ambassadors and agents, that he is willing to renew the usual course of connection with the government, and that the conferences respecting that object are in full activity. In the situation in which this matter stands, therefore, it is no longer proper that the ambassadors of his imperial majesty should continue to observe any distance towards the ambassadors of the French government."

175
Treaty of amity and commerce with Sweden.

Early in the same month there was signed at St Petersburg, a treaty of amity, commerce, and navigation, between Russia and Sweden, to continue for 12 years, by which Sweden was allowed to import into Russia, alum, salt herrings, and salt, on the payment of one-half of the duties then exacted, and into Russian Finland the produce of Swedish Finland, duty free; while the importation from Russia into Sweden, of hemp, linen, and tallow, was allowed at one-half of the existing duties, and of linseed at two-thirds. The most remarkable part of this treaty was the recognition, by the court of St Petersburg, of the northern confederacy, which the amicable adjustment with Britain appeared to have done away.

The commerce of Russia had now recovered its former splendour. The exports from the city of Riga alone for the year ending in July 1801, amounted to 6,770,638 rubles; and of these exports, England alone imported to the value of 2,509,853 rubles.

On the 25th of March 1802 was signed at Amiens the definitive treaty of peace between the belligerent powers of Europe, by one material article of which the islands of Malta, Gozo and Comino, were to be restored to the knights of St John of Jerusalem, under the sovereignty protection and guarantee of France, Great Britain, Austria, Spain, Russia, and Prussia; and his Sicilian majesty was invited to furnish 2000 men, natives of his states, to serve in garrisons at the different fortresses of the said islands, for one year after their restitution to the knights, or until they should be replaced by a force deemed sufficient by the guaranteeing powers. Some time after the conclusion of this treaty, disputes arose among the contracting powers relative to the sovereignty of Malta, which the emperor of Russia insisted should be yielded to Naples, otherwise he would not undertake to guarantee the order, and would separate from it the priories of Russia. The result of these disputes is well known, as they afforded a reason for renewing the bloody contest which has so long desolated the face of Europe.

During the short interval of peace that was enjoyed by Europe, the emperor of Russia made several prudent regulations in the internal administration of his empire. On the 12th of September 1801, a manifesto had been published, proclaiming the union of Georgia or Russian Grufnia with the empire, and on the 1st April 1802, Alexander sent a deputation to establish the new government at Teflis, the capital of the province. This deputation was received by the natives with enthusiastic joy, especially as they brought back the image of St Nina, which their prince Wachtang at his death had left at Mosco. On the 28th May, the emperor wrote a letter to the chamberlain Wittostoff, president of the commission for ameliorating the condition of the poor of St Petersburg, in which he recommended the commission to follow the example of a similar establishment at Hamburg, in selecting proper objects for their charitable bequests, preferring the humble and industrious pauper to the idle and sturdy beggar. He also offered considerable premiums to persons who should introduce any new or advantageous mode of agriculture, or who should bring to perfection any old invention, open any new branch of commerce, establish any new manufacture, or contrive any machine or process that might be useful in the arts.

Early in the year 1803, the emperor fitted out at his own expence, two vessels for a voyage of discovery round the world, under the command of Captain Krusenstern. These ships were provided with every necessary for accomplishing the object of the voyage; and several men of eminence for science and literature, among whom was Churchman the American astronomer, volunteered their services on this occasion. The vessels sailed in the latter end of 1803, and about a year after, intelligence was received from M. Krusenstern, who was then lying at Kamtschatka. They had touched at the Marquesas islands, where they had found a Frenchman and an Englishman, who had been left there several years before. The Englishman had completely forgotten his native

Russia.
176
Prosperous state of the Russian commerce.
An. 1802.

177
Russia guarantees the sovereignty of Malta to the knights of St John of Jerusalem.

178
Prudent regulations of the emperor Alexander.

An. 1803.
179
A voyage of discovery set on foot.

Russia. native language, and the Frenchman, who had for seven years spoken nothing but the language of the natives, scarcely retained sufficient French to inform M. Kruzenstern that he had made part of the crew of an American vessel which was wrecked on those coasts. The expedition was then preparing to sail for Japan, to carry thither M. de Rafanoff, who had been appointed ambassador extraordinary from the court of Russia to that of Japan.

An. 1804. In the beginning of 1804, the emperor established a university at Kharkof in Lithuania, for the cultivation and diffusion of the arts and sciences in that part of the Russian empire, and Mr Fletcher Campbell, a Scots gentleman, was employed to procure masters for this new institution. Some time after, the emperor ordered that meteorological observations should be regularly made at all the universities and public schools, and the results published. It appears that at the end of this year the sums allotted by the Russian government, for defraying the expences of these institutions amounted to 2,149,213 rubles, besides a gift of nearly 60,000 rubles towards erecting the new university.

181
Emancipation of the Jews in Russia.

About this time an imperial ukase was published, granting to the Jews a complete emancipation from the shackles under which that devoted people had long groaned, and allowing them the privileges of educating their children in any of the schools and universities of the empire, or establishing schools at their own expence.

182
Dispute with France.

For some time the genius of discord, which had again actuated the minds of the European sovereigns, failed to extend her baleful influence over the Russian empire; but it was scarcely possible that the emperor should long remain an impartial spectator of the renewed disputes between his more powerful neighbours. An important change had, in the latter end of 1802, taken place in the ministry of the empire; and Count Woronzoff, brother to the late ambassador at London, had been appointed great chancellor in chief of the department of foreign affairs, with Prince Adam Tzartoriski for his assistant. How far this change in the councils of the empire influenced the political measures of the court of St Petersburg, it is not easy to determine; but in the latter end of 1803, Alexander appeared to view with a jealous eye the presumption and violence exercised by France among the German states, and the encroachments which she appeared desirous of making on the freedom of the Baltic. Alexander had offered his mediation between Great Britain and France, but without effect, and both these parties strove to bring over the Russian emperor to their alliance. France seems to have held out to the ambition of Alexander the bait of a partition of the Turkish territories, the dismemberment of which had long been a favourite object with his predecessors. At length, however, the court of London prevailed, and the Russian ambassador, by his master's orders, took leave of the First Consul of the French republic, though without demonstrating any intentions of immediate hostility. A new levy of 100,000 men was immediately ordered, to recruit the Russian army, and to prevent any jealousy on the side of Turkey, assurances were given to the Sublime Porte of the amicable intentions of Russia towards that power.

On the 11th April a treaty of concert was concluded between Great Britain and Russia, in which the two governments agreed to adopt the most efficacious means

for forming a general league of the states of Europe, to be directed against the power of France. The objects of this league were undoubtedly of great importance to the welfare of Europe; and it is deeply to be regretted that the circumstances of the times did not admit of their being carried into execution. From the terms of the treaty, these objects appear to be,—First, The evacuation of the country of Hanover and the north of Germany. Secondly, The establishment of the independence of the republics of Holland and Switzerland. Thirdly, The re-establishment of the king of Sardinia in Piedmont, with as large an augmentation of territory as circumstances would allow. Fourthly, The future security of the kingdom of Naples, and the complete evacuation of Italy, the island of Elba included, by the French forces. Fifthly, The establishment of an order of things in Europe, which might effectually guarantee the security and independence of the different states, and present a solid barrier against future usurpation.

For the prosecution of the great objects of this treaty, it was proposed by the first article that an army of 500,000 men should be levied; but in a subsequent separate article, the contracting parties, after observing that it was more desirable than easy to assemble so large a force, agreed that the treaty should be carried into execution as soon as it should be possible to oppose to France an active force of 400,000 men. It was understood and stipulated that these troops should be provided by the powers of the continent who should become parties to the league, and subsidies should be granted by Great Britain in the proportion of 1,250,000l. Sterling for every 100,000 men, besides a considerable additional sum for the necessary expence occasioned in bringing them into the field.

About this time the occupation of Genoa by the French, on the pretence that that republic was too feeble to support itself against the attacks of Great Britain, was communicated to the different courts of Europe, and excited in every quarter the highest indignation. The emperor Alexander, in particular, was incensed at this new outrage. Such an open violation of those principles which were justly regarded as essential to the general safety, committed not only during the peace of the continent, but when passports had been delivered to his ambassador, in order that a negotiation might be commenced for the purpose of providing for the permanent security and repose of Europe, he considered as an indecent insult to his person and crown. He issued immediate orders for the recall of M. Novosiltzoff; and the messenger dispatched upon this occasion was commanded to repair with the utmost diligence to Berlin. M. Novosiltzoff had not yet left that city; he immediately therefore returned his passports to the Prussian minister of state, Baron de Hardenberg, and at the same time delivered, by order of his court, a memorial explanatory of the object of his mission, and of the circumstances which had led to its termination.

It stated that the emperor had, in compliance with the wishes of his Britannic majesty, sent his ambassador to Bonaparte, to meet the pacific overtures which he had made to the court of London: that the existing disagreement between Russia and France might have placed insurmountable obstacles in the way of a negotiation for peace by a Russian minister; but that his imperial majesty

Russia.
An. 1805
183
Treaty of concert between Great Britain and Russia.

184
Open rupture with France.

Russia.

majesty of Russia did not for a moment hesitate to pass over all personal displeasure, and all the usual formalities; that he had declared he would receive the passports only on condition that his minister should enter directly upon a negotiation with the chief of the French government, without acknowledging the new title which he had assumed; and that Bonaparte should give explicit assurances that he was still animated by the same wish for a general peace, which he had appeared to shew in his letter to his Britannic majesty; that after his Prussian majesty had transmitted the positive answer of the court of the Thuilleries, that it persevered in the intention sincerely to lend its hand to a pacific negotiation, the emperor had accepted the passports; but that by a fresh transgression of the most solemn treaties, the union of the Ligurian republic with France had been effected; that this event of itself, the circumstances which had accompanied it, the formalities which had been employed to hasten the execution of it, the moment which had been chosen to carry the same into execution, had formed an aggregate which must terminate the sacrifices which the emperor would have made at the pressing request of Great Britain, and in the hope of restoring tranquillity to Europe by the means of negotiation.

The recall of the Russian envoy appeared to be the signal of hostilities on the part of Russia and Austria against France. These hostilities may be said to have commenced and terminated in the autumn of this year. The military operations that distinguished this short but bloody conflict, the rapid successes of the French, the capitulation of Ulm on the 17th of October, the occupation of Vienna by the French on the 12th of the same month, and the sanguinary battle of Austerlitz on the 27th of November, have been already noticed under FRANCE, N^o 552—555, and are fresh in the memory of our readers. The consequences of these disastrous events were, first a cessation of hostilities, and at length a treaty of firm alliance between Russia and France.

An. 1806.

Before Alexander finally stooped to the imperial eagles of Napoleon, however, he was determined to make one more effort to preserve his independence. The Russian envoy at Paris, d'Oubril, had hastily concluded a preliminary treaty of peace between his master and the emperor of the French, which he signed at Paris on the 8th of July 1806, and instantly set out for St Petersburg to procure the ratification of his master. The terms of this convention were laid before the privy council by Alexander; but they appeared so derogatory to the interests of Russia, that the emperor refused them his sanction, and declared that the counsellor of state, d'Oubril, when he signed the convention, had not only departed from the instructions he had received, but had acted directly contrary to the sense and intention of the commission with which he had been intrusted. His imperial majesty, however, signified his willingness to renew the negotiations for peace, but only on such terms as were consistent with the dignity of his crown, and the interests of his empire.

185
Alliance
with Prussia
against
France.

In the mean time, the king of Prussia began, when it was too late, to see the folly and imprudence of the neutrality which he had so long maintained, and he at length prepared to oppose his now feeble efforts to the growing power of France. He brought together in the summer of this year, an army of at least 200,000 men,

Russia.

near Weimar and Jena, while the French myriads assembled in Franconia, and on the frontiers of Saxony. Previous to the commencement of hostilities, his Prussian majesty issued a spirited manifesto, in which he explained his motives for abandoning his plan of neutrality, and appealed to Europe for the justice of his cause. The king of Prussia entered into an alliance with the emperor Alexander, and with the king of Sweden, and it was expected, that these united forces would at length hurl the tyrant of Europe from his throne, or at least compel him to listen to equitable terms of pacification. These expectations were, however, miserably disappointed. The same extraordinary success was still to attend the arms of France, and the north of Europe was again condemned to submit in silence to her yoke.

On the 13th October, the Prussians received a dreadful check at the battle of Jena, where, according to the French accounts, their loss amounted to 20,000 in killed and wounded, and above 30,000 prisoners; and on the 27th of the same month, Napoleon entered Berlin. While the French were thus successful, the troops of the emperor Alexander entered Prussian Poland, and took up their residence at Warsaw; but they were soon attacked by the French under the grand duke of Berg*.

* Murat.

On the 26th of November, the outposts of the respective armies fell in with each other, and a skirmish took place, in which the Russians were thrown into some confusion, and a regiment of Kozaks was made prisoners. On the 28th the grand duke of Berg entered Warsaw with his cavalry, and the Russians retreated across the Vistula, burning the bridge over which they had passed. On the 26th of December, a dreadful engagement took place between the Russians, commanded by General Benningfen, and the French under generals Murat, Davoust and Lannes. The scene of action was at Ostralenka, about 60 miles from Warsaw, and the fighting continued for three days. The loss was immense on both sides, though the advantage appears to have been on the side of the French. According to French accounts, the Russian army lost 12,000 men in killed and wounded, together with 80 pieces of cannon, and all its ammunition waggons, while the Russian account states the loss of the French at 5000 men.

In the beginning of February 1807, the Russians obtained a partial advantage in the battle of Eylau. According to the account of this battle, given by General de Budberg, in a dispatch to the Marquis of Douglas, the British ambassador at St Petersburg, the Russian general Benningfen, after having fallen back, for the purpose of choosing a position which he judged well adapted for manœuvring the troops under his command, drew up his army at Preussisch Eylau. During four days successively his rear guard had to withstand several vigorous attacks; and on the 7th of February at three o'clock in the afternoon, the battle became general through the whole line of the main army. The contest was destructive, and night came on before it could be decided. Early on the following morning, the French renewed the attack, and the action was contested with obstinacy on both sides, but towards the evening of that day the assailants were repulsed, and the Russian general remained master of the field. In this action, Napoleon commanded in person, having under him An-
gereau,

An. 1807.
186
Battle of
Eylau.

Russia. gereum, Davoust, Soult, Ney, and Bessieres, at the head of the imperial guards. The loss of the Russians in that engagement, was by themselves stated at above 6000 men, while they estimated that of the French at nearly double that number.

187
Battle of
Friedland.

This was the last important stand made by the Russian army. Several actions succeeded at Spanden, at Lammitten, at Guttotadt, and at Heilsberg, in all of which the French had the advantage, till at length on the 14th of June, the Russians appeared in considerable force on the bridge of Friedland, whither the French army under Napoleon was advancing. At three in the morning, the report of cannon was first heard, and at this time Marshals Lannes and Mortier were engaged with the Russians. After various manœuvres, the Russian troops received a check, and filed off towards Konningsberg. In the afternoon, the French army drew up in order of battle, having Marshal Ney on the right, Lannes in the centre, and Mortier on the left, while Victor commanded a corps de reserve, consisting of the guards. At half past five the attack began on the side of Marshal Ney; and notwithstanding the different movements of the Russians to effect a diversion, the French soon carried all before them. The loss of the Russians, according to the usual exaggerations of the French bulletins, was estimated at from 10,000 to 15,000 men, and 25 of their generals were said to have been killed, wounded, or taken. In consequence of this victory, the French became masters of all the country round Konningsberg, and Marshal Soult entered that city in triumph.

Thus concluded the campaign in Germany, in which the Russians sustained a loss of at least 30,000 of their choicest troops.

188
War declared
against
Russia by
Turkey.

While these military operations were going forward on the continent of Europe, the emissaries of France were busily employed at Constantinople, in exciting the divan to declare against their ancient enemies. They at length succeeded; and on the 30th of December war with Russia was proclaimed, and 28 regiments of janissaries assembled under the command of the grand vizir; but the disturbances which broke out in the latter end of May 1807, prevented any operations of importance from taking place, and the pacification which was soon concluded between Russia and France, though it did not entirely put a stop to the war between the former power and Turkey, in some measure diminished their hostile preparations.

189
Treaty of
Tilsit.

The defeats which the allied armies had sustained in Prussia and Poland, rendered peace, almost on any terms, a desirable object; and Alexander found himself constrained to meet, at least with the appearance of friendship, the conqueror of his armies. Propositions for an armistice had been made by the Prussian general to the grand duke of Berg near Tilsit, and after the battle of Friedland, the Russian prince Labanoff had a conference, on similar views, with the prince of Neufchatel, soon after which an armistice was concluded between the French and Russians. On the 25th of June

an amicable meeting took place on the river Niemen, between the emperors of France and Russia, and adjoining apartments were fitted up for the reception of both courts in the town of Tilsit. This constrained friendship was soon after cemented by the treaty of Tilsit, concluded between the emperor of the French on the one part, and the emperor of Russia and the king of Prussia on the other, on the 7th and 12th of July in this year.

The conclusion of the treaty of Tilsit was notified to the court of London on the 1st of August by M. Alo-¹⁹⁰ Rupture with Britain. peus, minister plenipotentiary from the emperor of Russia; and at the same time a proposal was made from his imperial majesty for mediating a peace between France and Britain. This mediation, however, was declined on the part of Great Britain, until his Britannic majesty should be made acquainted with the stipulations of the treaty of Tilsit, and should find them such as might afford him a just hope of the attainment of a secure and honourable peace. This declining of the mediation of Russia was no doubt expected by the court of St Petersburg; but it served as a pretext for binding more closely the alliance between that power and France, by breaking off her connection with Great Britain. Accordingly, in October, Lord Granville Leveson Gower, who had succeeded the Marquis of Douglas as British envoy, received a note from the government, intimating that, as a British ambassador, he could be no longer received at the court of St Petersburg, which he therefore soon after quitted. An embargo was laid on all British vessels in the ports of Russia, and it was peremptorily required by Napoleon and Alexander, that Sweden should abandon her alliance with Great Britain.

An additional ground of complaint against the British court was furnished by the attack on Copenhagen, and the seizure of the Danish fleet in the beginning of September; and though Lord Gower had attempted to justify these measures on the plea of anticipating the French in the same transaction, the emperor of Russia expressed, in the warmest terms, his indignation at what he called an unjust attack on a neutral power. A considerable Russian fleet joined the French, but the combined squadrons were compelled to seek for shelter in the Tagus, where they remained blocked up by the British; and another fleet of 15 sail of the line that proceeded up the Mediterranean, and advanced as far as Trieste, shared a similar fate (1).

On the 26th of October the emperor of Russia published a declaration, notifying to the powers of Europe that he had broken off all communication between his empire and Great Britain, until the conclusion of a peace between this power and France. In a counter-declaration, published at London on the 10th of December, his Britannic majesty repels the accusations of Russia, while he regrets the interruption of the friendly intercourse between that power and Britain. His majesty justifies his own conduct, and declares, that when the opportunity for peace between Great Britain and Russia shall

(1) By the unfortunate convention of Cintra, concluded on the 3d of September 1808, the Russian fleet in the Tagus was surrendered to the British, to be held as a deposit, till six months after the signing of a definitive treaty of peace.

Russia. shall arrive, he will embrace it with eagerness; satisfied, if Russia shall manifest a disposition to return to her ancient feeling of friendship towards Great Britain, to a just consideration of her own true interests, and to a sense of her own dignity as an independent nation.

An. 1808.
191
Renewed
negotia-
tions with
Britain.

In October 1808, a meeting took place at Erfurth between the emperors of France and Russia, and a letter was drawn up under their signature, addressed to his Britannic majesty. The object of this letter was, to induce the king of Great Britain to enter into negotiations for a general peace, and with that view it was dispatched by Count Romanzoff, the Russian minister at Erfurth, to Mr Canning the British secretary of state for foreign affairs. As this letter, and the official note of the British government in answer to it, supply two very important documents in the later history of the present war, we shall here introduce them. The letter of the two emperors is as follows.

“Sire.—The present circumstances of Europe have brought us together at Erfurth. Our first thought is to yield to the wish and the wants of every people, and to seek, in a speedy pacification with your majesty, the most efficacious remedy for the miseries which oppress all nations. We make known to your majesty our sincere desire in this respect by the present letter.

“The long and bloody war which has torn the continent is abandoned, without the possibility of being renewed. Many changes have taken place in Europe; many states have been overthrown. The cause is to be found in the state of agitation and misery in which the stagnation of maritime commerce has placed the greatest nations. Still greater changes may yet take place, and all of them contrary to the policy of the English nation. Peace, then, is at once the interest of the continent, and that of the people of Great Britain.

“We unite in entreating your majesty to listen to the voice of humanity, silencing that of the passions; to seek, with the intention of arriving at that object, to conciliate all interests, and by that means to preserve all the powers which exist, and so ensure the happiness of Europe and of this generation, at the head of which Providence has placed us.”

(Signed) ALEXANDER.—NAPOLEON.

In answer to this letter the following official note, signed by Mr Secretary Canning, was dispatched to Erfurth; and as the imperial correspondents refused to accede to the requisitions it contained, all hopes of present accommodation were at an end.

“The king has uniformly declared his readiness and desire to enter into negotiations for a general peace, on terms consistent with the honour of his majesty’s crown, with fidelity to his engagements, and with the permanent repose and security of Europe. His majesty repeats that declaration.

“If the condition of the continent be one of agitation and of wretchedness; if many states have been overthrown, and more are still menaced with subversion; it is a consolation to the king to reflect, that no part of the convulsions which have been already experienced, or of those which are threatened for the future, can be in any degree imputable to his majesty. The king is most willing to acknowledge that all such dreadful changes are indeed contrary to the policy of Great Britain.

4

“If the cause of so much misery is to be found in the stagnation of commercial intercourse, although his majesty cannot be expected to hear, with unqualified regret, that the system devised for the destruction of the commerce of his subjects has recoiled upon its authors, or its instruments, yet it is neither in the disposition of his majesty, nor in the character of the people over whom he reigns, to rejoice in the privations and unhappiness even of the nations which are combined against him. His majesty anxiously desires the termination of the sufferings of the continent.

“The war in which his majesty is engaged, was entered into by his majesty for the immediate object of national safety. It has been prolonged only because no secure and honourable means of terminating it have hitherto been afforded by his enemies.

“But in the progress of a war, begun for self-defence, new obligations have been imposed upon his majesty, in behalf of powers whom the aggressions of a common enemy have compelled to make common cause with his majesty, or who have solicited his majesty’s assistance and support in the vindication of their national independence.

“The interests of the crown of Portugal and of his Sicilian majesty are confided to his majesty’s friendship and protection.

“With the king of Sweden his majesty is connected by the ties of the closest alliance, and by stipulations which unite their counsels for peace as well as for war.

“To Spain his majesty is not yet bound by any formal instrument; but his majesty has, in the face of the world, contracted with that nation engagements not less sacred, and not less binding, upon his majesty’s mind, than the most solemn treaties.

“His majesty, therefore, assumes that, in an overture made to his majesty for entering into negotiations for a general peace, the relations subsisting between his majesty and the Spanish monarchy have been distinctly taken into consideration; and that the government acting in the name of his Catholic majesty, Ferdinand VII. is understood to be a party to any negotiation in which his majesty is invited to engage.”

The demand of concurrence in the views of France War with Sweden.

and Russia made on Sweden was formally repeated in a declaration of the emperor Alexander, published at St Petersburg on the 10th February in this year. In this declaration his imperial majesty intimated to the king of Sweden, that he was making preparations to invade his territories; but that he was ready to change the measures he was about to take, to measures of precaution only, if Sweden would, without delay, join Russia and Denmark in shutting the Baltic against Great Britain, until the conclusion of a maritime peace. He professed that nothing could be more painful to him, than to see a rupture take place between Sweden and Russia; but that his Swedish majesty had it still in his power to avoid this event, by resolving without delay, to adopt that course which could alone preserve strict union and perfect harmony between the two states.

The king of Sweden, however, determined to abide by the measures which he had for some time pursued, and to accede to the terms of the convention which had just been concluded between him and the king of Great Britain. In consequence of this determination, a Russian

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