

THE KEYSTONE

A MONTHLY JOURNAL FOR THE JEWELRY TRADE

Volume 8.

Philadelphia April 1887

Number 4

OUR WORKSHOP.

QUIETEST CORNER OF THE BEST PAPER IN THE TRADE.

Knotty problems solved in a way to penetrate the thickest skull in Christendom.

CHAS. A. TRIPP, of Brattleboro, Vermont, says:

"In your article on hair springs, (January number) you say 'the other changes are a pair of brass screws for a pair of platinum ones of the same weight. Both accomplish the same result by different means.' What causes the change if they are of the same weight? We can see what would cause the change if both were the same size."

The influence of atmospheric resistance is an important factor in isochronal adjustment. We can readily see that the more rapidly the screws in the rim of a balance are moved through the air, the greater will be the resistance offered by the air, and this resistance increases in the square of the velocity. Consequently, if we diminish the atmospheric resistance to the long vibrations, we quicken them. Now, a platinum screw only offers about one-half the atmospheric resistance which a brass one does.

HAIR SPRINGING.

"Normal," of Worcester, Massachusetts, writes:

"Having been much interested in the practical matter in your paper relating to the repair and adjustment of watches, especially that by 'Our Watchmaker,' I venture to present a method of putting in a hair-spring, so that it shall need no secondary bending to bring it to its true working position. The idea is not entirely original, yet it may be new to some of your many readers. An enlarged sketch would show the idea clearly. The inner coil of the spring is placed upon the hub of the balance, and clamped there by a washer and nut. The balance is then put in working position in the watch, and the notch in the end of the bar adjusted carefully to receive the outer coil of the hair-spring. The bar, having been previously screwed poorly to the plate, is now screwed firmly to the plate. The screw-hole being oblong to admit of the exact adjustment of notch to spring as above stated. The notch in the end of the bar should fit the hair-spring quite closely, yet easily enough to let the spring in without help, and the notch should be a trifle less in depth than the width of hair-spring, so that the cap and screw shall bind the spring firmly in the notch. The bar must be previously fitted so that the notch and spring shall stand exactly the same distance from plate. If the hair spring is outside the balance, an offset may be made in the bar. If beneath the balance, the bar may be straight."

The above communication from "Normal" presents a new system of fitting hair-springs. He sends us a very neat drawing of his device, showing an unusual amount of skill in this line. We are compelled to say, however, that similar devices have been proposed and tried time and again. The methods given by our watchmaker are only the result of 200 years of experience; not by one man but by the watch-making world. To explain a little, the American factories, in bringing the production of watches to its present state, had more difficulty in "springing" as it is termed, than in any

one (or three) departments; and ten years ago, a springer was a man who never need go begging for a job, the companies being only too glad to get them. Foreign springers, as a rule, were of little use, being set in their ways and unwilling to learn a new method depending on a system. The system was weighing the balances very carefully, and marking the weight to a grain for each balance; these went to the man who selected the springs by a Botum gauge. The balance and spring went to the springer who pinned it into the collet, trued it in the round and flat; then vibrated it as directed in article on hair-springs and springing in Dec. number. And so skillful were these men that not one watch in twenty need have the hair-spring shifted. All there was of the system was what good judgment and experience pointed out as the best and most expeditious way to arrive at the best results.

The change which followed in the Waltham (and some other) companies by adopting the so-called isochronal pinning in, as shown at Fig. 3, January number, and abolished the method of moving the treezers along on the outer coil to establish the point at which it should be pinned in, as this point was at once established and the vibrations corrected by changing the screws by weight. All temporary fastening of the inner end of the hair-spring either by bees wax or other fastening is to be deprecated. Learn to do the job as pointed out by our watchmaker, which is only a well-written description of the course of our watch factories. The expedition of the system can be judged by the price paid for springing the lower grade watches in our factories, which is less than ten cents per watch, and this includes much more than the mere springing.

ALEX. MALBERT, of Jersey City Heights, writes: "I have some old gold 8 K. fine, which weighs 52 dwt. How can I make this 10 or 14 K. fine at the least expense, and lose as little weight as possible?"

To enrich your gold, that is to raise its quality. Of course you know that you lose in weight just in proportion to the finer you make your gold. For instance, you have 52 dwts. of 8 K. If you raise it to 16 K., you will only have 26 dwts. The best method to pursue is to roll the gold as thin as possible. This can be facilitated by piling as it is termed. That is, after you have rolled the gold as thin as any ordinary rolls will make it, put two thicknesses together and roll again. After the gold is rolled very thin, you cut it into bits, about half or three-fourths of an inch square. The next step is to dissolve out a part of the alloy with acid. To do this, we take a white, well-glazed earthen bowl, and for the weight of gold you mention, (52 dwts.) pour over it 6 ounces of chemically pure Nitric acid. We should heat up the dish and acid, as this course facilitates the dissolving of the alloy. The great objection to this process is the obnoxious acid fumes given off, re-

quiring it to be done out of doors. The best course to pursue is to place an iron dish of sand over a portable charcoal furnace, or one of these little coal oil stoves, and place the whole affair in the back yard. The gold should be kept hot for 2 or 3 hours in the acid. If, now we take a piece of the 8 K. in our fingers, it will be found quite brittle, breaking readily between the thumb and finger. We now add 1 quart of soft water to the gold and acid, and stir well with a piece of wood, or better, a glass rod. Pour off the water and acid, saving the water and acid for subsequent treatment to recover any gold which might be held in solution. We now wash well the gold plates and put them into a crucible with some sal tartar (carbonate of potash) for a flux. As soon as the gold is melted, pour into an ingot mould. We will find our gold now about 14 K. Another solvent for the excess alloy, is the chemicals used to color gold, in what is termed the wet process. This last mentioned solvent does not smell as bad nor is it so unhealthy as the nitrous oxide fumes given off by the nitric acid. The process can be conducted indoors, but preferable outside, as all chemical actions giving off gas are deleterious, especially to such persons as jewelers, who have none too much fresh air at the best. The coloring composition is as follows; 7 oz. of saltpetre, 3½ oz. of common salt, 2½ oz. of muriatic acid (chemically pure). The saltpetre should be heated to drive off the water of crystallization. An earthen bowl or a glass one heated over a sand bath will answer to heat the saltpetre and salt, which should be stirred when heating with a stick of hard wood, when the muriatic acid can be added. Put the thin gold in this for fifteen minutes, then add 1 oz. boiling water, letting the gold remain twenty minutes longer. Melt the gold and pour into the ingot mould as directed above. A very little gold will be left in the dilute acid, spoken of above; but if to this or the gold coloring solvent we add a saturated solution of sulphate of iron (green copperas), all the gold left in the acid solutions will be thrown down as a depository and can be melted with the other gold.

S. S. SANGVILLE, of Gloverville, N. Y., writes: "You will greatly oblige me by letting me know the quickest and best way to finish hard enameled work to show a bright and smooth surface."

Emery and water is the material for grinding and smoothing, then follow with putty powder or hydrated oxide of iron for a polish. The emery is best applied with a lead lap kept wet with flour of emery and water. The enamel must fill the cutting full, or in grinding away the gold to reach the enamel, the gold will come through in places. In enameling for polished work, that is the enamel polish; the filling is better to be in excess, so that when the enamel is ground down to the gold, the surface of the enamel is flat. The emery should be very fine and free from coarse particles that scratch the surface. One of the great points to be observed is, to grind with emery and

water the surface perfectly flat and true, leaving the surface as smooth as possible without an actual polish. Wash the job thoroughly and polish with putty powder (oxide of tin) on a leather lap, slightly moist. The polish soon comes, if the emery used is fine enough. The putty powder does not produce a fine polish on the gold; but after the enamel is polished, a rouge buff will soon bring up the gold to perfection. Pewter, (an alloy, of tin 86 parts and antimony, 14 parts, or tin 80 parts, lead 20 parts) is used by some enamellers for laps instead of lead for emery. Enamels can be ground off flat with emery stones formed of emery of different degrees of fineness made into a tablet with shellac, proceeding exactly as we would in stoning a job before polishing with a Scotch stone; and finish with a hand buff slightly moist and smeared with putty powder. The hydrated oxide of iron gives a brighter polish to enamels than putty powder, but is scarcely perceptible and much slower.

"J. M. C.," of Philadelphia, writes: "Will some one be kind enough to give through the columns of the KEYSTONE, some information how to soft solder bronzed figures, where the metal to be soldered is as soft as the solder. By doing so, you will favor a subscriber."

Most of our so called bronze figures are made of zinc, and this is an obstinate metal to solder with soft solder, but it does not melt until at a pale red heat, about 900° F. The parts of zinc figures to be soldered should be heated up to near the melting point of soft solder, when the solder should be applied with a tinner's soldering iron. A soft solder known as Bismuth solder melts a little before 300° F. The point to be observed is to heat the parts to be joined. The place of joining can be pretty well concealed by applying a suitable bronze powder mixed with spirit of varnish. Occasionally, figures and ornaments are cast of so-called Britannia metal, an alloy of tin antimony and Bismuth. This metal melts at a low temperature, but the Bismuth solder mentioned above will solder it; but it requires a good deal of practice to obtain certain and satisfactory results.

HARD SOLDER.

James Lawrence, of Rock Rapids, Iowa, sends a receipt for a hard solder solution which our "Lightning Pivoter" has tried and found "very good."

Mr. Lawrence says:

"Enclosed find a hard solder receipt. Try it. You can take a band ring highly polished and coat it all over with the solution. Then put your solder on the place where you wish it to flow, heat to the proper degree for the solder to flow there, let it cool a little and then drop in water. After rubbing with tissue paper, it comes out bright and polished as before. I have used it for a long time. This is the receipt: Take equal parts of borac acid and borate of soda, add 15 grains of muriate of ammonia, and 3 ounces of soft water. The water should be warm, so that the chemicals will dissolve. When dissolved the solution is ready for use."

128.13

CHAPTERS INDICED. CA

1/04

CERAMICS.

SECOND CHAPTER OF THE PAPER
BY PROFESSOR BROOME.

Who takes his reader on an imaginary but interesting tour through the realms of Decorative Art.

Having taken a review of the classes and nature of different kinds of pottery, the character of the art, its uses, as well as the nature of the field in which we are working, I will now invite you to go with me upon an imaginary excursion to a fane dedicated to ceramic art.

A mazy tracery of geometric forms, with colors softly harmonizing in analogous tones cut out with black and relieved with borders of complimentary hues, paves the way before us; the warm tones glow in sunlight and shadow, heightened by the cool greens of the lawn and shrubbery on either hand. This pavement is of incrustated tile, a kind of ceramic ware that fears neither damp or frost. It is called incrustated because the colored pastes are set in from one-third to one-half its depth, and are all fused together in the kiln, the paste or body being felspathic.

Groups of life size and colossal statuary in terra cotta mounted on pedestals of the same material, reproductions of antique and some original modern works, representing classic heroes, gods and demigods, fauns, satyrs, nymphs, animals and birds, line the walks and group the centres. Fountains in the same material of Tritons and Neraids, splashing with water jets and cascades, form here and there the garden surprises. Many of these works are from Austria's Weinerberg factories and studios, with their 10,000 operatives, men, women and children, who are governed by wise laws that furnish homes, instruction, care of the sick and feeble, and pension in age or disability. At these establishments bricks are made in endless quantities and every article for construction or embellishment of architecture. The company could construct a city with all its government buildings, parks, quays, and roads with ceramic material alone.

Our walk has brought us to the facade of a noble structure, so attractive in its exterior splendors that it is impossible to pass without examination. Three thousand posts form the circular balustrade in front of the entrance; these we find to be of a dense ceramic paste, moulded in choice form by Villeroy & Boch, of Luxembourg. The tile pavement here is of quiet, cool, grey tones, resting the eye and preparing it for the dazzling splendors of color on the facade.

The massive doorway is of a sandy terra cotta modelled with ornaments, in running mouldings and rosetted panels. Above are groups of ornament in bold relief, all tinted with thick enamels, solid and free from cracks. These are the efforts of the enterprising architect, Paul Sedille, and his associate, Mr. Leobnitz, who have made this branch of art a specialty. Above the arch is a large colored panel of inlaid or incrustated wall tile, representing Apollo and the horses of the sun. On either hand of the frieze are revetments of figure subjects in rich flat tints of color, outlined with dark and profusely sprinkled with matt gold. To the right and left of the grand entrance we find the facade divided in panels composed of cloisoned enamel tile, representing landscapes surrounded with borders of modelled tile in high relief and colored in brownish grey hues. Between these panels are niches with graceful statues of painting, poetry, sculpture, ceramic, tapestry, and jewelry, all built in cloisoned tile inlaid with rich colors; flesh tones, draperies, gold grounds, and sparkling jewels are represented. All this facade is flat, the relief given by color as permanent as the hills, and unaffected by climatic changes. The imposing ruins of

grand frescoes daily crumbling into dust under the influences of northern climates, caused a tendency to abandon coloration in architecture, leaving our modern structures cold and cheerless. Ancient India, Persia, and a few other nations of the Orient, by their enameled decorations of exteriors in simple tones, so fresh today in red, blue, green and yellow that they appear to have just issued from the hands of the artist, preserved to teach a lesson to the modern ceramist, suggested the mode of rendering permanent the sublime works of modern art. Four great minds have followed these tendencies, Deck, Leobnitz, Parvillie and Boulanger, each producing grand efforts and powerful types for architectural ceramic decoration.

Parvillie, after restoring the monuments at Constantinople where he studied the laws of the ancient ceramists, developed his oriental style. Leobnitz is associated with the architect Paul Sedille, who preaches the crusade of a new monumental art, in which terra cotta and

Arezzo, of the fourteenth century. Simon's great figure of Magdalene, seven feet high, a choice work of the fifteenth century. Paganino of Modena, and Delsa of Florence are numerous represented.

From the sixteenth century, two large bas reliefs of Peter and Paul by Miguel of Seville. Germain Pilon's life-size statues, Ecce Homo, Christ in the tomb, and Saint Francis, executed in 1588.

Let us rapidly pass over the terra cottas of the eighteenth century, when the gardens and parks were peopled with works of a bad style, and stop at the pretty statues and groups by Clodion, who worked towards the end of the eighteenth century. From these, we enter those of the present era. Here we see the grand lion by Mene; the fountains and garden statuary by Muller, composed of a silicious clay that accepts the touch of the sculptor's chisel. The living figures and busts of Carriere Belluse, always beautiful. The groups and figures of Carpeaux. Terra Cotta plaques

being baked at a comparatively low temperature; the science of Pyrotechnics not being developed until a later era. Even Egypt with all her science and arts, presents us with no wares baked at a higher temperature than terra cotta, the small figures of their deities covered with the much admired bluish green enamel are not exceptions; the limits of their manufacture being confined within the enameled art.

We find in the tombs of Thebes, however, a small bottle decorated with Chinese characters, possessing an antiquity of eighteen centuries B. C., of a true porcelain body. The presence of this bottle in the tomb at Thebes is supposed to be connected with the Egyptian marine expeditions mentioned in the early records of the Chinese. Certain it is that it has laid in the tomb since the demise of the King, and shows that China at that time had learned the art of porcelain.

The early terra cottas are often of excellent workmanship and choice form; forms, indeed, that have never been excelled and probably never will be. How the perfection of form could be developed by the mere instinct of early tribes of people, or as we find to-day among the savage tribes of Africa, is a marvel to educated minds. The connection between culture and instinct seems difficult to trace.

These wares have been fashioned on the primitive potter's wheel, consisting often of a round stone put upon a spindle or pivot of iron, and spun with the hand, or by another pulling it with a string, the wares dried in the shade, and burned in ovens formed of clay built up gradually in the same manner that some of the savage tribes build up their large clay jars for holding grain, some of which are of great size, and contend the palm for superiority with the large vases of Cyprus, or those Shieliman found on the site of ancient Troy.

Perhaps the first idea of forming clay vessels, may have arisen from the natural tendency of human beings to work the plastic element in their hands. Its soft unctuous nature, pleasant to the touch inclined the idle savage to amuse himself by forming it into a ball, then with the thumb shaping a hole in the centre, spinning it around and pressing the sides, it gradually assumed the appearance of a cup; it laid in the sun to dry, and perhaps, by accident, placed in the fire where its plasticity was destroyed and density increased. Once the phenomena was produced, necessity soon discovered its utility, hence the art of pottery.

Terra Cotta, or baked earth, a term applied to the ferruginous clays, of which red bricks and flower pots are made, but often in our day, including a variety of products made of fire clays, either simply or mixed with fire clays already burned and ground fine again, or even with silicious or calcareous clays, may properly include all those Ceramics below the grade of faience, or the dry white bodies. With these, we have an infinite variety of products. The figures of Carpeaux are made of a mixture of ferruginous clay and of fire clay. The busts and figures of Carriere Belluse Jr are simply of the ferruginous clays. Others are of this material variously colored with metallic oxides. The grand classic reproductions of Wienerburg and of Philadelphia are of fire clays. Numberless architectural ornaments are composed of this material varied according to the wants or taste of the manufacturer.

The Limoges ware of Haviland and others who have imitated him is composed of ferruginous and calcareous clays to which silex is added, and a species of fritt to give the proper degree of fusibility at a temperature suitable to the colors employed on the surface decoration.

If we include this highly artistic development of Ceramic ware, in the Terra



enamel plays an important role. Boulanger and Deck exhibit in their works more nearly the high destiny of ceramic art in its new application to architecture. More than any other, Theodore Deck is adapted for grand works. Twenty-five years ago this great man issued from the pottery of a terra cotta stove maker, establishing himself on one of the exterior streets of Paris, in a humble way. He studied the styles and secrets of manufacture, and produced one after another, the Persian, Japanese and Chinese wares. His aspirations are entirely modern, and he has broken with all the traditions of the past. By this assemblage of tiles he has represented water, skies, landscapes, and symbolic figures, surrounded with borders that recall the sobriety of the ancient Limoges—enamels.

The colored arabesques of the tile pavement seem to kiss our feet as we stroll through a hall containing medieval and modern terra cottas. Here, a Jupiter, life-size, of great beauty, and a Bacchante, both of ancient Rome. There, a number of grand monumental figures, and a Saint Antonio by Nicolo of

with modelled landscape, and pretty tinted figures by Laroche.

India furnishes an equestrian statue in a coarse clay, reddish gray color, and but slightly baked. Architectural members such as capitals, brackets, consols, heads and keys line the passages and aisles.

Our attention is arrested by a remarkable group of seven figures, life-size, representing the entombment of Christ, executed at Toulouse in 1839.

Here are also the works of Messrs Schmidt of Dresden, and Fielner of Berlin, executed for civic monuments of grand dimensions, and fired at high temperatures, that enable them to resist atmospheric influences.

Munich is also prodigal in terra cotta statues, used for decorations of churches, often colored in the ancient style. From this feast representing the labor of many great minds, we pass to a department containing choice forms of terra cotta vases, utensils, lamps and water bottles, executed by early Peruvians, Aztecs, and the tribes of Africa and primitive Europe. All early works are of common ferruginous clay, a material capable of

Cotta series, it may be termed the highest point this branch has yet reached. When properly treated, that is to say, when the science of its manufacture and coloring is properly applied, together with artistic taste and correct decoration, it forms objects that rank high among articles of luxury. So attractive are its splendors, that many artists have for the time deserted other departments of Ceramic art, attracted by its novelty and beauty.

Amateurs have largely labored in this line supported by common potters, who have composed the bodies, colors and glazes out of materials furnished by their ignorance. Our apartments have been decorated with a mass of objects, that will one day, I hope, make place for better wares of the same class. I now refer to what I saw at the industrial exposition at Cincinnati, where I could but feel emotions of pity, that so many noble workers were like sheep without a shepherd, running wildly into extravagances, and laboring without proper direction.

The character of this species of ware is first, a body of Terra Cotta, or one closely allied to it, for sometimes a partly ferruginous and calcareous clay is used as at Cincinnati, upon which clays variously colored with metallic oxides are thickly



spread, very like the manner of using oil paint. These colors cover the original body completely and give the colored designs. Frequently, the designs are modelled in relief, and are then colored with the slip colors as they are called. Over these colors is laid the glazing material, consisting of a composition similar to flint glass, and when fused upon the surface in the kiln used for baking the wares, produces an effect of color beautiful in the extreme. No colored object in nature is at all comparable to it in depth and brilliancy. The delicious colors of choice flowers fail utterly in comparison with its beauty. There is one drawback, that is in the limited range of the palette. Science, however, is endeavoring to reach farther into the chromatic scale, and the future may furnish us with still greater beauties of coloring.

Let us examine what has actually been done in this branch. Come with me into a gallery in our imaginary palace of Ceramic art.

We will suppose again the scattered works of man to be collected in this home, as they would be within the portals of the cultivated mind. View this piece before us, it is a vase of large dimensions, larger indeed than could conveniently be made in the vitrified porcelain bodies. Its form, suggested by the lines of the bulb, rises with a proud grace, and almost breathing motion, influenced in its curves perhaps too much by the rigid geometric form of classic Greece. Up the

graceful sides majestically rises the stalks of some decorative plant, spreading a mass of rich serrated leaves in greens and yellow browns over the whole bulb. These are topped with heavy clusters of crimson reds and purples, relieved with a ground of cold grays broken with yellow. The chromatic harmony is perfect. The texture like that of an oil painting. The crispy surface sparkling with transparent glaze gives a luscious depth to the colors.

This process seems first to have been brought out by Haviland, a New York Quaker, who established himself in France, at the city of Limoges, and gave the first great impulse to the manufacture of porcelain. So prosperous has the enterprise become, that this American is regarded in France as the benefactor of the industry. His wares are known in every city of the United States, and are justly esteemed for their perfection of manufacture. For decorative purposes, hard porcelain is but partially suited, on account of the hardness of its glaze, which does not soften in the heat of the enamel kiln, where the colors are fired upon its surface, and consequently does not amalgamate with the flux of the colors, and fasten them well to its surface. The colors are apt to peel after repeated firings, and often at the first firing, they are apt to remain matt or dry, the glaze furnishing nothing to enrich them. Hard porcelain is however much safer for the purpose of decoration than the ordinary white wares, or faience. Indeed, I do not know a reliable white ware for decoration. My experience in this direction has been unpleasant indeed.

Let us return to our barbotine decorations, for many Ceramic beauties yet await us. A pair of landscape plaques by Celliere arrests the eye, with clear effects of light in rich half tone and shadow. The form of the trees, texture of the foreground, and atmospheric effect of the sky are well rendered. These plaques are the only pieces we have seen that are free from the fine cracks or craze in the glaze; and demonstrate that this species of ware can be made without that defect.

Beside these are some marine views on square plaques, in very light tones, breezy and life-like, excellent in touch and color.

A pair of fine vases by Aubree next attract our attention. Well made, presenting artistic features in color and drawing. The general effect is a mixture of color on blue grounds. Others by the same artist are in yellow browns.

Leopold Serre, who ranks first in the skill and freedom with which he applies his color, in obtaining fine rose tints, and in the taste of his designs, here displays a plaque, decorated with an ideal head.

The productions of Madame Moreau, in a ferruginous body with barbotine color decorations, are here represented. The influence of Japanese taste in design and color is seen in these works so rich in drawing and so modest in color. This piece is owned by the National Museum of France, that by the museum of Limoges, and others by choice buyers in both continents. There is nothing of the smooth or fine style in this work. Its merit consists in rich drawing, the intelligent breaking up of symmetrical arrangement, the balancing of the tones of color, and relative proportion of each. There is a recherche, thought and sentiment in the ideas as well as in the treatment of this work that leaves the mind perfectly satisfied. Never have I seen a sample of European art equal to this vase owned by La Baronne Rothschild, and executed by Madame Moreau, who is wealthy and sells her works only for the purposes of charity.

In general, barbotine colors applied upon the surface after the manner of oil painting, exhibit more skill, and is more agreeable to the eye, than when applied upon surfaces modelled in high relief;

particularly when an attempt is made to render the modelled surfaces in true or absolute coloring, the cultivated artist will seek effects of color rather than imitations of nature.

A body somewhat finer than that just considered, furnishes us a base for an attractive class of ceramic products passing under the head of artistic Faience. One of the leading types is decorated with a tracery of lines the spaces between filled with a thick glaze containing the color. The lines are put on with a material that prevents the glaze containing the colors from running into each other. The style is called cloisnee, or partitioned, because the colors are partitioned by the lines and prevented from flowing into each other, in somewhat the same manner as the thin brass partitions or cloisons are soldered upon copper vases, between which the enamels are filled, and afterwards ground to a surface and polished; with this difference, that the colors placed between this species of tracery called cloisons do not need any subsequent polishing,



but are glossed and finished when they issue from the kiln. The Saracenic style of art is generally used for this style of decoration, an assortment of colors in cobalt blues, chrome, or copper greens, gold purples and rubies, antimonial yellows and copper reds are used with a crude brilliancy of effect. Vases, lampstands, plates, urns, fountains, jardinières, chimney fronts, friezes, and tile for mural embellishments are made in this species of ware. The art has become quite general, and even domestic utensils are sometimes decorated in this manner.

Let me draw your attention to examples. Here we have a fountain from Bordeaux made by Viellard, in Moorish style of design, twelve feet high, grouped on each side by large alhambra vases. The effect is that of barbaric splendor, the colors all being brought to their utmost degree of intensity, and harmonized mostly by contrast. The vermilion-like copper reds are rendered more intense by juxtaposition with the greens. The purple and blues with orange and chrome pinks. The tone and whole air of the work suggests the orient, and is really the art sentiment brought into Europe in a modern age by the refined saracen, of whom it may be said that he taught barbarous Europe the arts of civilization and of taste. He gave Europe her astronomy, civil improvements, refined systems of agriculture, mechanical improvements, polished literature and a beautiful ceramic art, superior to the one she lost after the decline of the Roman empire.

This style of art, now so favorably received by the public, has been brought out and constituted an industrial product by Collinot, who has established his factory in the plain of Boulogne. His voyages in Asia, as well as those of that well instructed traveller, Adelbert de Beaumont, led him to imitate the oriental Faiences in the manner mentioned.

The pottery is of a white paste or nearly so, baked at a moderate temperature, the enamels are sometimes opaque and sometimes transparent. Much of this ware is used by persons of princely tastes for both the table and toilette. Among the products may be mentioned tiles, panels, vases of all forms and dimensions, card receivers, match safes, lamps, incense burners, toilet boxes and bottles.

The style called Lambeth ware, or that commonly known in this region as Bennett ware, is of this species of pottery. In the United States many beautiful pieces have been made by this English artist who has located himself in New York city. This style of decoration admits only of ornaments in flat tints, and conventional forms, it is unsuited for the purposes of high art.

Another mode of decoration by the use of cloisons has been carried to a point that may be called sublime. I have mentioned it to you before; it is the style adopted by Theodore Deck, and Boulanger of Choisi le Roi, for decorating the facade of the beaux arts at the Paris Exposition of 1878. It consists of an assemblage of clay tile upon which have been traced or painted designs of large dimensions. The parts to be colored are then hollowed out, leaving cloisons or partitions of the clay body in relief, so as to retain the colored alkaline enamels with which the cavities are filled, and prevent their flowing into one another. Mural decorations are thus made of paintings of colossal dimensions, possessing high qualities of decorative art. Their beauty and permanence destines them in the immediate future to become a leading feature in architectural art. Already such powerful artists as Colon, Ehrmann, Legrain, and D'Argent have produced works that will outlast our civilization and may prove a pleasing record to future ages.

Observe these colossal painted niches with symbolic figures designed by the unapproachable Ehrmann and executed in cloisnee enamel tiles by Deck and Boulanger. See how the light sparkles in the deep enamels! How moist the gold grounds appear as they reflect their deep yellow light from under the dewy glaze!

Here, Sculpture, classically cold and majestic, with chisel and mallet in hand, leans on her work, intently studying the refinements of its form, with a calmness and repose in her gaze, that commands a feeling of stillness and awe.

Next, Painting, all pliant and picturesque in form, attitude, and draperies, glowing with the chromatic beauties of her own palette, her face lighted with rosy smiles, and eyes sparkling with love light, familiarly looks upon us, quickening our senses with delight.

Poetry, next, with smooth, clear brow, and pensive face, her form all noble grace, style and tablet in hand, stands rapt in dreamy thought, gazing away into Elysian fields of imagination, now, the numbers seem to fall in slow, easy motion. On her left, watching her face, expectant Music sweeps with rosy fingers the golden lyre. Tapestry, at her loom, weaves her pictured flowers with colored threads. Jewelry, all glitter, mirror in hand, bedecks her charms. Lastly, Ceramic, gazing entrancedly on the luscious colors of her painted vase.

(To be continued.)

THE famous Berlin iron jewelry, which originated during the Franco-Prussian war, wrought in exquisite filagree work, is gradually finding favor.

THE KEYSTONE

A monthly journal for the Trade, published at Nineteenth and Brown streets, Philadelphia, price 25 cents a year, in advance.

Circulation 15,000 larger than that of any other journal of its class, reaching every jeweler in the United States and Canada.

Address all communications to
THE KEYSTONE,
ROBERT W. ROBINS, Publisher,
Nineteenth and Brown streets,
Philadelphia, Pa.



A Monthly Journal for the Jewelry Trade.

PHILADELPHIA, APRIL, 1887.

THE devices sent in by A. N., of New Haven, Conn., will be noticed and illustrated in the May number.

HENRY C. HASKELL, of 18 John street, New York, maker of fine jewelry, is also manufacturer of medals and badges from original designs.

THE Hammond wheel, for cutting and finishing glass, is a remarkable discovery. We have seen specimens of its work, and pronounce it perfect.

KREMENTZ & Co.'s collar button, in all sizes, is now in the market. They take with the trade, and orders are now pouring in for them.

JEWELERS throughout the New England States report business very dull for the past month. Plenty of work, but no sales, they say.

THE Keystone Watch Case Company have something to say to the trade on pages eleven and sixteen. Special attention is called to these pages.

C. McVICAR, of Ellensburg, W. T., lately issued a neat circular announcing that he had opened a watch repairing and jewelry store at that place.

THE Johnston, N. C., *Monitor* gives Mr. H. C. Toplis of that city an excellent notice, referring especially to him as an expert and careful watch and jewelry repairer.

LUDWIG LEHMAN, of 122 Fulton street, New York, manufactures a fine line of fancy paper boxes for the jewelry trade exclusively. His advertisement appears in this issue.

I. BEDICHIMER, of 616 Chestnut street, Philadelphia, manufacturer of Masonic marks, society emblems, pins and jewels, will execute all orders sent to him in the most elegant styles, at short notice, at bed-rock prices.

JACOT & SON, of 37 Maiden Lane, New York, the well-known dealers in musical boxes, have something to say to the trade in the advertising columns of the KEYSTONE. What they offer is the book "How to repair Musical Boxes."

THE firm of Howe, Johnson & Co., of Hutchinson and Nickerson, Kansas, has been dissolved, Mr. J. H. Johnson retiring, and Messrs. J. E. and C. O. Howe continuing the business under the name of Howe Bros. This firm has a large business in both these towns, which they have gained by fine workmanship and fair prices. They never take in work that they cannot warrant, and touch no old watches.

J. R. PAINTER, of 1208 Chestnut street, will, on application, send you the catalogue and price list of the elegant and sweet-toned music boxes he keeps in stock. Skilful workmen will repair broken music boxes sent to him by jewelers.

HOWARD & SON, of Providence, have sent out some handsome circulars this season; one advertising their Sensation collar button, and the other announcing the appointment of Mr. George W. Parks as manager of their silver department.

G. A. DEAN & Co., manufacturing jewelers, announce to the trade that on or about April 10, 1887, they will remove their general office and stock to factory at Attleboro, Mass. The salesroom at 194 Broadway, New York, will be continued.

MOSELEY & Co., of Elgin, Illinois, present in this KEYSTONE the merits of their lathes, made in three standard sizes. They will send on application their new price lists, which detail at length the merits of their very excellent lathes.

THE KEYSTONE acknowledges the receipt of handsome cards of invitation to the wedding of Louis G. Jahneke and Miss Amanda C. Rittenhouse. Mr. Jahneke is the well-known jeweler of Lexington, Virginia. The bride and groom have our best wishes.

CLARK, GIDDINGS & Co., of Sterling, Illinois, present on page fifteen of the present issue the peculiar merits of their "Comfort Glass Case," which no jeweler should be without. The price, \$15.00, is very reasonable for this handsome and useful piece of furniture.

W. W. OLIVER, of 430 Niagara street, Buffalo, New York, sole manufacturer of the "Little Giant" ring bender, uses the columns of the KEYSTONE this time to inform the trade that he also manufactures other useful and ingenious tools of great assistance to the jeweler.

THE *Journal* of Elkland, Pa., says: "Mr. Mitchel, our new jeweler, is building up a fine business in his line. His success is probably due to the fact that he keeps an elegant line of goods, and is courteous and accommodating—a gentleman with whom it is a pleasure to do business."

THE Asheville, N. C., *Citizen*, in a recent issue, said: "Mr. H. L. Lang, watchmaker and jeweler, showed us recently a watch made by himself, the case and material of which were box wood and ivory. It is of ordinary size, a perfect watch, keeping perfect time, the dial marking both the old and new divisions of the hours, with a second as well as a minute hand, a stem as well as key-winder, and except in material, differing in no respect from other watches. The artisan who could make such a gem is perfect in his art."

THE *Advocate*, of Clarksville, Tenn., says: "The interior of Thomas Rohner's establishment is neatly and artistically arranged and contains one of the finest assortments of jewelry, watches, etc., to be found in the city. All the goods are quoted at very reasonable prices and are of superior beauty in style and finish. Repairing of watches, jewelry, etc., is promptly and nicely executed, practical and experienced assistants being employed. This house, besides doing a large local trade, is well and favorably known throughout the country, and is one of our old established and representative houses."

THE Keystone Watch Case Company extends a special invitation to the retail trade, that at their convenience they will visit them. The offices of the Company are located as follows: 104 State Street, Chicago; 12 Maiden Lane, New York, and the home office at Nineteenth and Brown Streets, Philadelphia.

THE *Dorchester New Era*, Cambridge, Md., says: "Mr. John A. Tschantre, a practical watch repairer and silversmith, formerly with Mr. W. M. Fletcher, has purchased the stock of goods in Mr. J. Stewart's watch and jewelry establishment, and will hereafter carry on business at that place.

THE Halifax, N. S., *Acadian Recorder* of March 24th, says: "Last night, about 9.45 o'clock, the few persons who happened to be passing along Barrington St., saw a soldier dash out of W. H. Cleverdon's jewelry store, followed by the proprietor, who gave the signal to stop the thief. The soldier, who belonged to the York and Lancaster regiment, was followed some distance, but got away. He had gone into Cleverdon's, asked to see some silver watches, several of which were shown him: He grabbed one, and rushed out of the shop."

THE *Palladium*, Benton Harbor, Michigan, recently said: "In noting the important improvements among our merchants, we are pleased to call the attention of our readers to the jewelry store of Louis Kolman. Mr. Kolman engaged actively in the jewelry business some six years ago, and by plain, honest dealings with his customers has reached the point when it is conceded that one of the largest assortments and the finest goods in watches of all kinds and jewelry of the latest patterns and neatest designs can always be found at his store. Mr. Kolman has sold a great number of the Boss patent filled cases, which are guaranteed to wear for twenty years. These cases are made in both the ladies' and gents' sizes, key and stem wind, hunting or open face."

THE *Wyandotte Gazette*, Kansas City, Kansas, says: "Mr. C. L. Lee, about a year ago, bought the jewelry, stock, and good will of Mr. O. D. Burt, of this city. With his experience in the business, he felt that a good trade could be built up in Wyandotte. His success is now assured. Mr. Lee is constantly filling his shelves and cases with the latest designs in jewelry, silverware, etc., and the best of clocks and watches. Anything in his line may be ordered of him as well as if it were a branch of Tiffany's. He will make or mend a ring, will repair and clean a clock, will manufacture jewelry according to pattern, will cut, polish and set precious stones including diamonds. Being here to stay, his goods may be depended on."

THE *Daily News*, Palatka, Florida, says: "It is a subject of general remark among all, strangers as well as home people, that the jewelry establishment of Messrs. J. F. Speck & Son is the most elegant and handsome in the State. And it does present a very handsome appearance. Finished in ebony, with large plate glass mirrors and tasty pictures and statuary, the effect is pleasing indeed. Then the stock, being carefully selected and very complete, is displayed to the best advantage, and at a glance almost, the customers can see just what they want. The stock is a very large one, consisting of clocks, watches, jewelry, spectacles and eye-glasses, silver and plated ware, gold pens and pencils, walking canes, and a miscellaneous assortment of fancy articles. The repairing department is very complete and large quantities of work are turned out every day."

THE *Baltimore American* of recent date said: For several days past, large crowds have gathered in front of the show window of the jewelry store of Messrs. Hennessee, Bates & Co., corner of Baltimore and Charles Sts., to see the beautiful emerald and diamond ring, which was presented to Mr. J. F. Morrison, by his friends in the Crescent Club. The large emerald is absolutely perfect in color, and free from any imperfection. Perfection in large size emeralds is very rare. The weight of this stone is 6½ karats. It is oblong, and is mounted with two blue-white diamonds, each weighing about 2½ karats. As a work of art and a combination of gems, this is probably one of the finest rings ever made. The cost of the ring was \$3,600. These gems are remarkable ones and are worthy of inspection. They will be on exhibition a few days longer. This firm procured the gems and set them."

AN OLD traveler writes this description of a clock that he saw in Japan: "This clock, in a frame three feet high and five long, represented a moon landscape of great loveliness. In the foreground were plum and cherry trees and rich plants in full bloom; in the rear a hill gradual in ascent, from which flowed a cascade, admirably imitated in crystal. From this point a thread line stream glided along, encircling rocks and tiny islands in its winding, but presently losing itself in a far-off stretch of woodland. In the sky turned a golden sun, indicating as it passed the striking hours, which were all marked upon the frame below, where a slowly creeping tortoise served as a hand. A bird of exquisite plumage, resting on a plum-tree branch, by its wings proclaimed the expiration of each hour. When the song ceased, a mouse sprang from a grotto near by, and, running over the hill, hastily disappeared in the shrubbery."

THE OPAL, which, ever since the days when Sir Walter Scott wrote his romantic story in which this stone figures so extensively, and which, in these later days, is supposed to bring ill luck to the wearer, is growing to be one of the most highly favored and most costly of the precious jewels. The ban under which it has rested for so long a time has been removed, and where a few years ago they could be bought for comparatively low prices are now bringing fabulous sums. A well-known jeweler showed me a necklace of opals, which, he said, was cheap for \$30,000. This necklace is now the property of the wife of a Brooklyn millionaire. The central opal in the pendant is alone worth \$2,000. I might hardly be believed when I say its magnificent color and luster dimmed the magnificent diamonds that were set with it. I saw at this same place an opal that was to be set in an engagement ring, which was valued at \$1,500.—*Baltimore American*.

I HAVE peeped into quiet "parlors," where the carpet is clean and not old, and the furniture polished and bright; into "rooms" where the chairs are neat and the floor carpetless; into "kitchens" where the family live and the meals are cooked and eaten, and the boys and girls are as blithe as the sparrows in the thatch overhead, and I see that it is not so much wealth and learning, nor clothing, nor servants, nor toil, nor idleness, nor town nor country, nor station, as temper that render homes happy or wretched. And I see, too, that, in town or country, good sense and God's grace make it like what no teachers or accomplishments can make it—the opening stave of an everlasting psalm; the fair beginning of an endless existence; the goodly, modest, well-proportioned vestibule to a temple of God's building that shall never decay, wax old, or vanish away.—*Dr. John Hall*.

HELPS AND HINTS.

SELF-INSTRUCTION IN THE ART OF LETTER ENGRAVING.

Caution to Ambitious Students. Slow and Sure Progress.

Ambitious and sanguine as the amateur in engraving usually is, his progress in the acquisition of technical and artistic knowledge is slow and unsatisfactory, and the consequent disappointment that ensues may permanently discourage him from pursuing his work. This is a disaster that may be avoided by patient effort in learning first principles; in the student feeling his way, so to speak, as he proceeds, and in mastering minor details before the more difficult methods of procedure are attempted. Amateurs are apt to rush in where experts fear to tread.

The learner who essays to acquire the engraving business without a teacher is extremely liable to fall into the pernicious error of supposing himself qualified to engrave, when his actual knowledge of engraving is meagre and rudimentary. He frequently awakes from such delusions on happening upon a piece of work executed by a skilled workman. He will then recognize the superiority of the expert engraver's work and, by comparison the defects in his own performance. If such a revelation enables him to perceive wherein he lacks ability; if thereby he learns to improve his style by adopting the correct features of the superior work and discarding his own errors, he will prove himself possessed of the true metal of an artist, and the result must enure to his advantage. But the actual facts are mostly otherwise. The amateur fails to grasp the points that go to make up a good piece of work; is unable to account for his own want of merit, and becomes tired and discouraged. Thus his first error is intensified and perpetuated, and he abandons the business as a failure.

We do not deprecate or discourage ambition in a student; we merely desire to restrain it within salutary bounds. It is too frequently far ahead of his practice. We write from experience when we say that learners often try to engrave many styles of lettering before attempting what should be their primary aim—to practice sketching a few of the leading styles which engravers mostly use, and endeavor to acquire the method of correct formation. This is the most advantageous course to pursue. Correct drawing of letters must, of necessity, precede correct cutting. An expert engraver may probably improve on an imperfect sketch in the progress of cutting, by reason of his acquired skill and habitual precision, but with the learner, the case is different. He adheres mechanically to the sketched outlines of his figure, and if his sketch is erroneous, the engraving will be sure to reproduce its faults. He may deem it superfluous to be punctilious in his drawing, and consider one sketch, even if not correctly done, sufficient. This is a radical error, and negligence in one affair—even what may appear a minor matter, will lead to serious defects. The usual excuse the beginner offers for his fault is his imperfect idea of the proper course of procedure; his want of knowledge, and consequently of skill in beginning his work—hence his disadvantage. This is all true, but no man acquires an art by intuition; he must learn. Talent or genius may facilitate his progress, but study and practice are the chief factors that produce ability. Every engraver's sketching is at first crude and imperfect. He improves by degrees, if he has the determination and adopts the means. Even if the learner's progress be slow, let it be at least certain. Care and caution, study and taste will inevitably lead to advancement. Negligence and haste must be eschewed as the twin concomitants

of mediocrity. The attempt of the frog in the fable to rival the magnitude of the ox is about as sensible an idea as the efforts of learners to imitate expert engravers without previously acquiring the principles of drawing and cutting.

Now, in learning this business, as in every other, there are a few points to be considered. The first is, as we have pointed out—you must learn to draw well. This is a great help and an indispensable requisite. Some may have a taste for drawing, but are not expert at it. They are able to acquire this portion of the art readily. Others find it slow work and difficult to master, and require longer training. Patience and much practice after good models will enable these to attain ability.

The expert engraver, by trained and careful judgment, is mindful that each letter and every word is properly laid out before he attempts to engrave it. Some do this work much quicker than others, depending upon acquired skill or natural aptitude. An engraver must have a prompt comprehension of the general plan of his work and each particular part of it, and correctly adapt the means to the desired end. He must be quick and skillful in formulating his plan, and execute it with taste and precision. Good judgment in selecting appropriate styles of lettering and adopting the proper style—according as the job is ordinary or elaborate—to the work in point, is another characteristic of the expert.

The design which gives the appearance of being finely executed without being laborious in its details, is to be preferred to elaborate, difficult and ill-adapted specimens. The lettering must be suited to the work. Judgment and taste must supersede caprice and innovation in engraving. The class of work which engravers prefer is that which can be done



with advantage and expedition. A job which looks neat and can be easily done, is appreciated in the trade. Discrimination in this regard is not easily taught, but is learned in the course of experience. Now, what applies to experts in selecting styles of letters easy to engrave and which appear neat and appropriate, bears even greater weight to amateurs and learners. They, especially, should select the simplest forms of lettering consonant with the style of work to be engraved. They, particularly, should avoid difficult sketching and cutting when plain and easily wrought work would suit better.

The skilled engraver, with his knowledge of forms and appreciation of effect, has the knack of adopting for each piece of work that style of lettering suited, and yet offering the least possible trouble in execution. The amateur or beginner, with meagre knowledge and limited judgment, usually selects letters tedious and troublesome to produce and at variance with harmony and grace, and not in keeping with the subject.

It may appear strange and inconsistent to the beginner to be told that he must devote weeks or even months, as the case may require, to the study and practice of drawing in order to acquire a correct idea of formation before he uses the graver. This, however, is essential. The graver must not be used at the outset—at least in cutting letters with. The first step is to learn how the letters should be formed. The use of the graver can then be advantageously learned, because, even if the cutting is at first necessarily imperfect, the correctness of formation is a redeeming feature of the work, and good cutting will follow in due season. If the sketch

ing is bad, no amount of good cutting can atone for the defect.

It is not correct to fancy, as most learners do, that sketching and cutting may be learned concurrently. This plan but doubles the difficulty of learning engraving. In the establishment of the writer no student is set at work in that way, and it is erroneous for the self-taught student to imagine he can do better than one under the eye of a master.

We have usually taught students during the period of learning to sketch, to acquire the proper method of holding the graver, and by degrees leading them on to cutting lines and curves, and in this way preparing them to cut letters. But before they are allowed to cut letters or lines of lettering we take care that they are qualified to sketch those letters correctly, or at least, that they have properly sketched letters to work upon with the graver. To permit otherwise would be to allow students to commence wrong and encourage careless habits to develop which might become incurable.

Students, especially self-taught ones, who pursue no systematic plan, like that which is hereby indicated, but who endeavor to master the engraving business at a rush, trying to cut letters and monograms, ciphers and scrolls, floral and ornamental designs, even landscapes, before learning to draw well, soon tire of the art because they do nothing correctly. If they persevere they are long in making any real progress. Months roll on without any appreciable improvement; whereas, if they had started right they would be astonished to find how fast and easy they could learn. No person understands these matters better than the writer. Those under our tuition have invariably advanced rapidly, unless the student was of a wayward and ungovernable disposition, and would insist upon having his own way about learning the art. Such a person is always a failure. We receive many communications worded in effect as follows:

DEAR SIR: I engrave some, but not as well as I would like, and am not what would be called an engraver by a person who understands the business. Please inform me how I can improve in the art. I want to know the correct forms of letters, and the several styles most in use for ordinary work. Have you examples of letters, inscriptions, etc., from which I can copy or take impressions? I believe I could in that way much better improve myself without the aid of an instructor.

Now, to answer all these communications and furnish designs would require a greater amount of time and trouble than could be devoted to the matter. To meet the difficulty set forth in the inquiry, of furnishing good specimens for imitation, induced the writer some time ago, as previously announced in this journal, of inventing the plan of engraved plates, with the most usual and useful styles of lettering and the numerals cut thereon; the plate thus furnishing a valuable aid to all beginners and self-taught engravers. The series comprises suitable styles and sizes for use on coffin plates, etc., as follows: Script—caps, lower case and numerals; Old English—caps, lower case and numerals; Roman—caps, numerals and italic lower case.

The above styles are those in general use and best adapted for learners. They are the bases from which all others are designed and built. They would be of great utility to all engravers not well informed in the analysis of the various characters. Chaste in form and correctly engraved, they constitute good object lessons to copy from, and each plate is accompanied with a little transfer device by which an impression can be quickly and correctly made of any letter or figure on a piece of metal. The plates are of the usual practice size, engraved on copper, and will undoubtedly greatly aid those who have no instruction from a practical engraver. They are furnished at \$1.25 each, ten cents extra for postage; the

transfer instrument twenty-five cents, two cents extra for postage.

G. F. WHELPLEY.

COPPER CENT OF 1787.

Mr. William Dunlop has in his possession what he believes to be the oldest coin in the United States. It is a penny of the issue of 1787, and the smoothness of its surface shows that it has gone through about as many ups and downs as a coin may be supposed to experience in a century. It was presented to Mr. Dunlop by Mr. W. S. Wetzell, who brought it from Great Falls, M. T., where he found it under very peculiar circumstances. While working in a sawpit several weeks ago, Mr. Wetzell saw the coin lying in the sawdust which covered the ground. The mark of a saw tooth led him to the conclusion that it had just been disinterred from the heart of a log. This led to further speculation, and for want of a better explanation, he attributed its discovery 2,000 miles from the colonial shore to the trappers or Indians. How it got in the tree, though, he did not attempt to explain. The coin is of copper, and about the size of a 25-cent piece. On its face is a sun shining on a dial, and under the latter the kindly advice, the observation of which is said to make men Vanderbilts. "Mind your own business." On one side is the date "1787" and on the other, the word "Fugio." Around the edge of the reverse side are thirteen rings linked, emblematic of the union of the colonies, and in the center the words, "We are one." Surrounding this are the words, "United States." Mr. Dunlop made a search of works on old coins, but could find nothing but a mere reference to the coin. There is said to be one other penny of that date in New York.—Kansas City Times.

REPRESENTATIVE Glover has left all cares behind and gone off on a long wedding trip to California, and on his return to Washington next fall will select a house for his bride, and set up a Benedict's establishment. His wedding gift to his bride was a necklace of diamonds with a moonstone pendant, and Mrs. Patten gave her daughter a handsome silver tea service. St. Louis friends sent on many handsome pieces of silver, and Nevada friends here remembered the bride with silver offerings. By her father's will, the bride came into possession of half her fifth of the estate when she became of age, and the rest remains in the hands of Mrs. Patten during the latter's life. Each of the five daughters will inherit in all something over \$300,000, and they are the best dressed of any of the heiresses of this season. The Patten fortune was made by one of the sudden jumps of Nevada silver mines in the great days of the Comstock lode, and under the wise management of Mrs. Patten, the estate has gone on increasing, and doubled itself during the years she spent in Europe with her daughters. She is a woman of great business shrewdness and ability, and her investments in Washington real estate two years ago have been most fortunate.

MOST of us can remember the time when it used to be said of this country, that it had no taste nor appreciation for art; and there is no doubt but there was formerly abundance of justification for such observations. But such is no longer the case, for the American people are to-day universally recognized as the most intelligent and liberal patrons of the fine arts of any nation in the world. The most splendid oil paintings that have been produced by modern artists are gradually being collected in this country; the prices paid by our wealthy people being apparently beyond all European competition.

A WONDERFUL CLOCK.

A curious deviation from the old proverb, which says that the cobbler should stick to his last, has been exemplified in the person of Miles Hughes, No. 69 Carroll Street. His early years were devoted to the shoemaking trade, but five years ago, he came to the conclusion that, like a certain Mr. Riley whose name is celebrated in song, he might do better with a hotel. But the most singular part of it all is that for the last seven years, he has been devoting his spare moments to a hobby in the form of a clock, wonderful alike in design and execution.

The frame work stands about seven feet high; the front is embellished with carved work and hand painting. The dial, sixteen inches in diameter, shows the second, minute, and hour, ranging from one to twenty-four; also the days of the week and month in separate circles. An inner ring displays figures corresponding to the "twelve-hour" system, thus furnishing two readings—one of twelve hours and the main one of twenty-four. The only other notable feature of the clock proper is that the interior mechanism is unusually simple, containing half the ordinary number of wheels, while performing correctly a greater variety of work. By an ingenious adjustment of the lower and upper works, a very sensational effect is reached in the artistic canopy, a strange device. At every quarter, the twelve apostles are seen to march out at one door and in at another, in semi-circle, in front of a figure intended to represent Christ. Peter is seen to turn his back upon the Saviour. Overhead is the inscription "Beware of temptation" and a hand pointing leftward to the bar, in front of which a dude is seen approaching a portly aproned "host" who receives contemptuously his visitor's overtures to "stand him off." At the extreme left a curtained door of the adjoining saloon opens and discloses a policeman in the act of getting away with his mug of beer. At the extreme right is an aperture, out of which figures representing "Childhood," "Youth," "Manhood," and "Old Age" emerge to correspond with the first, second, third, and last quarters of the hour. Not the least wonderful thing about the clock is the fact that the bulk of its elaborate carved work was done at odd times, by means of a jack-knife, and that some of the richer effects were produced from cigar boxes. Being like John Gilpin in one respect, at least, viz., his frugal-mindedness, it is said that diligent scrutiny of the strange mechanism reveals the fact that old gas burners and unused stoves have contributed their quota to the ingenious whole.—*Buffalo Courier.*

PROGRESS IN MINING.

Reviewing the progress of the great industries of mining and metallurgy, the *Engineering and Mining Journal* gives the following interesting summary, which indicates for these industries a remarkable degree of progress, technical and commercial:

"Never before in this country was the number of paying mines so great, or its proportion to the whole number worked so large. And never before were the improvements in metallurgy so interesting or their results of greater practical importance. The cost of production of every metal has been reduced.

In mining, the wonderful skill evolved from intelligent experience with machine-drills, and the introduction of cheap high explosives, have brought our ordinary every-day work to a point in speed and economy that a few years ago would have been considered as improbable as the telephone. Coal-cutting machinery and mechanical underground haulage are effecting a notable economy in the cost

of producing that most important of all mineral products—coal.

The twenty-ton copper-furnace has given place to the simple little water-jacketed shaft that smelts from 100 to 150 tons a day at an expenditure of about as many cents as it formerly cost dollars; the successful application of the Bessemer method to the treatment of copper ores; a vast increase in the capacity and economy of lead furnaces; the reduction in the cost of the treatment of zinc ores, which has brought this metal down to, and even below, the price of lead; improvements in the production of sulphuric acid that have made half a cent a pound for commercial acid a profitable price, even where the pyrites used have come from distant Spain; improvements in the crushing, concentration, roasting, amalgamation and chlorination of gold and silver ores; in the bromination of gold ores; in the electrical separation of metals; in furnaces and machinery used in the production and manufacture of iron and steel, which have made possible the wonderful records of our iron and steel works; excellence in design and construction of bridges; of locomotives, and machinery of all kinds, which have demonstrated to the outer world their superior economy and efficiency, compared with old world types; the cheaper production of electricity and its general application for power, light and heat; progress in the practical utilization of waste products. These and many more are subjects in which our American engineers have made, and are making, records that challenge the attention and admiration of the world."

SHIPPING KEGS OF GOLD.

The process of shipping gold across the ocean is thus described by the *Boston Commercial Bulletin*:

Each keg contains \$50,000 in clear gold. It is from the Bank of America, at New York, that most of the gold is shipped from that city. The foreign steamships sailing from this city now carry little or no gold, although the reverse was the case years ago.

The shipments of gold are not generally on the bank's account. At a first glance persons might well suppose that when the demand arises for gold to send abroad the shipper would only have to send in his order for his hundreds of thousands to the sub-treasury, where millions of specie are on deposit. But there are sufficient reasons why this plan will not work. The sub-treasury can pay out its coin only to creditors of the government.

With the Bank of America the associated banks keep on deposit constantly an enormous sum of gold, sometimes amounting to \$40,000,000. To the members of the bank association the Bank of America issues its own certificates against these deposits redeemable on demand. So, when there is occasion for making a gold shipment, the coin is prepared for that purpose in the rear office of that bank; here it is bagged and kegged and made ready for shipment.

Kegs in which gold is packed—"specie kegs," as they are called—are made of extra hard wood. They must have an extra iron hoop. Specie is not thrown loosely into a keg, nor, upon the other hand, is it carefully wrapped in tissue paper and piled up one coin upon another. The keg serves only as a protection for canvas bags, into which the gold is placed in the ordinary hit-and-miss fashion of pennies in a man's pocket. Into each bag goes \$5,000, and ten bags fill a keg.

In the interests of security each keg is treated to what is technically known among the shippers as the "red-taping" process. At each end of the keg, in the projecting rim of the staves above the head, are bored four holes at equidistant intervals. A piece of red tape is run

through these holes, crossing on the head of the keg, and the ends finally meet in the centre. At the point of meeting the tape is sealed to the keg's head by wax bearing the stamp of the shipper.

Gold crosses the ocean very much as does every other kind of freight, without any special looking after. The average rate of insurance is about \$2,000 on a shipment of \$1,000,000. There are shippers who do not insure. Having to ship \$1,000,000, they give it in equal parts to half a dozen different vessels. It is a strict rule with some firms never to trust more than \$250,000 at a time on any one ship.

A certain party furnishes all the kegs for gold and packs them. The man who does this is a monopolist in his way. Shippers of large amounts always lose a few dollars by abrasion, but not exceeding sixteen ounces on a \$1,000,000 shipment. The only protection to be found against abrasion lies in the shipment of gold in bars instead of coin. Gold bars are not readily obtained.

WATCH WITH A HISTORY.

The old silver watch belonging to the widow of James Moore, who was lynched at Macon, say the *Savannah News*, has a wonderful history. It was brought from Scotland years ago and is of London make. Its first owner was Robert Lodge, who ran on the Southwestern railroad as engineer in the olden days. Prior to the war, Lodge was killed in an accident near Stewart's crossing. The engine left the track and turned over, throwing Lodge on a stump and crushing the life out of him.

He had on the watch when he was killed, and it fell into the hands of Mrs. Moore, who was the half sister of Lodge's wife. When Mrs. Moore was first married to Jim Kimbrough, the latter wore the watch, and when he was killed in Baldwin county some years ago, while trying to arrest a man named Ennis, he had the watch on his person. The old time-piece was returned to the widow, and was thus for a second time associated with a violent death. Jim Moore married the widow Kimbrough, and he wore the old silver watch regularly.

After his arrest, he still had it on, but on the night before the mob took him, he returned the watch to his wife, and it became once again associated with a terrible tragedy. Some days ago Mrs. Moore placed the watch in the hands of Lieut. Wood, to be sold for her benefit, as she is in very straitened circumstances. Knowing that the old watch was valueless, except for the old silver that was in it, Lieut. Wood spoke to Watchman George Henry about it, and the latter got up a raffle of 100 chances at 25 cents a chance. Lieut. Wood threw the winning number, but he sold his throw to Frank Burke for 25 cents, and the latter became possessor of the ancient time-piece. He will return the watch to Mrs. Moore, and so another link in its eventful history is completed.

NEW WINE IN OLD BOTTLES.

The so-called "grandfather's clocks" are still popular throughout the New England States, but more especially in Salem, Mass., and Newport, R. I. A number of English clocks from Virginia have recently come into the possession of the Newport people in a peculiar way.

It seems that during the war of 1861 the negroes frequently stole the tall clocks from their master's houses and took them to their cabins; but, as the ceilings of the cabins were very low, the clock-cases had to be sawed off both at the top and at the bottom. Several years afterward an enterprising Yankee came along and bought a great many of the shortened clocks, took them home, repaired them and sold them at very high prices. Of course all of these clocks give the old, new and full

moon, the tides, etc., and occasionally one of them contains a music-box.

A good story is told of a society lady, who drove a long distance into New Jersey to buy an old clock with a musical attachment. Having brought it home she found that it badly needed repairing, and so took it to a neighboring watchmaker. Our practical-minded Pivot did not know how important it was in the mind of his customer that the clock play old tunes in keeping with its antique character, so when he found that the musical part was broken beyond redemption, inserted a new cylinder, which, of course, contained several modern melodies. When the clock had been repaired it was sent home. The happy owner called in her friends to congratulate her upon her purchase. The visitors, after admiring the clock, waited eagerly for the old tunes; but what was their amazement when, at the stroke of the hour, the instrument struck up Dave Braham's too popular catch "The Babies on our Block."

RUSSIA'S FAMOUS GEMS.

In the early part of the present century the attention of geologists was directed to Eastern Russia as a probable diamond region on account of its resemblance, in some of its natural features, to Brazil. A few years later, these gems were actually discovered by Humboldt and Rose, on the west side of the Uralian chain, in the gold-bearing alluvium on the banks of the River Adolfskoi, several feet above a stratum containing fossil remains of the mammoth, which has led some eminent scientists to conclude that the diamond of this region was formed since the extermination of this gigantic mammal. Since their first discovery, these precious stones have been found scattered along the Western declivity of the Urals, but not in large numbers as in the mines of South America and South Africa.

There is no country of modern times, unless it is Persia or Brazil, that has a more extensive collection of diamonds, and so many of remarkable size and beauty, than Russia, many of them obtained by conquest, treaty, purchase or inheritance. The display of wealth in this gem at the London Exposition of 1851 was unsurpassed. Among the exhibits from that country were a magnificent diadem comprising 1814 brilliants, 1,712 rose diamonds, 11 very fine opals and 67 rubies; besides a bouquet of diamonds made in imitation of the granite and the lily of the valley, and a wreath of diamonds representing the bryony bearing pear-shaped emeralds. It is reported that a splendid necklace of twenty-two large brilliants, with pendants composed of fifteen diamonds of large size, forms one of the treasures of the Winter Palace.

Of the amount of silver in existence, \$4,000,000,000 is estimated to be in coin and bullion, \$1,200,000,000 in watches and the remainder in plate, jewelry and ornaments. Of the amount in existence \$4,745,000,000 is estimated to have been obtained from North America, \$736,000,000 from South America, \$63,000,000 from Europe, \$47,000,000 from Africa and \$31,000,000 from Asia, including Australia, New Zealand and Oceania. The amount of the precious metals in existence is estimated to be \$18,974,000,000.

INVENTIVE genius has brought out little recently in electricity, but it is whispered that one of the great telephone inventors has hit upon something in telegraphy, which will go far beyond anything known in that line or in telephony. The invention, as it has been described, is like a slate placed upon a man's desk upon which a message may be written and by the simple touch of a button transferred to the central office and thence to destination in an exact fac-simile.

TRADE TOPICS.

BRIEF BIT OF TALK WITH ALL SORTS OF FOLK.

Extracts from the letters received at the "Keystone" office during the past month.

Trade Topics are far from dull this issue. They present letters from New York, Philadelphia, Chicago, Attleboro, Mass., and other places, which are full of interesting points. Listen to the warble of our New York correspondent:

"How is trade?"

"Immense! away ahead of last year. Never had such a year in our trade. Are not able to fill our orders."

"How is trade?"

"Very poor, never saw the like; the jewelry trade is played out; too many in the business. We are overstocked with our goods, and our travelers are doing nothing."

"How is trade?"

"Oh, pretty fair. Not as good as it might be; still we are doing something, and think the year will pan out pretty well."

This is how trade is in New York, or at least the way it is expressed by the different people you meet in the course of a day on the Lane, and no doubt all are true, and they serve to show the different opinions of the people engaged in selling watches and jewelry.

There is, however, one thing sure about these people, and that is, you can tell almost to a certainty the class of goods these people carry, and you can depend upon it that the first man is a jobber who sells the best goods made by first-class manufacturers, while the others belong to that class whose only question is, Are the goods cheap, and not will they sell.

I met a gentleman the other day who had occasion to visit a retail jeweler in order to make some inquiries in regard to the quality of the different filled cases, and the remarks of the jeweler were more emphatic than polite. He said: "The country is swindled by a dozen or more different makes of cheap filled cases, that have not enough real gold in them to buy a glass of beer. But there is one called the James Boss that is a *hummer*, and I cannot tell one of them from gold except by the trade mark or filing into it. And why any blank idiot of a jeweler wants to sell a "snide" filled case, when he can sell a Boss is more than I can understand and that it is done by some is strong evidence that the fool killer is either dead or away on his vacation.

A great many retail jewelers may be seen on the Lane at this season of the year. It is not a difficult matter to distinguish one of them, as he is generally surrounded and followed by a lot of hungry looking drummers, who feed him, drink him, and date his bills ahead to January 1, 1890, or promise to collect from his mother-in-law.

The statement of imports and exports for the month of January does not show the balance in our favor that patriotic people would like to see, except in the matter of jewelry, which shows a decrease of imported jewelry of nearly \$18,000, while there has been an increase of nearly \$10,000 in the amount of watches imported. But this is mostly of low or cheap goods that are not made in this country, and every reduction by the American companies closes more tightly the door against all importations, and in a few years a Swiss watch will be as great a novelty as an English watch. No doubt if this statement was made to some of our Swiss dealers they would say something about "chestnuts," but its a coming fact, nevertheless.

The enormous increase in diamonds and precious stones of \$245,620, shows at least that the people are in the humor,

and are able to deck themselves out in these precious articles, and is certainly a forerunner of a great trade for that line of goods.

This is eminently the age of illustrations for newspapers, and your paper was the pioneer in the business, as reference to your first issues will show, and, with your permission, I send one, and perhaps in time all correspondents will do the same, and thus your paper will be the leader in this line, as your watch cases are in theirs.



This scene did not take place on the Lane, but in the far west, and the names of the parties are suppressed, but all else is just as it might have been.

"Are these men politicians or editors?"

"No they are not."

"Are they fighting or playing?"

"They are fighting."

"Why are they fighting?"

"They are fighting because the bald-headed man on his back is a fool, and the gentleman with the beautiful spotted shirt and striped pants is trying to knock some sense into the man with big feet."

"Will he succeed?"

"Yes, my dear readers, he has already succeeded, as the man on his back admits the Boss is the best."

"Is this the truth?"

"Yes, the Boss case is the best filled case in the world, and everybody should carry one, and then they will be in no danger of meeting such an affair as the above."

A great many of the traveling boys of the Lane were in Buffalo at the time of the Richmond hotel fire, and some of them made very narrow escapes. Among the latter was Mr. P. E. Robinson, of Aikin, Lambert & Co., who was considerably burned in attempting to save his goods, in which he was unsuccessful. Mr. Thomas V. Dickson, the well-known and big-hearted jeweler of that city took care of Mr. Robinson, as well as any other unfortunate gentlemen of the trade.

Mr. Adler made a very narrow escape, but was fortunate in having placed his stock of diamonds in the safe. Among the boys of the Lane in Buffalo at the time was Emile M. Bracher, of Lissauer & Sondheim, and Wm. Wallace of J. T. Scott & Co., who rendered valuable assistance to all unfortunate drummers.

Since writing the above, I have had the pleasure of shaking hands with Mr. Robinson, who still carries around with him a memento of the fire in the shape of a burned ear. "Rob" says the James Boss cases are fire proof as well as wear proof; for while his trunk containing these goods was burned to ashes, the Boss came out intact, and all the effect the fire had on them was to oxidize them. This is another new virtue of your case, and truly it is the "Boss."

Mr. R. B. Lester, who succeeded Mr. Noyes, the Commissioner of the Association, has fallen into his new place with an ease that would be a surprise to any one not acquainted with him, but those who know Mr. Lester know him to be a gentleman of such ability and tact that there are very few places that he could not step into and fill to the satisfaction of all.

It is said on the Lane that there never was in the history of the trade a house that came to the front with such a rush as that of C. G. Alford & Co., 200 Broadway, New York. In fact they bounded into prosperity and popularity with a hop, skip and a jump. They make it a rule to handle only first-class goods in every respect, and to such an extent have they carried this that Mr. Alford says he cannot sell anything else, as his trade has become educated to this fact, and never ask of them anything but the best makes.

This may seem wonderful to some, considering how well and ably the field is filled, but an acquaintance with Mr. Alford and genial partner would soon make known the cause. It is the pluck and energy of the gentlemen that would and must succeed in any enterprise that they might become engaged in.

Mr. Byron L. Strasburger, of 15 Maiden Lane, who recently succeeded to the well-known house of L. Strasburger, is pushing the trade with a degree of energy and ability that is to be commended. He carries a large line of the different American watches, jewelry, etc., and does business on business-like principles, and in a way that wins the good will of all who have dealings with him, or that come in contact with him; and we have no doubt that the many friends of Mr. S. will be pleased to know of his "immense success," as they say on the Lane.

Among the many prominent wholesale jewelry houses on Maiden Lane, N. Y., none occupy a more deserved prominence than that of Messrs. Keller & Untermeyer. This house is known all over the country as makers of fine jewelry and ornamented gold cases, and in their line they have certainly cause to boast, as they have placed some of the handsomest goods in the market that it has ever been our lot to see. The Messrs. Untermeyer, the head of the firm, are wide awake gentlemen and fully understand the wants of the trade. Mr. S. Aufhauser, the junior partner, is a gentleman that makes no mistakes, and as he attends largely to the buying, it is one of the causes that lead to the pleasure with which the retail trade hail the advent of the gentlemanly travelers of this house, as the good taste and judgment of Mr. A. is always seen in their stocks.

Mr. Hyman has just returned from one of the most successful trips he has ever had.

J. L. S.

J., of Wallingford, Conn., writes: "In answer to Hiram T. Ingals, would say that to remove borax the old workmen used to use alum and water, boiling the article in it. As for polishing without oil, I use a soft leather buff and dry flour of emery finish with a cotton buff and soft rouge. I have reference to lathe buffs. Two-thirds, more or less, of watches that come in for new hair springs are minus the old one, or part gone at least. I want to ask what use is a fine hair spring gauge in these jobs? I may not fully understand, but so far I cannot see as they are of any use at all without the old spring."

A CORRESPONDENT writes: "What place in the State of New York is best for a person troubled with the catarrh in the head and throat; and where would be a good place for a person so affected?"

Catarrh is a chronic disease, and incurable by any known remedy. Any homeopathic physician can relieve or check it occasionally from being habitually offensive. Some localities have the reputation of being good for catarrh, malaria or hay-fever, which are kindred diseases. The White Mountains are recommended by some; the Rocky Mountains by others; Saratoga is also highly spoken of. Colorado and Arkansas are good for the incipient stages of catarrh; but the best place we know of to obtain great relief from chronic malarial disease is Bermuda. Its dry and genial climate is extremely beneficial for nasal and lung diseases.

ATTLEBORO AFFAIRS.

"T," of Attleboro, Mass., has broken loose, and written to the KEYSTONE a letter so bright and full of local hits that it is given nearly verbatim. He says: "Have you ever been to Pascoag? No? Well then do not go—at least do not go by the alleged railroad that has its terminus there. If you must go to Pascoag, and wish to return the same day, take an ox team; it will be cheaper and quicker. Railroad fare is four and a quarter cents per mile; and if you wish to stop on the road drive into some farmer's cattle shed; you will find it preferable to any depot on the line of the so-called Providence and Springfield Railroad."

"Hon. James Brown, a lawyer of Taunton, defended, a few days ago, an Attleboro man charged with arson and burglary. Of course the man was acquitted. This was partly because Mr. Brown defended him; partly because he was an Attleboro man, and partly because he was innocent. But the *Globe* reporter did not make this last fact apparent in his account of the trial, whereupon Mr. Brown wrote to the *Globe*, setting forth the facts, and in the course of his letter makes the following remarkable statement: 'The only thing brought out against my client was that he was fond of playing poker and interested in the game, but as most of the gentlemen of Attleboro enjoy a social game of poker this fact did not injure him in the estimation of his friends or family.'

"I have characterized this as a remarkable statement, and such it seems to be. Of course I cannot deny Mr. Brown's ability, nor question his opportunities for acquiring accurate information on the subject of which he treats, but doubts lingered in my mind. I feel that he must have got localities mixed.

"On Sunday last, visiting the various churches, and we have them of all denominations, I saw representatives of every firm in town, clean-cut, well-dressed, respectable, even reverent men, with charming wives and lovely children, occupying the best pews, and I said at once in my heart, No! Mr. Brown, no poker players in Attleboro; in Seconk or Rehoboth, perhaps, but not in Attleboro!

"Trade is dull, very dull. Some manufacturers use much stronger expressions in giving their views on the situation, but homeopathic or allopathic invective do not alter the fact of dullness, and although Mr. M. Bonn, of Pittsburg, kindly visited us this week and relieved the monotony somewhat, yet, as one swallow does not make the spring, so does not even one liberal buyer make brisk business. The weather has, no doubt, much to do with this stagnation in trade. For the past six months it has been a villainous compound of Arctic frididity and New England humidity, with the accent on frididity. Under such circumstances, what fair woman or brave man would think of purchasing any article of jewelry to be buried under overcoat or waterproof? We buy such things that they may be worn and seen. The consciousness that we have on one of Daggett & Clap's elegant lace pins, or one of R. F. Simmons & Co's fine plate chains does not afford that degree of satisfaction that we experience from the half envious glances of our best and dearest friend, when dame nature permits us to display our finery to his gaze.

"To-day, the first of April, a blinding snow storm at noon; to-night, perhaps, thunder and lightning; later, we hope, sunshine. Yet we are admonished not to mind the vagaries of the climate—to take matters philosophically—philosophically be hanged. I do not wish to be a philosopher, but simply to be comfortable.

"I would mention some of the curios of the trade, but just now if there are any, they are carefully packed away to protect

them from existing inclemencies, and from going into a decline—in price."

MR. C. N. THORPE, President of the Keystone Watch Case Company, writes: "I noticed in your last number of the KEYSTONE a very interesting article 'The story of the spider and the fly reproduced in our cities.' I would like, for the benefit of the readers of the KEYSTONE, to tell the story of a rural friend of mine who lives not many miles from this city. This friend had heard of the manufacture of the Boss filled case and of its intrinsic value and splendid wearing qualities. Walking up Chestnut Street one day, he was induced to enter an auction store where they were selling gold (?) watches. As he slowly worked his way up to the auctioneer, he heard him describe a beautiful gold filled case. My friend at once thought, why that is the case I have heard so much in praise of, and at once became an eager listener to all the oily tongued auctioneer had to say. The watch was started at a fair figure and ran up to about what it would cost to buy a Boss case and a genuine American movement. My friend being one of the 'flies' spoken of in the fore-named article, the watch of course was knocked down to him. He paid his money, pocketed the watch, and later in the day started for his home. He took the watch out to set it at the Railroad Depot before getting on the train, and during his journey of some two hours took it out several times (so he stated) to examine it. The last time, he thought he noticed a white color showing through the gold on the edges. The next time he visited Philadelphia, he came to see me and told me this story in a very humorous manner. And sure enough he had bought a Swiss imitation American movement in a very thin silver case that had a light coat of electro-gilding and the silver was actually showing through the gilding.

I am satisfied, that after this, when my friend wants a watch, he will go to a good jeweler in his own town, and that, if he wants a good filled case, he will buy the Boss."

CHICAGO LETTER.

Mr. Benjamin Allen has returned home from an extended trip south.

Mr. Lem. W. Flershem has also just returned home from a flying trip west.

Beginning Saturday, May 7th, the Chicago Jeweling Jobbers, Watch Movement and Case Companies, and agencies of other kindred trades will close their places of business at 1 o'clock on Saturdays until the last Saturday in August. It is characteristic of Chicago jobbers to beautify their places of business with all modern conveniences in fixtures, and in decorating the walls and ceilings in latest designs of paper and painting. Close upon the improvements of Messrs. Benjamin Allen & Co., and Lapp & Flershem, Messrs. C. H. Knights & Co. have enlarged their room one-third its former size, so that now this establishment is one of the largest in Chicago. This house proves the old adage true "tall oaks from little acorns grow." A few years ago Mr. C. H. Knights, the senior partner, begun in a very small way, in the same building where the firm is now located, 125 State Street. By perseverance, industry and fair dealing he has built up an enormous business. Mr. Fred. Thearle is at the helm in the absence of Mr. Knights, having been with the concern since it first started. Mr. Tom Bristol is the "old tar" on the road. Together with Messrs. Smith & Garlich, they make things lively gathering in the orders.

Messrs. Lapp & Flershem, and Messrs. Stein & Ellbogen are also representative enterprising houses, both having commenced in a small way. Both Sigmund Stein and Max Ellbogen are old-time travelers, and well-known to the jewelers of the Northwest. C.

JUST A FEW

OF THE MANY FLATTERING THINGS SAID BY FRIENDS.

Which will compel the proprietors of the "Keystone" to buy fans to hide their blushes.

Substantial evidence of the value of the KEYSTONE is being received every day in the shape of cash. At the same time there are received hundreds of letters speaking in the highest terms of the paper, and commending the very marked improvements recently made in its appearance. Both cash and friendly words are good things, and are appreciated at their full by the management of the paper. Keep sending them to us. Here are just a few of the letters:

P. S. PARK, of Mexia, Texas: "Allow me to extend you hearty congratulations on the greatly improved appearance of our welcome visitor, the KEYSTONE. It has always been chuck full of the choicest trade items, and in its enlarged form, it is doubly attractive, on account of the extra amount of matter it contains. I have been a reader of it for several years, and have become so attached to its welcome 'phiz,' that I don't care to be without it any more. I don't know when my subscription expires, but you will find \$1 in currency enclosed, to be placed to my credit, and when that is exhausted, will send more. If you are running a life list, put me on it, as I expect to be a workshop companion as long as I am in business. If 'our workshop' is ever published in book form, I would be delighted to have one. Accept my best wishes for the success of the KEYSTONE financially, as well as otherwise."

A. B. PARKER, of Norristown, Pa.: "I desire to testify to the great value and popularity of the jeweler's friend, the KEYSTONE. As the result of a single insertion in the last issue of this paper, I have received no less than 25 replies, coming from New York, Vermont, New Jersey, Pennsylvania, Long Island, Maryland, Ohio, Illinois, Missouri, Iowa, and Mississippi. This in my estimation, is a grand testimonial to the worth of the paper. For, when live business men take the time to read a whole paper through, even to the advertisements, it must be a good paper indeed. I take pleasure in recommending anyone who has anything pertaining to the trade, either to be bought or sold, to advertise in the KEYSTONE, and I predict for such advertiser an agreeable surprise."

C. G. FRENCH, Nyack, N. Y.: "Enclosed please find subscription for your 'gem' of a paper."

D. E. THOMPSON, Saxonville, Mass.: "Please find enclosed subscription to the crispest little paper I have yet received."

CHAS. E. SIDELLS, Girard, Ohio: "Find enclosed one year's subscription to your valuable paper."

MARK E. BOGART, Wilmington, Ill.: "Please take out my ad. I could have got four or five situations if I had wanted that many."

J. A. HART, Oskaloosa, Kansas: "Enclosed find subscription for 1886 and 1887. You're just a daisy, that's what!"

R. W. THOMPSON, Petersburg, W. Va.: "Not knowing just when the year expired for the KEYSTONE, I enclose my subscription for another year, as I cannot bear to do without. It is part of my life."

W. H. LEONARD, Pittsboro, N. C.: "I find it one of the most interesting papers published for the jewelry trade."

E. J. SCOTT, South Wallingford, Vt.: "Enclosed find subscription for the KEYSTONE another year. I can't get along without the little paper."

J. W. HUBER, Ashland, Pa.: "It is not necessary to put my ad. in March number, as we had a cord of answers to our ad. in the Feb. number. Have sold to one of them who will take possession on April 1st."

MRS. L. KUPFER, Dillon, Montana: "It is beyond a doubt in my estimation the very best paper published for the trade and workmen."

J. E. MCKEE, Rensselaer Falls, N. Y.: "I find the KEYSTONE a valuable paper to me, and would give four times its price before I would do without it."

C. S. SPRINGER, Woodstock Hill, Conn., sent in a number of names, saying: "You see I like the paper so well I want my friends to have it."

ERNEST BRUNAT, Keokuk, Iowa: "Please find enclosed one year's subscription. I have a son learning the watchmaking and engraving art, and consider your paper a great help to a new beginner."

F. W. MOORE, Waupun, Wis.: "I am taking several trade journals, but for valuable and concise information the KEYSTONE takes the lead. Please enter my name on your list for 1887."

M. ZINEMAN & BRO., N. W. Cor. Seventh and Chestnut Sts., Philadelphia: "We are satisfied your paper must be read all over the country, judging from the many replies we have received from our card in your paper. You may look upon us as indefinite advertisers."

E. P. LEDOUX, Silver City, New Mexico: "Please stop my ad. 'Watchmaker Wanted.' Your paper is most too good an advertising medium. I have received 87 letters in answer to my ad. It has kept my clerk busy writing most all the time. I have secured a very good man through your paper."

JOHN W. GABRIEL, Halifax, N. S.: "Enclosed find two year's subscription. It is just the thing wanted for the jewelry trade, and contains everything you want to know in concise form. Will always take it."

L. W. KEIL, of Rockford, Ill.: "Please take out my 'Ad.' Have sold out. Can't answer all letters received from all parts of the country."

HARRY MARTIN, Kahoka, Missouri: "I got more information out of your last issue than any jeweler's paper I ever saw."

R. R. HICKSON, Bathurst, N. B.: "I got an American Lathe the other day, and I do not think I could have done anything with it if I had not read the article on 'Pivoting' in your paper beforehand."

D. B. SHULTZ, of Clinton, Ky.: "An ad. in the KEYSTONE brings no end of letters in reply."

MARYATT & MARKELL, of Red Cloud, Neb.: "We send our notices for publication in your paper because we think it the best paper published."

C. E. BAHN, of Stewartstown, Pa.: "Enclosed find year's subscription to KEYSTONE. Cannot do without it."

G. B. BLOOD, Baldwin, Michigan: "Please insert the inclosed ad. in March KEYSTONE. I have been flooded with letters since the February number came out with my two ad's."

GEO. F. APPLGATE, Trenton, N. J.: "Enclosed find check. Please send me your book on pivoting and balance for subscription to this year's paper. I appreciate it very much."

S. C. DAVIS, Dexter, Iowa: "I can not well do without the KEYSTONE. I look for it every month as regular as I do my three meals a day."

GEO. MILLER, Riverside, Cal.: "The KEYSTONE will please put me on its list of subscribers until further notice. If you ever open the doors of 'Our Workshop' to the trade in book form, please send me an invitation to 'walk in' for one copy."

F. L. DOLLOFF, of Jefferson, Ia.: "Allow me to congratulate you on the improvement in the KEYSTONE for March. It will now be suitable for binding, which will save taking two copies for scrap book purposes, which I have heretofore done, in order to get at good matter printed on both sides."

G. S. HOLLENBACK, Chebanse, Ill.: "The best of all. I take five journals, and think the KEYSTONE the best. Like the Boss case I think it the best because it sells the easiest, and everyone thinks it the best, because it has been tried and it stands the test."

C. F. MITCHELL, Noank, Conn.: "I think everybody in our line of business ought to subscribe for the KEYSTONE. I have two I got from a friend of mine to read, and I think they are just about right. I would like to commence with this month's paper."

H. B. CONYERS, Oneida, N. Y.: "I think my year for the KEYSTONE has just about expired, and I feel as though it would be impossible to get along without it. Please find enclosed the small sum you ask for the paper for another year's subscription."

G. H. TERPANY, New Carlisle, Ind.: "Enclosed find note for two years renewal of my subscription to your valuable paper. Of all the periodicals which come to me, the KEYSTONE is the most valued and useful."

J. W. PRITCHARD, Richie Court House, W. Va.: "Of all publications for our craft, this is ahead of any as to price and excelled by none in other respects. If the general make-up throughout the year is as good as sample copy I received for January, count me in."

JALONACK & NATHAN, 1395 3rd Ave., N. Y.: "Having received several of your papers, we find their contents so interesting and benefiting that you must add our name to your list of subscribers, so we can enjoy the KEYSTONE. We value your paper highly, as every issue has something which is of value to the dealer and the workman in the jewelry trade."

F. JACOBI, Newaygo, Mich.: "Enclosed please find 25 cents for which send me the KEYSTONE for one year. Allow me to congratulate you on the fine appearance of your paper, since it has been enlarged. I am positive no paper has ever been published in the interest of the jewelry trade, that produces as much thorough knowledge for so small a sum, as the KEYSTONE. May success ever crown it."

F. G. HALL, of Heuvelton, N. Y.: "Your last paper is a great improvement to the old style and double the amount of news. I would be willing to pay four times the amount if it were published weekly. I can hardly wait for it. The workshop talk is worth double the price of the paper alone."

FRED. W. OSGOOD, of Leominster, Mass.: "It is evident that your efforts with the KEYSTONE are appreciated by the enlargement of the sheet, and I see no reason why it should not continue to grow, as you certainly make it by far the most interesting of any paper yet published for the trade. Let the good work go on and you will reap the harvest you so richly deserve."

J. H. BATE & Co., of Acworth, Ga.: "We are very much pleased with the KEYSTONE's new appearance, but more so with the information derived from the valuable paper. We think that every well regulated jewelry firm needs it in their business."

SIGNS OF SPRING.



TRAMP—"Now that I have my new spring suit, the next thing to secure is something fine in the watch case line."

THE BOW LATHE.

A PRACTICAL TREATISE BY OUR WATCHMAKER.

First of an interesting series of letters on the management of this machine so useful to the trade.

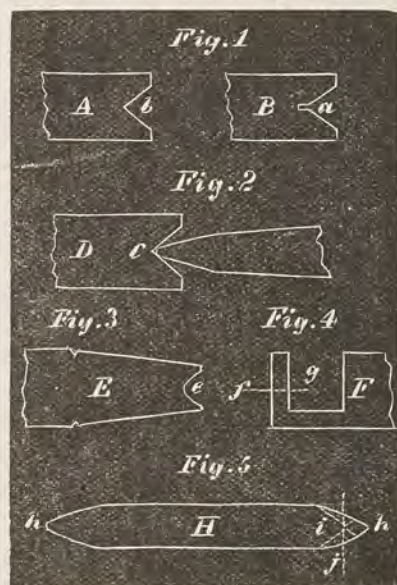
There is probably no trade or craft in existence where primitive tools have kept their place so long as in the construction and repair of watches. Indeed, until the radical departure from old established usages were adopted by the American watch companies the tools and implements used in the workshop were almost the same as they had been for a hundred years. This is especially true in regard to lathes. The old bow lathe, or as the English workmen term them, "the turns," are as old as any tool used by the watchmaker. This tool, in the hands of a skillful workman, is capable of the most exquisite work. But the reader must not imagine that a tool such as he can buy for three or four dollars is one any man, no matter how skillful, can do such work with. True, he could soon fit it up so as to produce fine work, but it takes a lifetime of practice to acquire such skill. The writer learned to use such a lathe from a man who was for many years a finisher with Morris Tobias, London, and a more exacting and painstaking workman I never knew. He insisted on an apprentice learning to use both hands indiscriminately; that is I had to learn to hold the graver with either hand, while the opposite hand managed the bow.

It is the writer's intention to make this series of articles thoroughly practical, and will consequently leave all abstractions and get down to business at once.

The bow lathe is undoubtedly the most primitive form of lathe in existence; and in some of the European countries lathes for turning wood, working with a string and treadle against a long wooden spring overhead, can still be seen. In the bow lathe the centers of the piece to be turned consist of cones or pointed ends. To persons who have been accustomed to seeing such lathes as modern machinists use, the pointed cone end seems a queer way of preparing a piece for the lathe, but if we examine the subject critically we will soon see that this is the true and proper way to proceed. The manufacturer of portable time-pieces received a great impetus from the invention of plates for drawing, or as it was termed "raising" pinion wire. Who invented the process of drawing pinion wire is much like most other improvements in horology, a matter of dispute. Neither is it of importance only as relates to the influence it exerted on our subject. Most of the parts of a watch were made of wire of some kind; pinions, screws, staffs, cylinders, and were produced from wire in a lathe, and a lathe which was adapted for receiving bits of wire easily prepared, was the kind of lathe bound to receive the most favor. In preparing these bits of wire for the lathe, all we need do is to point the ends with a file, slip on a screw collet and it is ready for a lathe using hollow centers. Now here comes the real beauty and convenience of the bow lathe. Suppose we were turning a piece of pinion wire to make a pinion; after we had cut and pointed the ends we put it in the lathe and tested it, whether running true or not. As soon as we applied the graver we found that on one side the leaves touched the graver, and the other side did not. How easy to file away the cone point to one side, so the leaves would all meet the graver alike. This is the strong point with the bow lathe. I do not propose to describe the methods of preparing the pinion leaves as to finishing and polishing the leaves; all I offer is how to use the lathe after the material is prepared as we find it in the market.

The centre or "runner" of a bow

lathe is something that by most workmen is imperfectly understood; the only reason why a hollow centre for a bow lathe was used is as described above—convenience of preparing the work. In our cheap bow lathes, the hollow cones in the ends of the steel and brass centres or runners (I shall use the term centres as it is in more general use in this country) are very imperfect. Let us examine this subject and get at what we want to produce, the best results. A watch is only a very fine small machine, and there is no new or different mechanical principle involved in a watch than in a locomotive or marine engine; or, perhaps, I should have said in making or producing the parts. In regard to the subject of centering, (if the reader does not already know) let him ask any skillful machinist if it is possible to turn a piece round in any lathe, if the centres are not drilled. To illustrate in Fig. 1, we have a longitudinal section of one end of a piece of metal



to be turned. At A, we have a simple hollow cone as shown at b; also in Fig. 1, at B, we have again a hollow with a small hole drilled at a, to secure steadiness. In all machinists' work, a hole at the bottom of the countersink, as at a, is considered imperative. In a bow lathe the usual practice is to have the recess (hollow cone) at an angle of about 60°, and the piece to be turned shaped somewhat as shown at d, Fig. 2. In this cut, the hollow cone c, comes to an absolute point, while the piece to be turned is a little stout as shown. In this case we have the same result as would be obtained by drilling, as shown at a, Fig. 1. Some of our best bow lathes in this day, have the centres jeweled with white agate jewels ground to perfect hollow cones. But, for a lathe which is used no more than for repairs, it is not necessary to have the centres jeweled; hardened steel cones answering every purpose. The great difficulty is in getting a perfect hollow cone. Most lathes have the cone imperfect, the hollow cone being shaped as shown at e, Fig. 3. The reader can readily see that there is no security for accuracy in such a cone. The question now comes up, how are we going to correct or remedy this imperfection? With a live spindle lathe, it would be a very easy matter, but in our case, (at least for the present) we must use our lathe as we find it, except to correct its imperfections. With all bow lathes come extra brass centres for special uses like this. Some of my readers may say to themselves, "I don't want to know how to fix my lathe, it is all right as it is." To such, let me say, the lathe (a cheap one) is not all right, and the first thing to do is to make it right. We take one of the extra brass centres and cut a notch in one end as shown at g, Fig. 4, then drill a hole on the line f, (the line of centres of the lathe). We next take a piece of steel wire about 1/4 of an inch in diameter, and file the ends into cones, as shown at h, h, Fig. 5. We put a screw collet on H, and turn a cone as shown at the dotted line i, Fig. 5. We

do this at each end. Of course, there will be a little neck of metal left at the dotted line j.

(To be continued.)

CELEBRATED CLOCKS.

Marvels of horology made by cunning and ingenious hands.

Once a King of Spain came to Geneva to see a clock which had been made by Droz, a merchant of that city. Upon the clock were seated a shepherd, a negro and a dog. As the hour was struck, the shepherd played upon his flute, and the dog played gently at his feet. But when the King reached forth to touch an apple that hung from a tree under which the shepherd rested, the dog flew at him and barked so furiously that a live dog answered him, and the whole party left in haste. Venturing to return, one of the courtiers asked the negro in Spanish what time it was. There was no reply, but when the question was repeated in French, an answer was given. This frightened the courtier, who joined his companions, and all of them voted that the clock was the work of the evil one.

We are told of a strange clock that is said to have belonged to a Hindoo prince. A large gong was hung on poles near the dial, and all about upon the ground lay a pile of artificial human heads, ribs, legs and arms. The whole number of bones in the pile was equal to the number of bones in twelve perfect bodies, but the pile appeared to have been thrown together in the greatest confusion. When the hands of the clock indicated the hour of 1, out of the pile crawled first the number of parts needed to form the frame of one man, part coming to part with quick click, and when completed, the figure sprang up, seized a mallet, and walking up to the gong, struck one blow. This done, he returned to the pile and fell to pieces again. When 2 o'clock came, two men arose and did likewise; and at the hours of noon and midnight, the entire heap sprang up, and marching to the gong, struck one after another his blow, making twelve in all; then returning, fell to pieces as before.

A clock made by a Parisian consists merely of a glass dial and two hands, which are balanced each with a ball on the other side of the centre. These balls are only about an inch in diameter, and yet they contain all the machinery that turns the hands about. The back of the dial is a perfectly smooth surface. You may turn the hands round and round with your cane, and when you let them alone, they will swing back and forth for a while, and then they will stop at exactly the right spot to show the true time. A clock in Brussels is so placed over a chimney or pipe through which the air goes upward that the draught keeps it wound up all the time.

The most remarkable clock in America, if we consider the place in which it was built, is the one that was made by a miner in the Hallenback colliery at Wilkesbarre, Pa. This clock was made out of bits of board and iron, and with the roughest tools that can be imagined. It was made nearly half a mile underground, and it occupied the maker nine years before he could say it was done. The clock is about nine feet high, and there are sixty-three figures that move by machinery. There are only twenty-two moving figures in the Strasburg clock. On the front of the Wilkesbarre clock—the one we are speaking of—there are three shelves or balconies. Along the lower balcony a mounted general leads a file of Continental soldiers. The liberty bell rings and a sentinel salutes the procession. A door in the upper balcony opens and shows Molly Pitcher, who fires her historic cannon, the smoke of which is blown away from the interior of the clock by a fan. Then the portraits of the first twenty Presidents of the United

States pass along in a kind of panorama, the Declaration of Independence being held aloft by Thomas Jefferson. On another of the balconies the twelve apostles go by. Satan comes out, and the cock crows for the benefit of Peter. When Christ appears, a figure of Justice raises a pair of scales, while a figure of Death tolls the minutes upon a bell.—*Popular Science Monthly*.

FORMATION OF THE DIAMOND.

Among the many theories existing as to the formation of the diamond, that of Professor Simmler, of Switzerland, is certainly not the least probable. The diamond often incloses cavities which, in some instances, contain a gas, in others a liquid. Sir David Brewster, who had given much attention to the subject, found, in investigating the nature of the liquid, that its refractive power is less, but its expansive power greater, than that of water. In comparing the results obtained by Brewster with those calculated for other liquids, Simmler found the numbers for the expansive and refractive power of the liquid referred to, to coincide singularly with those for liquefied carbonic acid. But other facts observed by different savants tend to prove also the presence of this agent in the coating of the most valuable of gems. Upon the bursting of such crystals there often occur two liquids in the cavities, the one behaving like water, the other like liquid carbonic acid. On one occasion it was observed that the liquid in a quartz crystal which was dashed to pieces scattered its contents around with a great noise, burning holes in the handkerchief wound around the hands of the experimenter. The acid content itself had disappeared. Upon these observations Professor Simmler based his theory. If carbon be soluble in liquid carbonic acid, it would then only be necessary to subject the solvent to slow evaporation; the carbon would thereby be deposited, and, by taking proper care, assume crystalline forms. In evaporating quickly the so-called black diamond, which, in the state of powder, is much used for polishing, the colorless diamond might be produced. Though the liquid referred to has never been subjected to chemical analysis, the formation of liquid carbonic acid in the interior of our globe may, nevertheless, be considered as highly probable. In the gaseous form we know it to be evolved in immense quantities from fissures, volcanoes, and mineral springs. When now this gas is produced in the cavity of a rock which is free from fissures, it will finally be compressed so highly that it will assume a liquid form by itself. Certain rocks may be considered strong enough to resist the expansive force of this agent, and if soluble carbon were there present, it might be taken up and redeposited, the carbonic gas escaping through some newly formed fissures. If this theory is correct the artificial production of diamonds may some day be accomplished.

A YOUNG American sculptress, Miss Louise Lawson, now living in Rome, has recently sent to Tiffany's a life-size statue. It has been wrought out of Seravazza marble, and represents a boy about twelve years old—a Rhodian boy of 2,000 years ago, wearing only a Phrygian cap and tunic. Miss Lawson is the daughter of Dr. L. M. Lawson, for years professor in the medical college at Cincinnati, where she began her art studies under Professor Rebisso, who thought so highly of her talent, that he induced her to go to Rhodin in Paris, who in turn sent her to Rome. She is a niece of Mr. Lawson, of Donnell, Lawson & Simpson, the New York bankers.

A BROOKLYN millionaire's wife has a necklace of opals worth \$30,000.

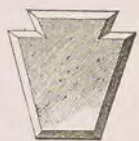
Don't

Be so taken with the Keystone Solid Gold Cases as to lose sight of the fact that the Keystone Watch Case Company manufacture also the best SILVER CASES that are in the market to-day.



To-day

As ever since their introduction they lead the van. One of the great secrets of their success is that they have always been made with fidelity to the interests of the trade. They are honest cases.



**Keystone and Leader
Silver Cases**

Are sold by all Jewelers who take pride in handling high grade goods.

**Keystone
Watch Case Company**

PHILADELPHIA

NEW YORK

CHICAGO



Honest

Yes! Honest in every way. Honest in metal, guaranteed 900 fine. Honest in the material used. Honest in the construction of the parts. Honest in the putting together. Honest in the fit, and honest in the final finish.



Final

Finish and ornamentation are honest. The latter speaks for itself, but we would like to say further that every design is original. The Keystone Company employs its own talent, and never uses stolen ideas.

NUTS

NEATLY CRACKED BY OUR LIGHTNING PIVOTER.

Questions asked by the trade deftly answered by a thoroughbred who understands his business.

THOMAS S. SHARP, of Olivet, Dakota, asks: "What is the correct rule for matching pinions to wheel and vice versa?"

The usual practice is to take a certain number of teeth of a wheel to obtain the pinion diameter, but this system is, at best, a loose one. We have a brass instrument jointed at one end and opening to a V shape, called a sector for this purpose, but they are expensive, costing \$7 or \$8. Workman make a distinction in the selection of pinions, relative to wheels, whether the wheel is to drive the pinion, or the pinion to move the wheel, or, as some of the works on horology term it, "the wheel to lead, the pinion to follow." The rules generally used for watches are as follows: for 6 leaf pinions, 2 teeth and all of one space; 7 leaf pinions, 2 teeth and to center of next tooth; 8 leaf pinions, 3 full teeth; 10 leaf pinions, 3 teeth and all the next space; 12 leaf pinions, 4 full teeth. These rules are only approximate ones. The true method is to measure the diameter of the wheel or pinion by 1-1000, and then calculate the required size of the wheel or pinion to be replaced. To obtain the correct size by teeth, as in the above table, we will take, for example, a 64 tooth wheel, and make the necessary arithmetical calculations to find tooth diameter of said wheel, which will be required for an 8 leaf pinion. Here, the pitch diameters are to each other as 8 to 1, and the pitch circumferences are also as 8 to 1; and if wheel and pinion ran by friction alone, and the wheel was $\frac{1}{2}$ an inch in diameter, the pinion would be exactly 1-16, or $\frac{1}{4}$ of $\frac{1}{2}$ an inch: but, in fact, the teeth of the wheel and leaves of the pinion each extend outward beyond the pitch circle to engage each other. We will, in the first place, ignore any special size, and merely consider a wheel of 64 teeth to be matched to an 8 leaf pinion by teeth spaces. We first divide the circumference by 3.1416 and find our diameter to be 20.37 teeth. We would naturally say an eighth part of this in teeth would be 2.54, or 2 $\frac{1}{2}$ teeth, a little strong. But to this, we must add the part of the leaf which extends outside of the pitch circle. Now, to ascertain how much this is, let us consider the rules in such cases. For establishing the length and thickness of teeth, it is usual to divide the pitch, *i. e.*, the space from center to center of the teeth, into 10 equal parts, taking 7 of these as the length of a tooth, 3 extending outside of the pitch circle, and 4 inside. Consequently, we must add twice 3 tenth of our teeth space to the pinion diameter. Now, 1-10 of 2.54 is .254. Multiply this by 3 and we have .762 as what extends beyond the pitch circle. As this extension is on both sides of the pinion, we must add twice .762 or 1.524 to the 2.54 (the true pitch diameter), and we have 4 teeth spaces, or as the rule above, 3 full teeth, that is, set the spring calliper to grasp 3 full teeth, which is nearly equal to 4 teeth from point to point. It is in fact a little small, but this is done in practice to have the pinion a trifle small, when the wheel leads. The same rule applies to any number of teeth and leaves. We intend to give some considerable space to this subject before long.

A SUBSCRIBER asks: "How can you make a liquid to keep highly polished copper from tarnishing, also how do you make enamel?"

A solution of bleached shellac in alcohol applied as a lacker will do it. Warm the copper when you apply the varnish.

Or you can use collodion, but it is not so durable as the shellac. The base of all enamels is a substance called fritz, frits or flux. To such fritz are added such colors as the workman desire. A good fritz is made of 10 parts red lead, 6 parts flint-glass, 2 parts saltpetre, and two parts borax. Mix this mixture in a common Hessian crucible, keeping it melted some time, then pour into a dish of water. This fritz should be ground in an agate mortar.

Fritz No. 2. Take 2 parts lead, 1 part tin, and melt in a ladle and heat to a pale red heat; keep removing the oxide as fast as it forms, being extremely careful to remove all metallic particles not oxidized. Take 2 parts of this compound oxide of tin and lead, 4 parts silica, 1 part saltpetre, and 1 part common salt; mix well together, and melt in a similar crucible, but do not let the mass become perfectly fluid as repeated meltings injures it.

Fritz No. 3. 12 parts broken crystal glass, 4 parts calcined borax, 2 parts glass of antimony, and 1 part saltpetre. Prepare this fritz as recommended for No. 1. Unlike No. 2, this should be remelted several times, but should be well broken up before each melting to insure thorough incorporation.

Fritz No. 4. 16 parts fine flint glass, 6 parts carbonate of potash (sal tartar), 2 parts common salt, and 1 part calcined borax.

Fritz No. 5. 12 parts calcined borax, 12 parts silicious sand, 4 parts glass of antimony, 1 part saltpetre, and 2 parts chalk.

Fritz Nos. 3, 4, and 5 are all the better for grinding and remelting. To these fritz's are added various substances to give them color and also to make them opaque or transparent. These explanations will have to be deferred until our next issue.

"T. S. S." asks: "How do you remove rust from gilded movements that have been wet?"

Dilute muriatic or sulphuric acid generally will remove iron rust from a gilt plate, but sometimes the iron seems to incorporate itself into the pores of the electro gilding, and is very difficult to remove. All screws and steel parts should be removed before putting into the dilute acid. It should not lay too long or it will cause the gilding to slough.

"READER," of Stanbury, Mo., asks: "Can you tell me how to make old watch plates look new and bright?"

The best way is to regild. This method should be practiced more. Many persons would stand a dollar additional expense if the job could be well done (as it can be) for this sum. A badly stained and blackened movement can be brought out bright by dipping in a solution of cyanide of potassium; $\frac{1}{2}$ an ounce of the cyanide to a pint of water. After dipping for ten or fifteen seconds, the work should be well washed. Of course, jobs treated in this way will soon stain and blacken again.

GUSTAV KUHN, 169 Girard Avenue, Philadelphia, asks: "Is it better to oil a watch main-spring or not oil and only keep it clean?"

In all cases oil the main spring, but do not put on enough so that the oil will run out of the barrel into other parts of the watch. Clock oil is a better oil for main-springs than watch oil.

FRED CARPENTER, of Manistique, Michigan, asks: "Will you please tell me the best way to wash a chamois and leave it soft and good as new?"

The best way to wash a chamois skin is to use water hardly blood warm with plenty of soap. Hot or very warm water hardens a chamois skin. You need not be too careful in rinsing, as a little soap left in the skin is not detrimental. Lay a clean dry towel on the chamois skin

after all the water that can be conveniently wrung out has been removed. Roll up towel and chamois skin together, and wring again. In this way the towel absorbs a portion of the water, and makes the skin just so much the drier. The secret of having a washed chamois skin soft is, from the time you unroll it from the towel, to keep rubbing and stretching it until perfectly dry.

WHO CAN ANSWER?

H. M. W. Eastman, of Roslyn, N. Y., asks questions in the appended communication that the manager is unable to answer. If any of our friends happen to be posted on Parisian clock makers, they will confer a favor by answering this letter.

"I have in my possession a clock which is supposed to be about 200 years old, but there is nothing about it to indicate the time when it was made. The only thing about it by which the time of making the clock can be determined is the name of 'Gribelin Paris,' which appears on the back of the clock. I should like very much to know when the clock was made, and if you can tell me or put me in the way of finding out, you will greatly oblige."

R. H. LEE, of Grand Haven, Michigan, writes: "Will the paraffine and petroleum mentioned in the last paper as a protection of the polish of metals be good for brass? I am making a small machine of brass, and want something to keep it from tarnishing."

Yes. The paraffine and petroleum mixture will protect brass from tarnishing. It is very useful especially for work in progress of construction to keep it bright; but for finished work, lacker is much to be preferred. We have given receipts for lacker in a former number.

THE KEYSTONE, of Philadelphia, came to us last month in an enlarged form. The improvement in this valuable and spicy contemporary is particularly noticeable, and we trust that it may long live and prosper.—*Toronto Trader.*

L. BLATTNER,

Jewelry Auctioneer.

Sales conducted in all parts of the United States.

For particulars address,

223 FRANKLIN STREET, ALLEGHENY, PA.

Correspondence confidential.

Wm. Rogers

PERSONALLY,
Wallingford, Ct.
ONLY SURVIVING
ASSOCIATE
ROGERS.
No Initial
or Arrow Goods.

Highest Quality Only.
Electro-Plated by honest Original
ROGERS process and safeguards,
under careful personal supervision
which guarantees and protects
quality.

Spoons, Forks, Knives,
ETC.
IN FULL LINES.

J. D. CROCKER,

No. 8 Province Court, Boston, Mass.

Watch Case Repairer,

Gold, Silver and Nickel Plater,

Jewelry of all kinds made and repaired.

(Send by mail)

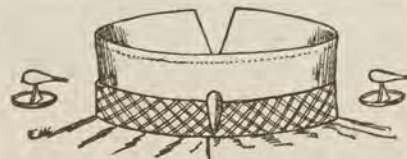
Latest and Best.

A New Anti-Magnetic Watch Shield.

Entirely independent of the watch, and a perfect protector. It is worn in the vest pocket, and fits any watch. It protects not only the movement from magnetism, but also the hands, stem and case springs, which make the most powerful magnets within the watch. This recent invention has been endorsed by many leading electricians and railroad men, who are now wearing the shields. A company for their manufacture is already in good operation at Terre Haute, Indiana. Agents wanted everywhere, at liberal terms. This shield, attractive and of best workmanship, retails at one dollar, and will be sent by mail on receipt of price, by addressing

J. F. KESTER & CO.,

Terre Haute, Ind.



A GRIP WORTH KNOWING.

By referring to the cut in this column you will see how an ingenious contrivance, patented by Mr. J. P. Delany, of No. 2 Astor House, holds down the rebellious necktie. This collar-button grips the necktie and holds it in a clutch from which there is no escape. The invention is very appropriately called the "Grip."

AN INFALLIBLE TEST.

PHILADELPHIA, APRIL, 1887.

CHAPTER I.

Comparison is the safest as well as the only true measure of value. Those who constantly make use of it in this connection seldom make mistakes, while, on the other hand, those who accept without comparison goods made by unscrupulous manufacturers, are continually being victimized, and always without being aware of the fact, as they take no steps to ascertain the truth. They are constantly undermining their own reputation by selling goods that will not give their customer's satisfaction. There is an old saying "To deceive one's self is the worst kind of deception."

With this prelude we wish to call your attention to the fact that there are certain manufacturers who buy new patterns of Boss cases as soon as they are out on the market, and copy the styles exactly, line for line—everything a direct steal. Why is this done? Certainly for one of two reasons. Either they acknowledge that they haven't enough brains to get up good selling designs to compete with the Boss case, or their cases are so poor that they must put on Boss patterns in order to sell them. We do not care to say which, as we have always followed the rule of attending to our own business, and we are satisfied with the result, and you are satisfied with Boss cases; therefore be careful, and when you see another line of filled cases with Boss designs, you will know there is something wrong.

CHAPTER II.

A little more than six months ago we began to turn out solid gold cases. Very few (for us) at first, and modestly we said nothing about it, satisfied that we could not compete with the older concerns until we had gained a little by experience. The goods were all readily taken and our customers wanted more. What was our surprise, however, to find the old concerns copying our styles. Our first efforts we considered not very good, but they copied every line, the shape and style. How surprising, first, that we could do it; and second, that our old competitors were willing to acknowledge that they were beaten.

Our goods are endorsed by many kind letters from the trade, and emphatically by our competitors who copy our designs.

Chapter III. reserved for a future time.

Yours truly,

KEYSTONE WATCH CASE CO.

A GOOD many men do not apparently know how to wear watches and watch chains. It used to be the fashion to wear the timepiece in the vest pocket, and to droop the chain artistically along the stomach to the nearest vest button. From that fashion decreed a little advance, and the chain from the nearest vest button was carried along in a graceful festoon to the farthest vest pocket. All that has passed away, and the style now is for the masculine front to be unadorned. A watch must now be worn in the pistol pocket, and the chain coiled up in the nearest pants pocket. This is the only proper thing. The style is English. If a man wants to be correct, he must wear his watch in this way, and use colored shirts with white collars and cuffs. If he does these things, he will find that whenever he goes into a billiard-room and takes off his coat, he will hear a buzz of unanimous admiration. It is only when a man has his coat off, nowadays, that it is possible to tell whether his watch is in his pocket or at his "uncle's."

THE KEYSTONE at twenty-five cents a year, is the best investment you can make. One issue alone being worth the price of the whole year.

NO FURTHER USE FOR IT.



YOUNG MAN (whispering to jeweler). "That engagement ring I bought of you yesterday—"

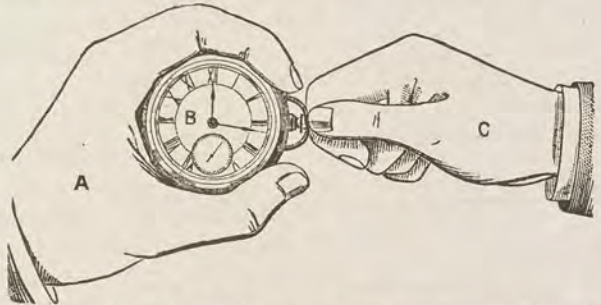
JEWELER—"What's the matter with it; didn't it fit?"

YOUNG MAN (cautiously).—"Sh! It didn't have a chance. Gimme collar buttons for it."

—Puck.

HOW IT IS DONE.

Some difficulty having been expressed to understand just how the new pendant setting watches work, the cut and explanation are given below:



Hold the watch firmly in the left hand. Grasp the crown with the thumb and fore-finger of the right hand as shown in the cut. Pull out the crown until the stem snaps into the setting notch, and turn the hands backward or forward as desired. Push the crown back until it snaps into the winding notch.

LUDWIG LEHMAN,

Manufacturer of

FANCY PAPER BOXES FOR THE JEWELRY TRADE EXCLUSIVELY

122 Fulton Street, New York.

We publish no catalogue, but will furnish prices and samples on application.

W. W. Oliver,

Sole Manufacturer of

The "Little Giant" Ring Bender

Patent Bench Shears.

PATENT HAND AND POWER

Draw Benches.

Hand and Power Rolling Mills.

TURNING LATHES.

POLISHING LATHES.

POLISHING HEADS.

LAP HEADS.

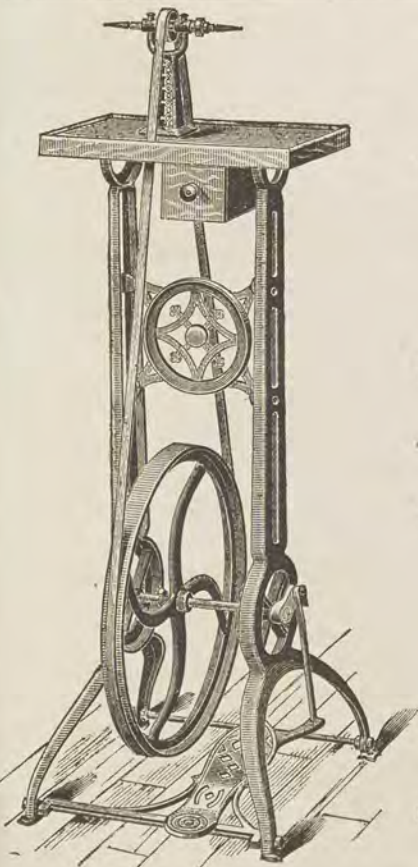
METAL LAPS, Etc.

Office and Factory,

430 Niagara Street,

BUFFALO, N. Y.

New illustrated catalogue sent free on application.



MAKER OF FINE JEWELRY.
HENRY: C. MEDALS & BADGES.
MADE FROM ORIGINAL DESIGNS
18 JOHN F. N. Y. HASKELL



Headquarters

for

Musical Boxes

JACOT & SON,

37 MAIDEN LANE, NEW YORK.

All our Music Boxes are provided with Jacot's Patent Safety Check

Send business card for Illustrated Catalogue. Send 25 cents for our book, "How to Repair Musical Boxes." Second edition. It should be in the hands of every watchmaker.

I. BEDICHIMER,

Manufacturer of

♦ MASONIC MARKS ♦

Society Emblems, Pins and Jewels,

616 CHESTNUT STREET,

PHILADELPHIA.

Highest award at Franklin Institute. 1874, International Exhibition, 1876.



R. B. MACDONALD

Manufacturing Jeweler

Fine Gold Plated

CHAINS, CHARMS, BROOCHES, PINS, ETC.

Bates' Building, Union Street,

Attleboro, Mass

Moseley Lathes

Beat All.

In Many Ways.

Three Standard Sizes for Watchmakers.

No. 1—No. 1 x 2—No. 2. All good.

Combinations and Prices to suit all.

Less than 1098 sold during 1886.

No. 1 Mosely Lathe for \$22, list.

Send for new Price List, and investigate all.

- | | | |
|---------------------|---|-------------------------------|
| Eastern Agency with | . | L. HAMMEL & CO., New York. |
| Western | " | NORDMAN BROS., San Francisco. |
| Northern | " | RENT BROS., Toronto, Canada. |
| Southern | " | ROCH & DREYFUS, New Orleans. |
| Central | " | ALL JOBBERS, Chicago. |

Manufactured by

MOSELEY & COMPANY,

ELGIN, ILLINOIS.

HIRST, MOORE & WHITE, LIMITED.
 WHOLESALE DEALERS IN
 WATCHES, DIAMONDS, AND JEWELRY,
 631 CHESTNUT STREET, ROOMS 3 AND 4, PHILA.
 SELL TO THE RETAIL JEWELRY TRADE ONLY.

Jas. B. Baker,
 Successor to
 Rem. P. Davis & Co.,
 1205 Chestnut St.
 Manufacturing and Repairing a Specialty.

RINGS A SPECIALTY WM. H. ELY



58 Nassau St., Cor. Maiden Lane, New York.

CHARLES C. HAENSLER,
 Manufacturer of Fine Velvet, Plush, and Morocco
 Cases for Jewelry, Silverware, Etc.
 Trays for Show-Cases and Windows, Fine Velvet
 Cases for Diamond Jewelry.
 14 and 16 John Street, near Broadway, N. Y.
 Western Agency, Merker & Co., 82 State Street,
 Chicago, Ill.

H. M. DAVIS,
 73 Nassau Street, Room 6, New York.
Watch Case Repairer.
 Jewelers desiring first-class workmanship and prompt
 attention will find it to their advantage to give me a trial.
 Jobs sent me by mail or express will be repaired and re-
 turned promptly. Engine Turning, Springing, Jointing,
 Polishing and general repairing neatly and quickly ex-
 ecuted.

COL. J. M. RUTHERFORD,
JEWELRY AUCTIONEER,
 618 Chestnut Street, Phila., Pa.

REFERENCES: { Oppenheimer Bros. & Veith, New York.
 John J. Maguire, Harrisburg, Pa. Henry
 J. Yeung, Joliet, Ill. W. L. Jones,
 Martinsburg, W. Va., and many others.

I make a specialty of conducting sales for Jewelers,
 and Jewelers only, in their own stores, in any part of
 the United States. Established since 1858. Address
 for full particulars. Correspondence confidential.



PERSONS wishing to
 attain a knowledge
 of the Engraving
 Business, and who
 want to procure the nec-
 essary tools, books, and
 accessories of the art,
 should write us particu-
 lars and we will help
 them in selecting just
 what they require, on
 favorable terms.

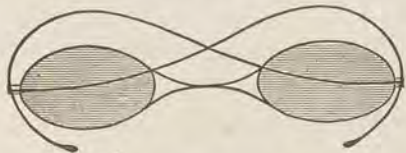
GEORGE F. WHELPLEY,
 18 AND 20 SOUTH PEARL ST., ALBANY, N. Y.
 Engraver and Supply Depot. Designs furnished per
 order. Badges, Bangles, Medals, Self-Inking Rubber
 Stamps, Seals, Dies, Etc.

Two-Horse Power Engine. \$150.



WITH STEEL BOILER.
Cheap, Reliable, Safe.
 Automatic Boiler Feed.
 Automatic Pop Safety Valve
 Steel Boiler. Cost of running
 guaranteed not to exceed
 one and one-half cents per
 horse power per hour. Less
 than half that of any kero-
 sene engine of equal effi-
 ciency. Nothing equal to it
 ever before offered for the
 price. Send for free discrip-
 tive circular.
CHAS. P. WILLARD & CO.
 284 Michigan Street, Chicago, Ill.

THE PHILADELPHIA OPTICAL CO.,
 (Limited),
 916 Chestnut Street, Philadelphia, Pa.,



Manufacturers of Gold and Steel Spectacles, Eye-
 Glasses, Lenses, Etc.

Importers of Opera and Marine Glasses.

A full line of Readers, Loupes,
 and Lorgnettes.

Our prescription department being the
 largest in the country, we can guarantee you
 quick and accurate work.

Send for sample line of our goods.

Established 1869.

CHAS. REISS,

JOBBER IN

American Watches,

OFFICE AND SALESROOMS,

31 and 33 South Pearl St.,
 ALBANY, N. Y.

Repairing Department Attached.

Tools, Material, Etc.

Price List to the Trade.

KING & EISELE,

Manufacturing Jewelers.

SPECIALTY RINGS.



Solid Gold Guaranteed Initial Set with 6 Diamonds, \$8.

All other goods at corresponding prices.

Send for Price Lists.

KING & EISELE,

Offices, 283 Main St. Factories, 2, 4, 6, 8 Swan St.
 BUFFALO, N. Y.

MUSIC BOXES
 SUPERIOR QUALITY



J. R. PAINTER'S
 WHOLESALE AND RETAIL SALESROOMS,
 1208 CHESTNUT ST., PHILADELPHIA, PA.
 SEND FOR CATALOGUE AND PRICE LIST.

Old Music Boxes carefully repaired by experienced
 Workmen from Switzerland.

N.B.—Special attention given to Jewelers' Trade.

H. H. HEINRICH,
 CHRONOMETER MANUFACTURER,
 No. 14 John Street, New York.

MARINE CHRONOMETER WITH HEINRICH'S ADJUSTABLE
 BALANCE. CERTIFICATE FROM U. S. OBSERVATORY.



Agent for the K. Zimmerman Watches and Palladium
 Balance Springs for Marine Chronometers.

CHRONOMETERS TO RENT. \$5 per month.
 In order to give an opportunity of examining and testing
 my Chronometers, I will rent them out at the rate of
 \$5 per month, payable in advance. To those desiring to
 purchase chronometers, after examining them, an allow-
 ance of the first month's rent will be made from purchas-
 ing price.

A large stock of new and second-hand Marine Chronom-
 eters on hand for the Trade. All my second-hand
 chronometers are in the very best condition, are re-
 adjusted, and look like new.
 Springing and Adjusting a Specialty.

AMERICAN WATCH
WHOLESALE SALESROOM.

WHOLESALE AGENTS FOR

ROGERS & BRO. FLAT AND HOLLOW WARE.

DAVID F. CONOVER & CO.,
 SUCCESSORS TO WM B. WARNE & CO.,
 S. E. Corner Chestnut and Seventh Streets, PHILADELPHIA, PA.
 WHOLESALE ONLY.

STANLEY BROTHERS

Manufacturers of **Rolled Plated Chains**

Attleboro Falls, Mass.

W. H. WILMARTH & CO.,

MANUFACTURING JEWELERS,

Specialty: SEPARABLE AND LEVER BUTTONS,

Attleboro, Mass.



WARNER OBSERVATORY.

It gives me pleasure to express my apprecia-
 tion, not only of the beautiful appearance, but
 also of the time-keeping qualities of the Water-
 bury Watch. During the past three years, I
 have compared the running of many of them
 with not only a Howard and a first-class Swiss
 watch, but also during the past two years with
 the mean time chronometer of the Warner
 Observatory. Fortunately there is no longer
 an excuse for a man or even a boy to be with-
 out a watch, or late to shop or school. It is
 certainly a marvellous advance in the science
 of horology when a warranted, correct time
 keeping watch can be manufactured and sold
 at \$3.50.

LEWIS SWIFT, F. R. A. S., Director.
 Rochester, N. Y., March 20.

SERIES "E."

The only genuine American invention in the way of a watch.
 All others made in this country are modeled after
 the foreign calculations.

Send business card for new special discounts for 1887
 to the trade on watches and material.

FOR SALE BY ALL JOBBERS.

THE WATERBURY WATCH CO.,

GEO. MERRITT, General Selling Agent, 52 Maiden Lane, New York City,
 Factory, Waterbury, Conn. London Office, 17 Holborn Viaduct, E. C.
 PARIS. BRUSSELS. ROTTERDAM. BOMBAY (INDIA).

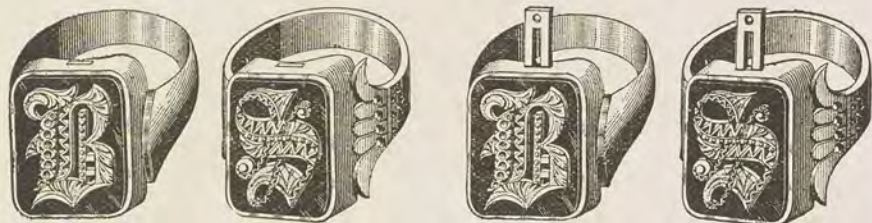
S. C. SCOTT.

Established 1847.

J. T. SCOTT

THE LATEST!

Ask for the **SUCCESS** Initial Ring.



Complete Ring.

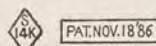
Part of Prong Exposed.



Ring without Initial.



Initials (Front View.)



Initials (Back View.)



Prong.

We are placing upon the market the most simple changeable Initial Ring ever offered to the trade. Send for sample and ask our travelers for them. Patented and made by

J. T. SCOTT & CO.,

No. 4 Maiden Lane, New York.

Jobbers in all kinds of

AMERICAN WATCHES.

Importers of Swiss Watches,

Including a full line of CHATELAINE WATCHES in Gold, Silver and Nickel.

Also a full line of

DIAMOND GOODS.

Comprising Loose Stones and Mounted in Ear-Drops, Lace-Pins, Scarf-Pins, Collar-Buttons, Fancy and Solitaire Rings.

Sole Agents for Chas. F. Tissot & Son's Fine Movements, fitting the 6 and 16 Size Elgin Cases; also for Nickel Open-Case Roskopf & Triumph-Roskopf Watches.

Our Spring Stock will be much larger and more complete than ever offered before.

Would call especial attention to our Full and Complete Line of CHRONOGRAPH WATCHES.

Our Jobbing Department is under our Personal Supervision.

The Julius King Optical Co. have their New York Office in our Store.

WATCHMAKER'S COMFORT GLASS CASE



Plan of drawers.



Clark's Patent Comfort Glass Case. Patent No. 256,640, April 18, 1882.

THIS is the only glass case in use that has ever given perfect satisfaction. Every watchmaker who becomes acquainted with it will have one. We can show abundance of testimony, from those who have used it, in its favor. The glasses stand upon edge and the arrangement is such that it will hold every size and height of Geneva Lunett, Patent Geneva and thick flat (for open face) glasses from 12 to 23 15-16. It contains 1,456 spaces and will hold 17,462 glasses in convenient order, so one is able at once to select the desired size and height of glass, and also make out an order for more glasses when required. The size of the case is 32 1/2 inches high, 22 1/2 inches wide, 16 1/2 inches deep. They are made of black walnut and cherry, hard finished, and of most thorough workmanship, nickel numbers on the front of the drawers and highly ornamental in appearance. Price, \$15.00 each.

CLARK, GIDDINGS & CO., Sterling, Ill.

Manufacturers of Clark's Patent Pendent Bow Pliers, Clark's Patent Simplicity Lamps, and Clark's Patent Ring Rolls. For sale by Jobbers.



Chicago Gold Pen Manufacturing Co.,
70 East Madison St., Chicago, Ill.

Manufacturers of GOLD PENS, HOLDERS, PENCILS and TOOTHPICKS.



Largest and most complete line in the West. Repointing and Repairing a Specialty.

W. H. BURTON, Manager.

THE ORIGINAL GOLD CROWN FILLED RINGS



TRADE MARK.

To meet the demand for a lower priced Gold Filled Ring, we are now making in connection with the Crown Ring, a second quality stamped as above.

We manufacture for the Jobbing trade only.

McCall & Newman,
625 Arch Street,
PHILADELPHIA.



Second quality.

L. LELONG & BROTHER, Gold and Silver Refiners, Assayers,

—AND—

SWEEP SMELTERS,

S. W. Cor. Halsey and Marshall Sts.,

NEWARK, N. J.

HALF OF PAT.



COLLAR BUTTON.

Krementz & Co.

HALF OF PAT.



COLLAR BUTTON.

182 and 184 Broadway,

Cor. John Street - - - NEW YORK,

Manufacturers of a

FULL LINE OF 14-K GOLD JEWELRY. DIAMOND MOUNTINGS,

—AND—

The "ONE PIECE" Collar Button,

Patented May 6, 1884.



6 ^m/_m Short |

7 ^m/_m

7 ^m/_m Short.

8 ^m/_m

8 ^m/_m Short.

These buttons are not soldered, but made in ONE PIECE, and, therefore, are Hard Spring Metal.

They cannot break.



9 ^m/_m

9 ^m/_m Short.

10 ^m/_m

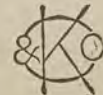
10 ^m/_m Short.

Sample Lines "On Mem." to Parties Furnishing Satisfactory Reference.


A sample of the pattern or style of these buttons, made of Oroide metal, will be sent to any Jeweler requesting it, upon mentioning the KEYSTONE. We do NOT make the buttons in Oroide FOR SALE; only for purpose of illustration.





FACTORY, NEWARK, N. J.








THESE designs of engraving originated in the Keystone Factories, and first appeared on Boss Cases. They have been stolen bodily, and are now being put on other filled cases, whose makers must concede the inferiority of their goods, else they would hardly copy other peoples' designs. If you want to handle filled cases that will prove satisfactory in every respect, see that you get the Boss. Look for this guarantee and trade mark in every case:



"This is to certify that the accompanying case, No. _____ was manufactured under James Boss patent of two plates of solid gold overlaying a plate of composition metal, and is warranted to wear for twenty years."

C. N. THORPE, Pres't.

KEYSTONE WATCH CASE CO.
 PHILADELPHIA NEW YORK
CHICAGO



