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[Number 1

THE PLACE OF MAGIC
IN THE
INTELLECTUAL HISTORY OF EUROPE

BY
LYNN THORNDIKE, Ph.D.,
Sometime University Fellow in European History



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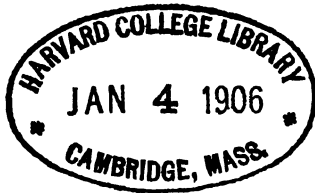
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TABLE OF CONTENTS

CHAPTER I

ILLUSTRATIONS OF BELIEF IN MAGIC IN MEDIEVAL AND IN EARLY MODERN TIMES

	PAGE
General belief in witchcraft, in astrology, and in the existence of magicians.	11
Even the most educated men believed in astrology	12
Further illustration of such beliefs among men of learning, and even among scientists	13
Isidore and Bede	14
Alexander of Neckam	15
Michael Scot	16
✓ Roger Bacon	18
Bacon's acceptance of astrology	18
Bacon's belief in occult influence	19
Vincent de Beauvais, Bernard Gordon, Albertus Magnus, Arnald of Villanova	19
Cabalistic doctrines of Renaissance scholars	20
Jerome Cardan	22
Paracelsus and Tycho Brahe	22
Francis Bacon	23
Summary of these beliefs	23
Question whether they are all closely connected	24
Question whether they were regarded by their authors as magic	25
✓ Importance of magic	26

CHAPTER II

MAGIC; ITS ORIGINS, AND RELATIONS TO SCIENCE

Magic once regarded as a reality	27
Magic praeternatural rather than supernatural	27
Belief in magic perhaps older than belief in divine beings	28
Magic not originally a secret art	28

	PAGE
Attitude of primitive man towards nature	29
His effort to explain strange phenomena	30
His belief in lucky things	31
His desire to know the future	31
Hence the probable origin of belief in magic	31
Chief characteristics of magic	32
Difficulty in defining magic	33
Gradual disappearance of magic before science	34
Possible union of magic and science	34
Importance of union of magic and science	35
Method of treating that theme in this essay	36

CHAPTER III

PLINY'S NATURAL HISTORY

A fitting starting-point for our discussion	37
<i>I. The Character of the Work:</i>	
Its extensive treatment of both science and magic	37
Objections to regarding it as a true picture of ancient science	38
Reasons for so regarding it	39
Pliny the Boswell of ancient science	40
Pliny's relation to mediæval science	41
<i>II. Pliny's Discussion of Magic:</i>	
Its significance	41
Pliny's remarks concerning the history of magic	42
"Magic" false, according to Pliny	42
"Magic" an obscene and criminal art, according to Pliny.	44
<i>III. Illustrations of Pliny's Fundamental Belief in Magic:</i>	
Inconsistency of his declared scepticism	44
His belief that animals possess magic properties	45
His belief that plants have similar occult virtues	45
Strange qualities of minerals	46
Magical powers of man	47
Efficacy of magical ceremonial	48
Pliny's belief unmistakable	49
Though probably limited	49
Question as to extent of his belief in astrology	50
His account of the heavenly bodies	50
Influence of the stars upon our planet	51

	PAGE
Influence of the stars upon man	52
Belief of Pliny in portents	53
Attitude of Pliny towards various popular superstitious ob- servances	53
Pliny not esoteric	54
Conclusions to be drawn from the <i>Natural History</i>	54

CHAPTER IV

SOME ANTECEDENTS OF THE BELIEF IN MAGIC IN THE ROMAN EMPIRE

Derivative and cosmopolitan character of intellectual life during the imperial period	56
Extent of our discussion of its antecedents	56
Question as to freedom of Greek thought from magic	57
Some evidence to the contrary	57
Doctrines of the Stoics favorable to magic	59
Pythagorean theory of numbers	59
Attitude of Plato towards "magic," as he understood the word . .	60
Plato's fantastic view of nature	60
Aristotle's acceptance of astrology	61
Aristotle's <i>History of Animals</i>	62
Cato's <i>De Re Rustica</i>	63

CHAPTER V

BELIEF IN MAGIC IN THE EMPIRE

Outline of contents of this chapter	65
I. <i>General Attitude:</i>	
Prejudice against "magic" and condemnation of Magi . .	65
Views of Apuleius and of Philostratus	66
In reality a widespread belief in magic	67
Explanation of apparent opposition to astrology	68
Galen	69
Neo-Platonism	70
Philosophy confounded with magic	71
II. <i>Philo of Alexandria and Allegorical Interpretation:</i>	
Question as to connection of allegorical interpretation with magic	72
Historical importance of allegorical interpretation and of Philo	73
Nature of Philo's allegorical interpretation	73
His influence in the Middle Ages	75

	PAGE
III. <i>Seneca's Problems of Nature and Divination:</i>	
Scientific traits of Seneca	75
His tendency to be esoteric and mystical	76
Ground covered by his book	77
His partial rejection of magic	77
His acceptance of divination	78
His discussion of divination from thunder	79
IV. <i>Ptolemy's Tetrabiblos and Astrology:</i>	
An illustration of the astrology of the scientist	80
Ptolemy and his influence	80
Scientific tone of the preliminary remarks in the <i>Tetrabiblos</i>	81
An attempt to base astrology upon natural law	82
Ptolemy's explanation of the influence of the planets	82
Summary of remaining contents of his first book	83
Contents of the other three books	83
V. <i>The Hermetic Books and Occultism:</i>	
Their nature and history, legendary and actual	84
Their contents	86
Their importance	87

CHAPTER VI

CRITICS OF MAGIC

Review of the usual attitude towards magic in the Roman world

I. *Opponents of Astrology:*

Cicero, Favorinus and Sextus Empiricus	
Considerations which discount their scepticism	
Inadequacy of their arguments	
Astrology attacked as being impracticable	
General problem of sidereal influence left untouched	

II. *Cicero's Attack upon Divination:*

In a way an attack upon magic as a whole	
Form and arrangement of <i>De Divinatione</i>	
Its relations to the past and to the future	94
Appeal of Quintus to antiquity and to tradition	94
Cicero's reply; condemnation of reliance on tradition	95
Divination declared quite distinct from science	95
Divination declared quite contrary to the laws of science	96
Idea of magical sympathy rejected	97

	PAGE
Cicero's attitude very unusual for his time	98
Question as to his consistency	98

CHAPTER VII

THE LAST CENTURY OF THE EMPIRE

Intellectual characteristics of the period	99
Marcellus of Bordeaux	99
Ammianus Marcellinus	99
His description of the state of learning at Alexandria	100
His justification of divination as a science	101
His extraordinary misquoting of Cicero	102
Synesius	103
His belief that all parts of the universe are in magic sympathy	103
Further instances of his trust in magic	104
Macrobius	106

CHAPTER VIII

CONCLUSION	108
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ERRATA.

- Page 21, line 19, instead of *verbe* read *verbo*.
 Page 49, lines 9 and 10, instead of *marvelour* read *marvelous*.
 Page 58, at close of first foot-note, instead of 66 read 67.
 Page 71, line 10 of foot-note, instead of *ἀλλὰ* read *ἀλλῶ*.
 Page 101, line 8 of foot note, instead of *factorum* read *fatorum*.
 Page 105, line 2 of second foot-note, instead of *εἴvai* read *εἴvai*.

CHAPTER I

ILLUSTRATIONS OF BELIEF IN MAGIC IN MEDIÆVAL AND IN EARLY MODERN TIMES

EVEN a slight acquaintance with European history reveals the existence of a number of curious and apparently unreasonable beliefs prevalent throughout a period extending from early mediæval to comparatively recent times.

✓ There is the belief in witchcraft, for instance. From the canons of synods in the early Middle Ages down to the pitiless executions during the witchcraft delusion, there is abundant evidence of its prominence. It played its part not only in humble life, but in court intrigues and in the accusations brought at state trials.

✓ The belief that one's future could be learned by observing the stars was equally widespread. Astrologers thrived at the courts of kings, and sometimes their advice was taken even by him whose every act was held to be under special divine direction. It would be a great mistake to think that the astrologer was maintained merely for the amusement of king and court, like the jester. His utterances were taken ✓ most seriously, and the principles of his art were so generally accepted as to become the commonplaces of the thought and the conversation of daily life. In 1305, for instance, when certain cardinals urged Pope Clement V to return to Rome, they reminded him that every planet was most powerful in its own house.¹ Indeed, even in our

¹ H. C. Lea, *History of the Inquisition in the Middle Ages* (1887),

speech to-day numerous vestiges of the astrological art survive.¹

Moreover, a grander and more imposing witchcraft displayed itself in the stories of the wizard Merlin and in the persons of the wicked magicians with whom knights contended in the pages of mediæval romance. So strong was the tendency to believe in the marvelous, that men of learning were often pictured by subsequent tradition, if not by contemporary gossip, as mighty necromancers. Even Gerbert, who seems to have done nothing more shocking than to write a treatise on the abacus and build a pipe-organ, was pictured as running off with a magician's book and daughter, hanging under bridges between earth and water to escape noxious spells, and making compacts with Satan.²

The attitude of the average mind as it has just been illustrated was to a large extent characteristic of the best instructed and most widely read men. The erudite poet Dante accepted the influence of the constellations upon human destiny. Bodin maintained in his *Republic*—perhaps the greatest book on political science written during the sixteenth

vol. iii, p. 437. Mr. Lea's chapter on "Sorcery and the Occult Arts" is very interesting and contains much material which it is difficult to find elsewhere.

¹ We speak of persons as jovial or saturnine or mercurial in temperament; as ill-starred, and so on.

² The classic on the theme of magic reputations incurred by the learned in ancient and mediæval times is Gabriel Naudé's *Apologie pour tous les grands personages qui ont été fausement soupçonnés de Magie*. Paris, 1625. That such reputations were often unjustly incurred was recognized long before Naudé, however. To say nothing now of Apuleius' *Apologia*, to which we shall refer later, attention may be called to the fact that even William of Malmesbury, while relating with apparent credulity the legends in regard to Gerbert, had the grace to admit that "the common people often attack the reputation of the learned, and accuse any one of dealing with the devil who excels in his art." *Gesta Regum Anglorum*, book ii, secs. 167, 168.

century—that astrology was very useful in tracing the development of society.¹ Aquinas, chief of the mediæval theologians, accepted astrological theory, except as limited by human free will, and further admitted that most men make little use of their liberty of action but blindly follow their passions, which are governed by the stars.² Among other great mediæval churchmen and canonists, d'Ailly and Gerson both believed that God signified important events in advance through the stars, and d'Ailly made some astrological predictions himself. Astrology was much taught in the mediæval universities,³ and was regarded as the climax of mathematics and as an essential part of medicine.

It is with such beliefs, accepted by educated men and forming a part of the learning and science of the times, that we are concerned in this essay. First, it is necessary to give some further evidence of the nature and of the general acceptance of these beliefs. This object will be most quickly and effectively secured by a résumé of the views of a few of the men most prominent in the intellectual history of the past. These men should offer fair, if not flattering, illustrations of the learning and culture of their times. In especial we shall notice the curious notions of those who wrote on scientific subjects or showed even a considerable

¹ *République*, book iv, ch. 2, cited by W. E. H. Lecky, *History of Rationalism* (1900), vol. i, p. 28. The chapter upon "Magic and Witchcraft" contains considerable material bearing upon our theme. A similar attitude to that of Bodin is found in a political treatise of about the year 1300, probably written by Pierre du Bois, where an argument for the universal rule of a French monarch is based on astrology. N. de Wailly, *Mémoire sur un opuscule anonyme* (Mémoires de l'Institut Impérial de France), vol. xviii, pt. ii, p. 442.

² *Summa Theologica*, pars prima, quæst. 115, arts. 3 and 4.

³ For some data on this point see Hastings Rashdall, *The Universities of Europe in the Middle Ages* (1895), vol. i, pp. 240-250; vol. ii, pp. 290, 452, 458, 459.

approach towards the modern scientific spirit. This we shall do partly because their writings seem at first thought the place where we should least expect to find such notions, and hence furnish striking illustration of the almost universal acceptance of these beliefs; partly because, as we shall soon find reason to conclude, there is really some connection between such beliefs and science.

The early Middle Ages are not distinguished for the prevalence of education and of culture in Latin Christendom, to say nothing of profound knowledge or original thought in any particular branch of learning. But in such learning and science as there was may be found examples of the beliefs which we wish to consider. We see them in Isidore of Seville, whose *Etymologies*, we may well believe, constituted an oft-consulted encyclopedia in many a monastic library for several centuries after the seventh, when it appeared. This saint, like almost all good Christians of his day, believed that marvels could be effected through magic by the aid of demons, although such resort to evil spirits he could not condemn too strongly.¹ But he saw no harm in holding that certain stones possess astonishing powers,² that the dog-star afflicts bodies with disease, and that the appearance of a comet signifies pestilence, famine or war.³ He maintained that it was no waste of time to look into the meaning of the numbers which occur in the Bible. He thought that they might reveal many sacred mysteries.⁴

¹ *Etymologiae*, bk. viii, ch. 9. In Migne's *Patrologia Latina*, vol. lxxxii.

² *Ibid.*, bk. xvi, *passim*.

³ *Ibid.*, bk. iii, ch. 71. He condemned astrology, however. See *ibid.*, and bk. iii, ch. 27.

⁴ "Liber Numerorum qui in Sanctis Scripturis Occurunt." (Also in Migne, vol. lxxxiii, col. 179.) "Non est superfluum numerorum causas in Scripturis sanctis attendere. Habent enim quamdam scientiae doctrinam plurimaque mystica sacramenta."

Bede expressed similar views in his scientific treatises.¹ Also, if we may regard as his two little essays about the authenticity of which there is some question, he ascribed such extraordinary influence to the moon as to maintain that the practice of bleeding should be regulated by its phases, and wrote—with some hesitation lest he should be accused of magic—an explanation of how to predict coming disasters by observing the time and direction of peals of thunder.²

Passing over several centuries during which judicial astrology is very conspicuous in the mathematical treatises which formed the greater part of the scientific literature of the times,³ we come at the close of the twelfth century to the *De Naturis Rerum* of Alexander Neckam (1157-1217). We find him ecstatically musing over the consonance of celestial harmony and associating the seven planets with the seven liberal arts and the seven gifts of the Holy Spirit,⁴ as if believing that there is some occult virtue in that number or some potent sympathy between these material bodies and such abstractions as branches of learning and generic virtues. Descending from the skies to things earthly—the transition is easy since he believes in the influence, saving human free will, of the planets on our lower creation⁵—he

¹ *De Natura Rerum*, ch. 24; *De Temporum Ratione*, ch. 28. The scientific writing of Bede may be found in vol. vi of his works as edited by J. A. Giles. London, 1843.

² *De Tonitruis ad Herefridum*, and *De Minutione Sanguinis sive Phlebotomia*. Many spurious treatises were attributed to Bede but there are some reasons for believing these genuine, although they are not named by Bede in the list of his writings which he gives in his *Ecclesiastical History*. Giles included them in his edition after some hesitation.

³ For the predominance of astrology in the mathematics of the 9th, 10th, 11th and 12th centuries, cf. *Histoire Littéraire*, vol. v, p. 183; vi, 9; vii, 137; ix, 197.

⁴ *De Naturis Rerum*, bk. ii, ch. 173, and bk. i, ch. 7. Volume xxxiv of *The Chronicles and Memorials of Great Britain*. (The Rolls Series.)

⁵ *Ibid.*, bk. i, ch. 7.

The first part of the book is devoted to a general history of the world, from the beginning of time to the present day. The author discusses the various civilizations that have flourished on the earth, and the progress of human knowledge and art. He also touches upon the different religions and philosophies that have shaped the human mind.

The second part of the book is a detailed account of the history of the British Empire, from its early beginnings in the sixteenth century to its greatest extent in the nineteenth century. The author describes the various colonies and territories that were acquired, and the policies and events that shaped the empire's growth and decline.

The third part of the book is a history of the world from the perspective of the different nations and peoples. The author discusses the unique characteristics of each nation, and the ways in which they have interacted with one another over the course of history.

The fourth part of the book is a history of the world from the perspective of the different religions and philosophies. The author discusses the origins and development of each religion, and the ways in which they have influenced the human mind and society.

The fifth part of the book is a history of the world from the perspective of the different sciences and arts. The author discusses the progress of each field, and the ways in which they have shaped the human world.

The sixth part of the book is a history of the world from the perspective of the different languages and literatures. The author discusses the origins and development of each language, and the ways in which they have shaped the human mind and society.

The seventh part of the book is a history of the world from the perspective of the different customs and traditions. The author discusses the origins and development of each custom, and the ways in which they have shaped the human mind and society.

The eighth part of the book is a history of the world from the perspective of the different climates and geographies. The author discusses the origins and development of each climate, and the ways in which they have shaped the human mind and society.

The ninth part of the book is a history of the world from the perspective of the different peoples and nations. The author discusses the origins and development of each people, and the ways in which they have shaped the human mind and society.

The tenth part of the book is a history of the world from the perspective of the different events and incidents. The author discusses the origins and development of each event, and the ways in which they have shaped the human mind and society.

tells us that mugwort prevents the traveler from feeling fatigue,¹ and that the Egyptian fig makes the wrinkles of old age vanish and can tame the fiercest bulls once they are gathered beneath its branches.² He describes fountains with properties as marvelous as those of the herb or of the tree.³ He tells of stones which, placed on the head of the sleeping wife, provoke confession of marital infidelity,⁴ or which, extracted from the crop of a rooster and carried in one's mouth, give victory in war.⁵ What is more, words as well as plants and stones are found by the careful and industrious investigator of nature to have great virtue, as experiment shows beyond doubt.⁶

Neckam, despite the fact that according to his editor, Thomas Wright, he "not infrequently displays a taste for experimental science,"⁷ was, after all, more of a moralizing compiler than anything else. But greater men than Neckam, men who were interested in learning and science for their own sake, men who knew more and wrote more, still cherished beliefs of the same sort. There was Michael Scot in the early years of the thirteenth century, the wonder of the cultured court of Frederick II, perhaps that monarch's tutor, the "Supreme Master" of Paris, the man who helped much to make the treasures of learning amassed

¹ *De Naturis Rerum*, bk. ii, ch. 63.

² *Ibid.*, bk. ii, ch. 80.

³ *Ibid.*, bk. ii, ch. 3 *et seq.*

⁴ *Ibid.*, bk. ii, ch. 88. In chapter 87 he writes: "Chelidonium autem rufus portantes se gratissimos facit; niger vero gestatus optimum finem negotiis imponit, et ad iras potentium sedandas idoneus est."

⁵ *Ibid.*, bk. ii, ch. 89.

⁶ *Ibid.*, bk. ii, ch. 85. "In verbis et herbis et lapidibus multam esse virtutem compertum est a diligentibus naturarum investigatoribus. Certissimum autem experimentum fidem dicto nostro facit."

⁷ Preface, p. xii in vol. xxxiv of the Rolls Series.

by the Arabs in Spain the common property of Latin Christendom, the introducer to Western Europe of a Latin version of Averroes and of an enlarged Aristotle.¹ Scot composed a primer of astrology for young scholars. His writings on alchemy show that he experimented in it not a little. His *Physionomia* accepts the doctrine of signatures, tells us that these signs on the outward body of the soul's inner state are often discovered through dreams, and contains a chapter giving an extended description of the rules of augury—an art on which the author, though a Christian, apparently bestowed his sanction. Prophetic verses foretelling the fate of several Italian cities have come down to us under his name. A poem of Henri d'Avranches, written in 1235-6, recalls to mind the fact that certain prophecies concerning the emperor had been made by the then deceased Michael Scot, whom the poet proceeds to call a scrutinizer of the stars, an augur, a soothsayer, a *veridicus vates*, and a second Apollo.² A most interesting recipe for invoking demons to instruct one in liberal arts is attributed to Michael Scot in a manuscript collection of *Occulta* in the Laurentian library.³

¹ My information concerning Michael Scot is mainly derived from his biography (Edinburgh, 1897) by Rev. J. Wood Brown, who has studied the manuscript copies of Scot's works in various European libraries and has succeeded in dispelling much of the uncertainty which previously existed concerning the events of Scot's career and even the dates of his life. Of Scot's works the *Physionomia* exists in printed form; indeed, eighteen editions of it are said to have been issued between the years 1477 and 1660.

² The poem is printed in *Forschungen zur Deutschen Geschichte*, vol. xviii, (1878) p. 486.

³ The part of the manuscript containing the experiment was written between 1450 and 1500, Brown thinks, but purports to be a copy "from a very ancient work." If spurious, its fabricator at least shows considerable familiarity with Scot's life. See Brown, pp. 18-19. The recipe is given in full in the appendix of Brown's book.

Later in the same century stands forth the famous figure of Roger Bacon, the stout defender of mathematics and physics against scholasticism. Some have ascribed to him numerous important innovations in the realm of natural science and of the mechanical arts, and have regarded his promulgation of the experimental method, guided by the mathematical method, as the first herald note of that modern science which was not destined really to appear for yet several centuries. Yet he held that the alchemist, if given sufficient time and money, could discover a way not only to meet the state's expenses by converting baser metals into gold, but also to prolong human existence beyond that limit to which it can be drawn out by nature.¹ Indeed these objects constituted two of the three examples he gave of the great advantages to be gained from the pursuit of that experimental science which was to disprove and blot out all magical nonsense.²

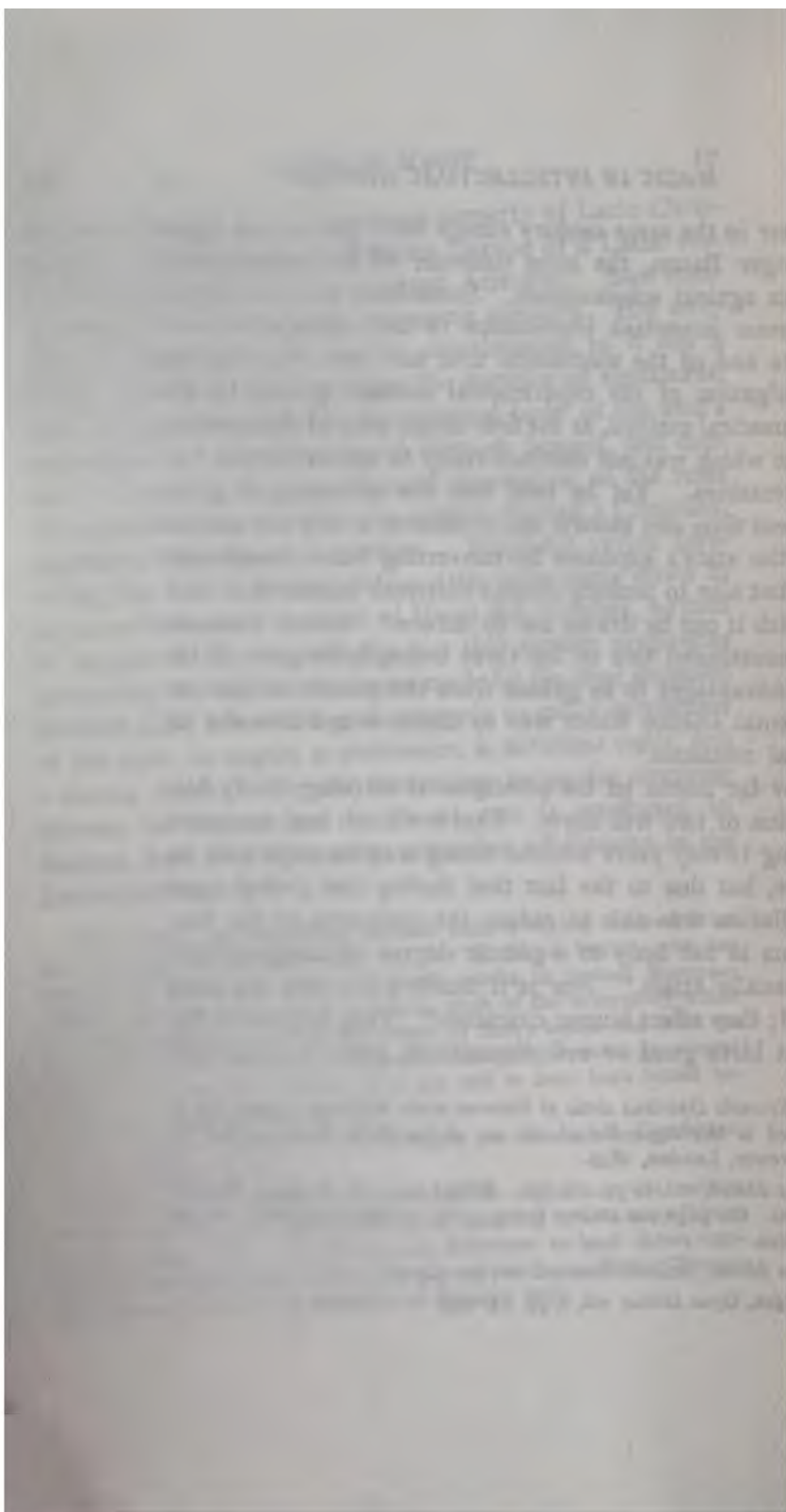
How far Bacon let the principles of astrology carry him a citation or two will show. That a woman had succeeded in living twenty years without eating was, he explained, no miracle, but due to the fact that during that period some constellation was able to reduce the concourse of the four elements in her body to a greater degree of harmony than they usually attain.³ Nor is it health alone that the stars control; they affect human character.⁴ They implant in the babe at birth good or evil dispositions, great or small tal-

¹ *De Secretis Operibus Artis et Naturae et de Nullitate Magiae*, ch. 7. Contained in the Appendix of vol. xv of the Rolls Series, edited by J. S. Brewer, London, 1859.

² *Opus Maius*, vol. ii, pp. 204-221. Edited by J. H. Bridges, Oxford, 1897-1900. On page 210 *et seq.* Bacon gives an elaborate recipe for an *elixir vitae*.

³ *Opus Minus*, Rolls Series, vol. xv, pp. 373-4.

⁴ Bridges, *Opus Maius*, vol. i, pp. 137-139.



ents. Human free will may either better these innate tendencies through God's grace or modify them for the worse by yielding to Satan's temptings; but in general the stars so far prevail that there are different laws and customs and national traits under different quarters of the heavens.¹ Nay more, astrology offers proof of the superiority of Christianity to other religions and gives insight into the nature of Antichrist.²

As one might surmise from Bacon's belief in the potent effect of sidereal emanations, he makes much of the theory that every agent sends forth its own virtue and species into external matter. This leads him to accept fascination as a fact. Just as Aristotle tells that in some localities mares become pregnant by the mere odor of the stallions, and as Pliny relates that the basilisk kills by a glance, so the witch by the vapor from her bleary eye draws her victims on to destruction. In short, "Man can project virtue and species outside himself, the more since he is nobler than all corporeal things, and especially because of the virtue of the rational soul."³ Hence the great effects possible from spoken words or written characters; although one must beware of falling into the absurdities and abominations of the magicians. Bacon, moreover, was like Scot a believer in the doctrine of signatures.⁴

Other men of the same period prominent in science who held similar beliefs we can scarcely stop to mention. There was Vincent de Beauvais, the great encyclopedist, and Ber-

¹ *Compendium Studii*, Rolls Series, vol. xv, pp. 421-422.

² Bridges, *Opus Maius*, vol. i, pp. 253-269.

³ *De Secretis*, ch. 3, discusses this question of fascination and also the power of words and of the human soul. In regard to characters and incantations, see *De Secretis*, ch. 2, and the *Opus Tertium*, which is also contained in vol. xv of the Rolls Series, ch. 26.

⁴ *Opus Tertium*, ch. 27.

nard Gordon, a physician of Montpellier and a medical writer of considerable note, who nevertheless recommended the use of a magic formula for the treatment of epilepsy.¹ There was Albertus Magnus with his trust in such wonderful powers of stones as to cure ulcers, counteract potions, conciliate human hearts, and win battles; and his theory that ligatures and suspensions, and gems carved with proper images possess similar strange virtues.² There was Arnald of Villanova who propounded such admirable doctrines as that a physician ought first of all to understand the chief functions of life and chief organs of the body and that the science of particular things is the foundation of all knowledge, and yet who believed in astrological medicine, wrote on oneiromancy and interpreted dreams, translated treatises on incantations, ligatures and other magic devices, and composed a book on the *Tetragrammaton* or ineffable name of Jehovah.³

That marvelous power of words—especially of the divine names of angels and of the Supreme Deity—which we may suppose Arnald to have touched upon in his *Tetragrammaton*, was discussed at length by a series of scholars at the close of the fifteenth and beginning of the sixteenth century whose names are most familiar to the student of those times. These men pushed the practice of allegorical interpretation of sacred writings, which had been in constant vogue among religious and theological writers from the days

¹ "Gaspar fert myrram, thus Melchoir, Balthasar aurum.
Haec tria qui secum portabit nomina regum
Solvitur a morbo Christi pietate caduco."

Hist. Litt., vol. xxv, p. 327.

² See *Liber Mineralium. Opera Omnia*, ed. Borgnet (1890), vol. v, page 23 *et seq.*

³ Two good accounts of Arnald are those in the *Histoire Littéraire*, vol. xxviii and Lea, *History of the Inquisition*, vol. iii, pp. 52-57. Older accounts are generally very misleading.

of the early Christian Fathers, to the extreme of discovering sublime secrets not only by regarding every incident and object in Scripture as a parable, but by treating the text itself as a cryptogram. Not only, like Isidore, did they see in every numerical measurement in the Bible mystic meaning, but in the very letters they doubted not there was hidden that knowledge by which one might gain control of all the processes of the universe; nay, penetrate through the ten sephiroth to the unspeakable and infinite source of all. For our visible universe is but the reflected image of an invisible, and each has subtle and practically unlimited power over the other. The key to that power is words. Such were the doctrines held by Pico Della Mirandola (1463-1494) who asserted that no science gave surer proof of Christ's divinity than magical and cabalistic science;¹ such were the doctrines of the renowned humanist, John Reuchlin, who connected letters in the sacred text with individual angels;² of Henry Cornelius Agrippa (1486-1535) who, inspired by Reuchlin's *De verbe mirifico* and *De arte cabalistica*, declared that whoever knew the true pronunciation of the name Jehovah had "the world in his mouth;"³ of Trithemius from whom Paracelsus is said to have acquired the "Cabala of the spiritual, astral and material worlds."⁴

Moreover, the writings of men primarily devoted to science continued through the sixteenth and on into the

¹ J. M. Rigg, *Giovanni Pico Della Mirandola*, London, 1890, pp. viii-x.

² Janssen, *History of the German People*, vol. iii, p. 45, of the English translation by A. M. Christie (1900).

³ Henry Morley, *Life of Agrippa von Nettesheim* (London, 1856), vol. i, p. 79. This biography includes a full and instructive outline of Agrippa's work on *Occult Philosophy*.

⁴ A. E. Waite, *Hermetical and Alchemical Writings of Paracelsus*, vol. i, p. xii.

seventeenth century to contain much the same occult theories that Michael Scot, Roger Bacon and Albertus Magnus had accepted and discussed. Jerome Cardan, one of the most prominent men of his time in mathematics and medicine—indeed, the discoverer of new processes in the former science—nevertheless believed in a strong attraction and sympathy between the heavenly bodies and our own, cast horoscopes and wrote on judicial astrology. In his *Arithmetic* he treated of the marvelous properties of certain numbers; in other writings he credulously discussed demons, ghosts, incantations, divination and chiromancy. His thirteen books on metoposcopy explain how to tell a person's character, ability and destiny by a minute examination of the lines on different portions of the body and by warts. He owned a selenite which he believed prevented sleep and a jacinth to which he attributed an opposite influence.¹

The vagaries of Paracelsus are notorious, and yet he was far more than a mere quack. Tycho Brahe (1546-1601) was a faithful follower of experimental method. He saw that the science of the stars could amount to little unless based on a mass of correct observations, and was one of the first to devote his life to that foundation of patient and systematic drudgery on which the great structure of modern science is being reared. His painstaking endeavor to have accurate instruments and his care to make allowance for possible error were the marks, rare enough in those days, of the true scientist. Yet he made many an astrological prognostication, and was, as his biographer puts it, "a perfect son of the sixteenth century, believing the universe to be woven together by mysterious connecting threads which the contemplation of the stars or of the

¹ For Cardan, see the biography in two volumes by Henry Morley, London, 1854, and that in one volume by W. G. Waters, London, 1898.

elements of nature might unravel, and thereby lift the veil of the future."¹ He also dabbled in alchemy, believed in relations of occult sympathy between "the ethereal and elementary worlds," and filled his mind with the teachings of Hermes Trismegistus, Geber, Arnald of Villanova, Raymond Lullius, Roger Bacon, Albertus Magnus, and Paracelsus.

Finally, even Francis Bacon, famed as the draughtsman of the chart which henceforth guided explorers in the domain of science, thought that there was considerable value in physiognomy and the interpretation of natural dreams, though the superstition and phantasies of later ages had debased those subjects;² and in divination if not "conducted by blind authority."³ He said that by a reformed astrology one might predict plagues, famines, wars, seditions, sects, great human migrations and "all great disturbances or innovations in both natural and civil affairs."⁴

Such are the beliefs which for a long time pervaded the thought and learning of Europe; beliefs of the widespread acceptance of which we have noted but a few striking illustrations. They constitute a varied and formidable class of convictions. There was the notion that from such things as the marks upon one's body, or from one's dreams, or from peals of thunder, flight of birds, entrails of sacrificial victims and the movements of the stars, we can foretell the future. There was the assumption that certain precious stones, certain plants and trees and fountains, certain animals or parts of animals have strange and wonderful virtues. There was the idea that man, too, possesses marvel-

¹ J. L. E. Dreyer, *Tychō Brahe. A Picture of Scientific Life and Work in the Sixteenth Century* (Edinburgh, 1890), p. 56. A valuable book.

² *De Augmentis Scientiarum*, bk. iv, ch. 1.

³ *Ibid.*, bk. iv, ch. 3.

⁴ *Ibid.*, bk. iii, ch. 4.

ous powers to the extent that he can fascinate and bewitch his fellows. Nor should we forget the attribution to the heavenly bodies of an enormous influence over minerals and vegetation, over human health and character, over national constitutions and customs, even over religious movements. We find this notion of occult virtue extended to things without physical reality: to words, to numbers, to written characters and formulæ. It is applied to certain actions and ways of doing things: to "ligatures and suspensions," for instance. Then there was the belief that wonders may be wrought by the aid of demons, and that incantations, suffumigations, and the like are of great value in invoking spirits. Finally, there was a vague general notion that not only are the ethereal and elementary worlds joined by occult sympathy, but that all parts of the universe are somehow mystically connected, and that perhaps a single magic key may be discovered by which we may become masters of the entire universe.

How shall we classify these beliefs? What shall we call them? What is their meaning, what their origin and cause? As for classification, it is easy to suggest names which partially apply to some of these notions, or adequately characterize them individually. The art of signatures, oneiromancy, augury, divination, astrology, alchemy, the Cabala, sorcery, and necromancy are some designations which at once come to mind. But no one of them is at all adequate as a class name for all these beliefs and the practices which they involve, taken together. Are not these notions, nevertheless, closely allied; is there not an intimate relation between them all? And is not "magic" a term which will include them all and denote the general subject, the philosophy and the art, of which they all are branches?

True, many of the holders of the beliefs above enumer-

ated declaimed against "magic."¹ But sometimes fear of being accused of magic was their very reason for so doing. Bede had such a fear when he treated of divination by thunder. Roger Bacon took suspicious care to insist that his theories had nothing to do with magic, which he declared was for the most part a mere pretense and could bring marvels to pass only by diabolical assistance.² The writer of the *Speculum Astronomiae*—probably Albertus Magnus—found it necessary to write a treatise to distinguish books of necromancy from works on "astronomy," *i. e.*, astrology.³ Coming to a later age, we find Agrippa frankly owning his trust in magic, and including under it, in his three books of *Occult Philosophy*, practically all the beliefs that we have mentioned. For him magic embraced the fields of nature, mathematics and theology. Indeed, men of his day and of the century following displayed a tendency to stretch the term to include true science. He himself called magic "the acme of all philosophy." Giovanni Battista della Porta (1540-1615), not it is true without considerable justification, called his encyclopedic work on

¹ Bodin for instance condemned "magic" in his *De Magorum Dæmonomania* (Paris, 1581).

² Bridges, *Opus Maius*, vol. i, p. 241. See too the *De Secretis Operibus Artis et Naturæ et de Nullitate Magiæ*. Rolls Series, vol. xv, appendix.

³ *Spec. Astron.*, ch. 17. Albertus Magnus, *Opera Omnia*, ed. Borgnet (1890), vol. x, pp. 629 *et seq.* And he finally came to the conclusion that "concerning books of necromancy the better judgment—prejudice aside—seems to be that they ought rather to be preserved than destroyed. For the time is perchance near at hand in which, for reasons which I now suppress, it will be advantageous to consult them occasionally. Nevertheless, let their inspectors abstain from abuse of them." Ch. 17.

Similarly Roger Bacon, in his *De Secretis*, ch. 3, after mentioning books of magic to be eschewed, remarked that many books classed as magic were not such but contained worthy wisdom.

mature *Natural Magic*.¹ Lord Bacon chose to understand magic "in its ancient and honorable significance" among the Persians as "a sublimer wisdom or a knowledge of universal nature." He said that as physics, investigating efficient and material causes, produced mechanics, so metaphysics, studying into forms, produced magic.²

Apparently, then, magic has a broad significance and a long history. The word itself takes us back to the Magi of ancient Persia; the thing it represents is older yet. It will form the theme of our next chapter, where we shall discuss its history and its meaning, and then the particular significance of those beliefs accepted by men of learning which have been enumerated in the present chapter.

¹ *Magiae Naturalis Libri XX*. Lyons, 1651.

² *De Augmentis*, bk. iii, ch. 4.

CHAPTER II

MAGIC: ITS ORIGINS AND RELATIONS TO SCIENCE

To men of the past—how long ago does not at present matter—magic meant far more than the performance for their amusement of clever tricks, which however puzzling they knew well enough were based upon illusion and deception. There was a real magic for them.

This faith in the reality of magic was not, moreover, merely the outcome of men's belief in the existence of evil spirits, in the power of those spirits to work changes in matter or to predict the future, and in man's power to gain their services. We sometimes speak of magic and necromancy as if they were identical, and mediæval writers often did the same thing, but such is not the case. If we but consider the meaning of the word "magic" when used as an adjective, we perceive that thus to restrict its scope as a noun is incorrect. What is a magic cloak, for instance? It is simply a cloak possessing properties which cloaks in general do not possess and which we are surprised to find in cloaks. Most cloaks keep us warm or improve our personal appearance; this cloak makes us invulnerable and invisible. A demon or a fairy may have endowed the cloak with these extraordinary qualities, but that is a secondary consideration. What makes the garment a magic cloak is the fact that it has such properties, no matter where or how it got them. Or what is a magic change? Is it merely a change wrought by spirits good or evil? By no means.

It is any change with characteristics and results which we do not expect nor usually see in changes. In short, magic is præternatural rather than supernatural.

Thus we find the existence of magic in the earliest period of human thought generally assumed by anthropologists, but some writers deny that man always has believed in supernatural beings. He first, they tell us, had a vague notion that by propitiating or by coercing nature he might secure for himself happiness; and that if anything external was to have power over the workings of the natural structure, it must be man, for both gods and God were yet unknown. Only gradually, they hold, through his belief in tree-spirits, through his devotion to plants or fetishes made sacred by their supposed efficacy in serving human wishes, perhaps, too, through his attitude toward human beings whose reputation for skill in magic finally led to deification, did man come to a belief in more or less divine beings and turn to them for the power and the happiness which in his savage and untutored impotency he had been unable to win by his own efforts.¹ Then only would the performance of magic by the aid of supernatural beings commence.

There is another misleading idea which we should avoid. Fairy tales and romances picture magicians to us as few in number, adepts in a secret art. Instinctively, moreover, looking as we do upon magic as a mere delusion, we are prone to regard it as the creation of the popular imagination, and to believe that what magicians there were outside of the ordinary man's imagination were a few imposters who took advantage of his fancies, or a few self-deceived

¹ This view is set forth at length in J. G. Frazer's *The Golden Bough* (3 vols., London, 1900). The book also furnishes many illustrations of the magic of primitive man. Mr. Frazer holds that "religion" supplanted magic and is in turn itself being supplanted by science. His definition of religion would probably not be generally accepted.

dreamers whose minds such fancies had led astray. This is a superficial view. It does not explain how the ordinary man came to imagine the existence of magic. Magicians in the true sense were no mere imaginary order existent only in the minds of men, nor a profession of dreamers and imposters. Magic was not the outright invention of imagination; it was primitive man's philosophy, it was his attitude toward nature. It was originally not the exercise of supposed innate, marvelous powers by a favored few nor a group of secret doctrines or practices known to but a few; it was a body of ideas held by men universally and which, during their savage state at least, they were forever trying to put into practice. Everybody was a magician.

To understand magic, then, we should consider this attitude of primitive man—I use the word primitive in no narrow sense—and should try to picture to ourselves what his attitude would be. It is a safe assumption that he would interpret the world about him according to his own sensations, feelings and motives. Whether he looked upon nature at large or in detail, he would in all probability regard it not as an inexorable machine run in accordance with universal and immutable laws, but as a being or world of beings much like himself—fickle, changing, capable of being influenced by inducements or deterred by threats, beneficent or hostile according as satisfied or offended by treatment received. To make life go as he wished, he must be able to please and propitiate or to coerce these forces outside himself.¹ In this endeavor his faculty of associa-

¹ Alfred Maury, in the introduction to his *La Magie et l'astrologie dans l'antiquité et au moyen âge*, (Paris, 1860), expresses a practically identical view and has the conception of magic gradually fading away before the advance of science. (See also the article on "Magic" in the *Encyclopædia Britannica*, 9th edition.)

Maury's work is not, however, as satisfactory as one is led to think

tion probably led him to conclude that things resembling each other or having any seeming connection must be related by strong bonds of sympathy and have power over each other. Since he had already attributed human characteristics to matter, he naturally now observed no distinction between the animate and the inanimate, the material and the spiritual. A wooden image might be used to affect the fate of a human being, or the utterance of alluring and terrifying sounds to produce change in unfeeling and unresponsive matter.

Moreover, as man observed the world about him, he would note many a phenomenon in nature which he could explain only by assuming strange and subtle influences. There was, for instance, the magnet, so different from other stones; the hot spring, so different from other waters; the action of electricity—still a mystery. Such things, too, as a calf with five legs, a dream, a sneeze, appealed to him as peculiar and striking, and perplexed him. He thought that they must have some important significance. His attempt to explain all such phenomena generally led him into magic.

from reading its introduction. Although he has defined magic almost in so many words as the attitude of primitive man towards the universe, he himself interprets magic much more narrowly when he comes to write his book proper, as indeed its title, *Magic and Astrology*, suggests. In short the thought that science and magic may at one time have mingled does not seem to impress him, and his work is of little aid to one considering our present subject. For instance, he cites Pliny only as an opponent of magic. Maury's work, moreover, comprising in its historical portion but a little over two hundred pages—and these nearly half filled by foot-notes—can hardly be regarded as more than a brief narrative sketch of the subject.

Considerable erudition is displayed in Maury's references, especially those to Greek and Roman writers, and from page 208 to 211 Maury gives a good bibliography of some of the chief secondary works dealing with magic. More was written upon the subject shortly before his time than has been since.

Man often had to decide between two or more courses of action, apparently equally pleasing and advantageous or displeasing and disadvantageous. Should he turn to the right or to the left; should he begin his journey to-day or to-morrow? The thought probably came to him that one of these directions, one of these days, would in the end prove more advantageous than the other, though at present he could see no difference between them. One must be lucky, the other unlucky. This belief in lucky times, places and actions was magic. For such times, places and actions were magical as truly as the cloak that is unlike other cloaks or the change that differs from other changes.

Akin to man's desire to discover what course of action would bring him good luck was the longing he doubtless had to know the future; a knowledge which would be as interesting as those tales of his ancestor's doings in which he delighted, and of more practical use. As he had no difficulty in granting to matter spiritual qualities or in subjecting to trivial material influences mind and soul without power of resistance, so now he sought in the present sure signs of his own future. Such indications seemed to him to be found not only in dreams, which indeed had some connection with his personality, but also in such things as the flight of birds or the movements of the stars. He often did more than assign magic powers to the heavenly bodies; often he worshiped them as gods. His effort thus to learn the future from inadequate and irrelevant present phenomena was divination or magic.

These notions of primitive man do not exhaust the field of magic. As he became educated, he would extend the attribution of magic properties to such things as numbers and written characters or formulæ. His original ideas might be elaborated or refined. But already he accepted the principles upon which a belief in magic founds itself. These

The first of these was the Declaration of Independence, which was adopted on July 4, 1776. This document declared that the thirteen colonies were no longer part of the British Empire and that they were now free and independent states. The second was the Constitution, which was adopted on September 17, 1787. This document established the framework for the federal government and the rights of the states. The third was the Bill of Rights, which was adopted on September 12, 1791. This document guaranteed the basic rights of the citizens, such as the right to free speech and the right to a fair trial.

The fourth of these was the Louisiana Purchase, which was completed in 1803. This purchase doubled the size of the United States and opened up new lands for settlement. The fifth was the War of 1812, which was fought between the United States and Great Britain. This war established the United States as a major power in the world. The sixth was the Missouri Compromise, which was passed in 1820. This compromise allowed Missouri to enter the Union as a slave state and Maine as a free state. The seventh was the Compromise of 1850, which was passed in 1850. This compromise allowed California to enter the Union as a free state and established the Fugitive Slave Act. The eighth was the Kansas-Nebraska Act, which was passed in 1854. This act allowed the people of Kansas and Nebraska to decide for themselves whether they would be slave or free states. The ninth was the Dred Scott Decision, which was issued by the Supreme Court in 1857. This decision ruled that African Americans were not citizens and that Congress had no authority to restrict the slave trade. The tenth was the Lincoln-Douglas Debates, which took place in 1858. These debates focused on the issue of slavery and helped to define the positions of the Republican and Democratic parties.

principles were evidently common property. Of course some men would come to surpass others in their knowledge of the supposed bonds of sympathy between different things, or of lucky objects, seasons and methods, of ways to coax and control natural forces, of the meaning of portents and of means to predict the future. In the progress of time the finer mysteries of the art might become the monopoly of a priesthood. But everybody believed in magic; everybody understood something about it.

To attempt to define magic further than has been done in our description of the notions of primitive man is like trying to embrace a phantom. Magic rested upon man's conjecture of the characteristics and processes of nature, not on a knowledge of nature correctly deduced from observation and experiment. As one would expect, there went with these mistaken notions a fantasticalness both in reasoning and in practical procedure. The follower of magic is apt to be on the watch not for facts or laws, but for hidden mysteries; he is fond of ceremonial and symbols; he enjoins upon himself and his fellows the necessity of secrecy in their operations and mysticism in their writings. Again, magic is, as has been said, *præternatural*; its outcome is to be marvelous. It assumes the existence of wonderful properties in various objects and of wonderful bonds of sympathy between different things. Finally, we should remember that man always is a factor in magic. His knowledge, skill or power is always essential to the performance of a feat of magic. Even when demons do the deed, they must be invoked. A miracle may be contrary to natural law but it is not magic, for man is not the cause of it. Even if wrought in answer to his prayer, the miracle is not magic, for the gods answer only if they choose. But the magic formula compels the desired marvel; by it man coerces nature or even deity.

The following are the main points of the report: (1) The general health of the population is good, but there is a marked increase in the incidence of certain diseases, particularly tuberculosis and cancer. (2) The mortality rate from these diseases is high, and it is necessary to take prompt action to reduce it. (3) The most effective method of reducing the mortality rate is to improve the general health of the population by means of a better diet, more exercise, and a more hygienic environment. (4) It is also necessary to improve the methods of diagnosis and treatment of these diseases. (5) The most important step in the reduction of the mortality rate is to improve the general health of the population. (6) The most effective method of improving the general health of the population is to improve the diet, increase the amount of exercise, and improve the environment. (7) It is also necessary to improve the methods of diagnosis and treatment of these diseases. (8) The most important step in the reduction of the mortality rate is to improve the general health of the population. (9) The most effective method of improving the general health of the population is to improve the diet, increase the amount of exercise, and improve the environment. (10) It is also necessary to improve the methods of diagnosis and treatment of these diseases.

Such are some of the chief characteristics of magic. Yet with these granted, it remains, like superstition or religion, a vague term at best. The reader may disagree with me as to exactly what beliefs and practices should be included under it, and it is indeed a nice question just where magic begins and ends. Much of alchemy, for example, was nothing but chemistry of a rude sort, and perhaps even its theories that metals may be transmuted and life greatly prolonged will some day prove to have had much truth in them. On the other hand, alchemy was based to a considerable extent on a belief that plants, animals and minerals have properties and powers which they cannot have; and if we ever do succeed in making gold or putting off old age, it is quite certain that such a consummation will never be accomplished by the fantastic methods which alchemists usually employed. Similarly we shall see that the practice of allegorical interpretation of past writings and the Pythagorean doctrine of numbers, which perhaps at first thought one would not regard as magic at all, nevertheless bear at least some resemblance to it. But after all our thesis is not to establish a certain definition for the word "magic," or to prove that such and such ideas and acts are magical. A name signifies little, and the word magic has had too many different meanings in different periods and for different men to allow any one to assert with confidence that he has found an absolutely correct definition. I employ the word simply because it seems the most convenient, most intelligible and most justifiable term for denoting a number of beliefs which I believe are all intimately related and which are the marks of a certain attitude towards the world.

So much for the definition of magic and for the nature of its origin. But the discussion of these two points does not fully explain the meaning of the beliefs which were illustrated in our first chapter. We have yet to bring out

the full significance of the presence of such notions in the minds of mediæval thinkers and scientists.

It was stated above that the outcome of magic is præternatural, marvelous; but this statement, while in one sense perfectly true, requires some qualification. Perhaps to inexperienced primitive man the results which he wished to accomplish or the crude theories on which he based his operations seemed nothing remarkable. Perhaps incantation seemed to him the natural way to bring rain, and sorcery the sole cause of disease. But as time went on and observation taught men, it must have been impressed upon their minds that either the events they sought to produce, or the methods by which they sought to produce them, were a little out of the ordinary, although of the possibility of the events and of the validity of the methods they still remained convinced. If we wish to sum up the whole history of magic in a sentence, we may say that men first regarded magic as natural, then as marvelous, then as impossible and absurd. Evidently then magic is subjective, as anything false must be. To-day in the thought of educated and sensible people it is limited in actual significance to stage illusions; once it was a universal attitude towards the universe. As one false hypothesis after another was superseded by true notions, the content of magic narrowed in men's minds until at last it became an acknowledged deception. Meanwhile its mistaken premises and strange proceedings first mingled with and then vanished into science and scientific methods.

This, then, is the significance of the beliefs of which we were speaking in the first chapter. They are phenomena in that union—or struggle—of magic and science which marked the decay of the former and the development of the latter. As such, they warn us not to picture a magician to ourselves as armed with a wand, clad in solemn robes,

and attended by a black cat. They warn us, on the other hand, not to regard the learned students of nature, mathematics and medicine in ages past as modern scientists in mind and spirit, who were merely handicapped by such obstacles as crude instruments and want of data. We perceive the anachronism involved in explaining away as mere passing fancies, personal eccentricities or anomalous beliefs the superstitious or bizarre notions of those to whom tradition has accorded great fame. We are warned to consider carefully whether such notions were not ingrained in the very being of those men and characteristic of their whole mental attitude. ✓

Science and magic are very unlike, but even the distinction between East and West varies according to where the speaker takes his stand. We have come to regard science as abstract truth, scientific investigation as necessarily correct and sensible; we forget that science has a past. In their actual history science and magic were not unassociated. Scientists might accept magical doctrines and magic might endeavor to classify its fancies and to account for them by natural causes. Roger Bacon could regard the attainment of magical results as the great end of experimental science. Francis Bacon could place magic in the same category with metaphysics and physics. ✓

It is with this mingling of magic and science—or more broadly of magic with learning in general—in the history of our Western world that this essay has to do. It is a theme of no narrow interest. Such ideas as have been cited, not only held by the most learned men of the times but incorporated in their scientific and philosophical systems—in so far as they had any—deserve consideration in the history of science and philosophy as well as in that of magic, or in an investigation of the mental make-up of the men of the past.

While, however, the place of magic in the intellectual history of Europe is our general subject, the present essay is far from being an attempt at a complete treatment of it. The aim is rather to illustrate that theme by a survey of learning during the period of the Roman Empire, when the divers threads of the thought and knowledge of the ancient world were to some extent united. The prominence of magic in mediæval science is perhaps better known and more generally admitted. Accordingly this essay will take for granted, except in so far as it has been illustrated in our first chapter, the presence of magic in mediæval learning, and will try to show that magical doctrines, credulity, mysticism, and love of the marvelous were not traits peculiar to mediæval thought, but that in this respect (as in others) there was close resemblance, probably strict continuity between the Roman world and later times. It was largely in order to bring out this resemblance, continuity and influence that the beliefs of various writers in the Middle Ages and early modern times were given in the first chapter. Let the reader compare them with those notions of men in the Roman Empire which will presently be set forth. If we are justified in thus regarding the Roman world as summarizing ancient science and helping to explain mediæval thought, we evidently, in taking our stand in that period secure a broad prospect and ought to obtain a fair idea of the place of magic in the intellectual history of Europe. In defining the field which we are to cover, it should be further said that Christian thought will not come into our discussion, since it did not greatly influence science and other secular learning until the close of the Roman Empire. Lastly, it should be clearly understood that we are here concerned with magic only as connected with science and with learning—only as accepted by educated men.

CHAPTER III

PLINY'S NATURAL HISTORY

WE should have to search long before finding a better starting-point for the consideration of the union of magic with the science of the Roman Empire and of the way in which that union influenced the Middle Ages than Pliny's *Natural History*. Its encyclopedic character affords a bird's-eye view of our entire subject. Its varied contents suggest practically all the themes of our discussion in succeeding chapters. Chronologically considered, it is satisfactory as an introduction, since it appeared in the early part of the Empire (77 A. D.).

I. *The character of the work.*—Pliny's treatise is far more than what we understand by a "Natural History." It is an attempt to cover the whole field of science; *rerum natura* is its subject.¹ This, as Pliny says, is a task which no single Greek or Roman has before attempted. He tells us that he treats of some 20,000 topics gleaned from the perusal of about 2,000 volumes, with the addition of many facts not contained in previous works and only recently

¹ "Praeterea iter est, non trita auctoribus via, nec qua peregrinari animus expetat. Nemo apud nos qui idem temptaverit, nemo apud Graecos qui unus omnia ea tractaverit." From his dedication to the Emperor Vespasian. C. Plinii Secundi, *Naturalis Historiae Libri xxxvii*. Ludovicus Janus, Lipsiae, 1870. 5 vols. in 3. I shall refer to passages by the division into chapters found in the editions of Hardouin, Valpy, Lemaire and Ajasson. Three modes of division are indicated in the edition of Janus. There is an English translation of the *Natural History*, with an introductory essay, by J. Bostock and H. T. Riley, London, 1855, 6 vols. (Bohn Library).

brought to light.¹ At first thought, then, the *Natural History*, vast in its scope and constituting a summary of the views of previous authorities, would seem the best single example of the science of the classical world. The fact that it touches upon many of the varieties and illustrates most of the characteristics of magic makes it the more fitting a starting-point for us. Indeed, Pliny makes frequent mention of the Magi, and in the opening chapters of his thirtieth book gives the most important extant discussion of magic by an ancient writer.

It is true, however, that Pliny does not seem to have been a man of much scientific training and experience. He said himself that his days were taken up with the performance of public duties, and that consequently his scientific labors were largely carried on in the evening hours.² Probably we should regard his book as little more than a compilation, and perhaps no very judicious compilation at that, in view of his maxim that there is no book so bad but that some good may be got from it.³ Perhaps we may not unjustly picture him to ourselves as collecting his material in a rather haphazard fashion; as not always aware of the latest theories or discoveries; as occasionally citing a fantastic writer instead of a more sober one; or as quoting incorrectly statements which his limited scientific knowledge

¹ "Viginti milia rerum dignarum cura . . . ex lectione voluminum circiter duum milium, quorum pauca admodum studiosi attingunt propter secretum materiæ, ex exquisitis auctoribus centum inclusimus xxxvi voluminibus, adiectis rebus plurimis quas aut ignoraverant priores aut postea invenerat vita." Also from the dedication. Pliny uses more than one hundred writers, however.

² "Homines enim sumus et occupati officiis, subcisivisque temporibus ista curamus, id est nocturnis, ne quis vestris putet cessatum horis." From the dedication.

³ Pliny the Younger to Macer in his *Letters*, bk. iii, ep. 5, ed. Keil, Leipzig, 1896.

prevented him from comprehending. Perhaps, too, he derived some of his data directly from popular report and superstition. Certainly to us to-day his work seems a disorderly and indiscriminate conglomeration of fact and legend on all sorts of subjects—disorderly, in that its author does not seem to have made any effort to sift his material, to compare and arrange his facts, even in his own mind; indiscriminate, in that Pliny seems to lack any standard of judgment between the true and the false, and to deem almost nothing too improbable, silly or indelicate to be mentioned. Ought we to consider such a work as truly representative of the beliefs of preceding centuries, or as an example of the best educated thought and science of its author's own age? This is a question which we must consider.

Yet as we read Pliny's pages we feel that he possessed elements of greatness. If he was equipped with little scientific training or experience, we should remember that little training or experience was necessary to deal with the science of those days. At least he sacrificed his life in an effort to investigate natural phenomena. Moreover, his faults were probably to a great extent common to his age. The tendency to regard anything written as of at least some value did not begin with him. Material had often before been collected in a haphazard manner. Lewes, in his book on the science of Aristotle, has described with truth even the famous *History of Animals* as unclassified in arrangement and careless in the selection of material.¹ Many of Pliny's marvelous assertions and absurd remedies purport to be from

¹ Geo. H. Lewes, *Aristotle; a Chapter from the History of Science*, London, 1864. Lewes also holds that while Aristotle often dwelt upon the value of experiment and the necessity of having a mass of facts before making general assertions, he in practice frequently jumped at conclusions.

the works of men of note, although possibly he was sometimes deceived by spurious writings. He frequently gives us to understand that he himself intends to maintain a cautious and critical frame of mind, and he makes great pretensions to immunity from that credulousness of human nature over which he will occasionally smile or philosophize.¹ When we take up Aristotle's *History of Animals* and Seneca's *Natural Questions*, it will become evident that Pliny's "science" was not very different in quality from that of the Greeks or from that of his own age. If he seldom gives us a clear-cut or complete exposition of a subject, it is probably because there was seldom one to be found. If he seems in a chronic state of mental confusion and incoherency, it is because his task staggered him. His work was by its nature so far impersonal that we can attribute its defects only in part to his personality.

On the whole, then, we probably shall not be greatly misled if we regard the *Historia Naturalis* as a sort of epitome of what men had believed about nature in the past or did believe in Pliny's own day. The author may not have portrayed past and present thought at their best but he portrayed them, and that in detail. "The greatest gull of antiquity"² was the Boswell of ancient science.

¹ *Nat. Hist.*, bk. xxvi, ch. 9. "Mirum esset profecto lucusque profectam credulitatem antiquorum saluberrimis ortam initiis, si in ulla re modum humana ingenia novissent atque non hanc ipsam medicinam ab Asclepiade repertam probaturi suo loco assemus evectam ultra Magos etiam. Haec est omni in re animorum condicio, ut a necessariis orsa primo cuncta pervenerint ad nimium." *Cf.* also bk. xxviii, ch. 1. "Quamquam et ipsi consensu prope iudicata eligere laboravimus potiusque curae rerum quam copiae institimus." In Pliny's dedication, however, occurs a sentence which gives one the impression that he felt rather in duty bound to accept tradition. "Res ardua, vetustis novitatem dare, novis auctoritatem, obseletis nitorem, obscuris lucem, fastiditis gratiam, *dubiis fidem*, omnibus vero naturam et naturae suae omnia."

² Quoted without reference by E. Eggleston, *The Transit of Civiliza-*

Pliny makes almost as good a representative of mediæval science as of that of the Roman world, and thus well illustrates the influence which the one had upon the other. Indeed not only is the *Natural History* just the sort of work that delighted the Middle Ages, but Pliny seems to have exerted a considerable direct influence on writers down through the sixteenth century. Isidore of Seville practically copied his unfavorable comments on the magi and his discussion of the powers of stones.¹ Bede seems to have owed a good deal to him. Alcuin openly praised that "most devoted investigator of nature."² Roger Bacon quoted him; the *Natural History* was a mine whence Agrippa dug much of the material for his *Occult Philosophy* and to which Porta seems equally indebted in his *Natural Magic*.

II. *Pliny's discussion of magic.*— Before illustrating Pliny's combination of magical lore with true and sane statements about nature, we should consider his discussion of what he was pleased to call magic; for just as he prided himself upon his freedom from excessive credulity in the abstract, so in regard to magic in particular he seems to have flattered himself that his position was quite different from what it actually was.

tion from England to America in the Seventeenth Century" (N. Y., 1901), p. 16. This interesting and valuable book contains much material illustrative of the science and superstitions of the times.

¹ *Etymologies*, bk. xvi, Migne, vol. lxxxii.

² *Alcuini Epistolæ*, 103, vol. vi, pp. 431-432, of *Bibliotheca Rerum Germanicarum*, ed. Philip Jaffé, Berlin, 1873. "Vel quid acutius quam quod naturalium rerum divitissimus [or devotissimus] inventor, Plinius Secundus, de caelestium siderum ratione exposuit, investigari valet?" In Migne's *Patrologia Latina*, vol. c, col. 278, the letter is given as number 85. For other references to Pliny by earlier writers, see *Bibliothèque Latine-Française*, C. L. F. Panckoucke, vol. cvi which forms the opening volume of Pliny's work in that set.

Pliny did have, however, a fairly clear idea of the extensive scope of magic as well as of its great age and currency. Not only did he declare that of all known arts it had exerted the greatest influence in every land and in almost every age, but "no one," he said, "should wonder that its authority has been very great, since it alone has embraced and combined into one the three other subjects which appeal most powerfully to man's mind."¹ For magic had invaded the domain of religion and had also made astrology a part of itself,² while "no one doubts that it originally sprang from medicine and crept in under the show of promoting health as a loftier and more holy medicine."³ Indeed, he thinks that the development of magic and of medicine have been parallel⁴ and that the latter is now in imminent danger of being overwhelmed by the follies of magic which have made men doubt whether plants possess any medicinal properties at all.⁵ Pliny, moreover, sees the connection of magic with the lore of the magi of Persia. Indeed, "magus" is his only word for a magician. But this does not lead him to admit what some persons—the philosopher Eudoxus, for instance—have asserted, that magic is the most splendid and useful branch of philosophy.⁶ For Pliny, magic is always something reprehensible.

The magi are either fools or imposters. They are a

¹ *Nat. Hist.*, bk. xxx, ch. 1. "Auctoritatem ei maxumam fuisse nemo miretur, quandoquidem sola artium tris alias imperiosissimas humanæ mentis complexa in unam se redigit."

² *Ibid.* He uses the words "mathematicas artes" instead of "astrologiam" but the words following make his meaning evident: "nullo non avido futura de sese sciendi atque ea e caelo verissime pati credente."

³ *Ibid.* "Natam primum e medicina nemo dubitat ac specie salutari inrepisse velut altiore[m] sanctiore[m]que medicinam."

⁴ Bk. xxx, ch. 2.

⁵ Bk. xxvi, ch. 9.

⁶ Bk. xxx, ch. 2. "Eudoxus qui inter sapientiae sectas clarissimam utilissimamque eam intellegi voluit."

genus vanissimum.¹ They believe such absurdities as that herbs can dry up swamps and rivers, open all barriers, turn hostile battle-lines in flight, and insure their possessor, wherever he may be, abundant provision for every need.² They make statements which Pliny thinks must have been dictated by a feeling of contempt and derision for the human race. They affirm that gems carved with the names of sun and moon and attached to the neck by hairs of the cynocephalus and feathers of the swallow will neutralize the effect of potions, win audience with kings, and, with the aid of some additional ceremony, ward off hail and locusts.³ They have the impudence to assert that the stone "heliotropium," combined with the plant of the same name and with due incantations, renders its bearer invisible.⁴ "Vanitas" is Pliny's stock-word for their statements. Nero proved how hollow are their pretenses by the fact that, although he was most eagerly devoted to the pursuit of magic arts and had every opportunity to acquire skill in them, he was unable to effect any marvels through their agency and abandoned the study of them.⁵

¹ Bk. xxviii, ch. 23.

² Bk. xxvi, ch. 9.

³ Bk. xxxvii, ch. 40. The word in this passage which I render as "potion" is in the Latin "veneficium"—a word difficult to translate owing to its double meaning. "Venenum" signifies a drug or potion of any sort, and then in a bad sense a drug used to poison or a potion used to bewitch. In a passage soon to be cited Pliny contrasts "veneficæ artes" to "magicæ artes" but I doubt if he always preserved such a distinction. A similar confusion exists in regard to the Greek word *φάρμακον*, as Plato sets forth clearly in his *Laws*. There are, he says, two kinds of poisons employed by men which cannot be clearly distinguished. One variety injures bodies "according to a natural law." "There is also another kind which persuades the more daring class that they can do injury by sorceries and incantations . . ." *Laws*, bk. xi, p. 933 (Steph.). Jowett's translation.

⁴ Bk. xxxvii, ch. 60. "Magorum inpuudentiæ vel manifestissimum in hac quoque exemplum est . . ."

⁵ Bk. xxx, ch. 5, 6.

Moreover, magi or magicians deal with the inhuman, the obscene and the abominable. Osthanes, and even the philosopher Democritus, are led by their devotion to magic into propounding such remedies as drinking human blood or utilizing in magic compounds or ceremonies portions of the corpses of men violently slain.¹ Magic is a malicious and criminal art. Its devotees attempt the transfer of disease from one person to another or the exercise of baleful sorcery.² "It cannot be sufficiently estimated how great a debt is due the Romans who did away with those monstrous rites in which to slay a man was most pious; nay more, to eat men most wholesome."³ In fine, we may rest persuaded that magic is "execrable, ineffectual and inane." Yet it possesses some shadow of truth, but is of avail through "veneficas artes . . . non magicas,"⁴ whatever that distinction may be.

III. *Illustrations of Pliny's fundamental belief in magic.*—Pliny, we have seen, made a bold pretense of utter disbelief in magic, and also censured the art on grounds of decency, morality and humanity. Yet despite this wholesale condemnation, in some places in his work it is difficult to tell where his quotations from magicians cease and where statements which he accepts recommence. Sometimes he explicitly quoted theories or facts from the writings of the "magi" without censure and without any expression of disbelief. If it is contended that he none the less regarded

¹ Bk. xxviii, ch. 2. Pliny's own medicine is not prudish, and elsewhere he gives instances of devotees of magic guarding against defilement. (Bk. xxx, ch. 6 and xxviii, ch. 19).

² Bk. xxviii, ch. 23. "Quanta vanitate," adds Pliny, "si falsum est, quanta vero noxia, si transferunt morbos!"

³ Bk. xxx, ch. 4.

⁴ Bk. xxx, ch. 6. "Proinde ita persuasum sit, intestabilem, inritam, inanem esse, habentem tamen quasdam veritatis umbras, sed in his veneficas artis pollere non magicas."

them as false and worthless, we may fairly ask, why then did he give them such a prominent place in his encyclopedia? Surely we must conclude either that he really had a liking for them himself and more than half believed them, or that previous works on nature were so full of such material and his own age so interested in such data that he could not but include much of this lore. Probably both alternatives are true. Finally, many things which Pliny states without any reference to the magi seem as false and absurd as the far-fetched assertions which he attributes to them and for which he shows so much scorn. Indeed, it hardly seems paradoxical to say that he hated the magi but liked their doctrines.

What clearer example of magic could one ask than the conclusion that the odor of the burning horn of a stag has the power of dispelling serpents, because enmity exists between stags and snakes, and the former track the latter to their holes and extract the snakes thence, despite all resistance, by the power of their breath? Or that on this same account the sovereign remedy for snake-bite comes "ex coagulo hinnulei matris in utero occisi?" Or that, since the stag is not subject to fever, the eating of its flesh will prevent that disease, especially if the animal has died of a single wound? What more magical than to fancy that the longest tooth of a fish could have any efficacy in the cure of fever? Or that excluding the person who had tied it on from the sight of the patient for five days would complete a perfect charm? Or that wearing as an amulet the carcass of a frog, minus the claws and wrapped in a piece of russet-colored cloth, would be of any aid against disease?¹ Yet the *Natural History* is full of such things.

To plants, for example, Pliny assigns powers no less

¹ Concerning the stag, see bk. viii, ch. 50. On the use of frogs and fishes to cure fevers, bk. xxxii, ch. 38.

marvelous than those which he has attributed to animals. There is one plant which, held in the hand, has a beneficial effect upon the groin; ¹ another overcomes the asp with torpor, and hence, beaten up with oil, is a remedy for the sting of that snake. ² Fern, he says, if mowed down with the edge of a reed or uprooted by a ploughshare on which a reed has been placed, will not spring up again. ³ Moreover, in his twenty-fourth book, immediately after having announced that he has sufficiently discussed for the present the marvellous properties attributed to herbs by the magi, ⁴ he proceeds to mention the following remedies. One is a quick cure for headache, and consists in gathering a plant growing on the head of a statue and attaching it to your neck with a red string. Another is a cure for tertian fever, and consists in plucking a certain herb before sunrise on the banks of a stream and in fastening it to the patient's left arm without his knowledge. A third recipe instructs us that plants which have taken root in a sieve that has been thrown into a hedge-row "*decerptae adalligataeque gravidis partus adcelerant.*" A fourth would have herbs growing on dung-hills a cure for quinzy, and a fifth assures us that sprains may be speedily cured by the application of a plant "*iuxta quam canes urinam fundunt,*" torn up by the roots and not allowed to touch iron. ⁵

Coming to minerals we find Pliny rather more reticent in regard to strange qualities. His account of gems is written mainly from the jeweler's point of view. When marvellous powers are mentioned, the magi are usually made re-

¹ Bk. xxvi, ch. 59.

² Bk. xxi, ch. 105.

³ Bk. xviii, ch. 8.

⁴ Bk. xxiv, ch. 102.

⁵ Bk. xxiv, chs. 106, 107, 109, 110, 111. Evidently these last remedies derive their force not merely from magic powers inherent in vegetation. The effect of ceremony and of circumstance becomes a factor.

sponsible, and such powers are frequently rejected as absurd. Pliny, however, grants some magic properties in certain stones. Molochitis, by some medicinal power which it possesses, guards infants against dangers;¹ and eumecas, placed beneath the head at night, causes oracular visions.² To water Pliny allows powers which we must regard as magical, for according to him certain rivers pass under the sea because of their hatred of it.³

In man, moreover, as well as in other creatures upon earth, there is magic power. Pliny mentions men whose eyes are able to exert strong fascination,⁴ others who fill serpents with terror and can cure snake-bite by merely touching the wound, and others who by their presence addle eggs in the vicinity.⁵ Pliny takes up the power of words and incantations in connection with man. Whether they have potency beyond what we expect ordinary speech to possess is a great and unanswered question. Our ancestors, Pliny says, always believed so, and in every-day life we often unconsciously accept such a view ourselves. If, for instance, we believe that the Vestal virgins can, by an imprecation, stop runaway slaves who are still within the city limits, we must accept the whole theory of the power of words. But, taken as individuals, the wisest men lack faith in the doctrine.⁶

¹ Bk. xxxvii, ch. 36.

² Bk. xxxvii, ch. 58.

³ Bk. ii, ch. 106.

⁴ Bk. vii, ch. 2. ". . . Qui visu quoque effascinent interimantque quos diutius intueantur, iratis praecipue oculis, quod eorum malum facilius sentire puberes. Notabilius esse quod pupillas binas in singulis habeant oculis."

⁵ Bk. xxviii, ch. 6. The eggs, however, it should be said, are represented as being beneath a setting hen.

⁶ Bk. xxviii, ch. 3. "Ex homine remediorum primum maxumae quaestionis et semper incertae est, polleatne aliquid verba et incantamenta

Pliny, then, believed in the possession of magic properties by well-nigh all varieties of terrestrial substances, nay even by colors and numbers, and in strange relations of occult sympathy, love and hatred between different things in the realm of nature. His acceptance of ceremony as efficacious has also been brought out to some extent. We have seen him attributing importance to death from a single wound, to suspension by a single hair, to fastening an amulet without the patient's knowledge, or to the absence for a time from the patient's sight of the person who attached it. We will consider one or two more such instances among the many which exist in his pages.

He who gathers the iris should be in a state of chastity. Three months beforehand let him soak the ground around the plant with hydromel—as a sort of atonement to appease the earth. When he comes to pluck it, he should first trace three circles about it with the point of a sword, and, the moment he plucks it, raise it aloft towards the heavens.¹ In another passage, in connection with the application of a mixture to an inflammatory tumor, Pliny says that persons of experience regard it as very important that the poultice be applied by a naked virgin and that both she and the

carminum. Quod si verum est, homini acceptum fieri oportere conveniat, sed viritum sapientissimi cuiusque respuit fides. In universum vero omnibus horis credit vita . . . Vestalis nostras hodie credimus nondum egressa urbe mancipia fugitiva retinere in loco precationibus, cum, si semel recipiatur ea ratio et deos preces aliquas exaudire aut illis moveri verbis, confitendum sit de tota coniectione. Prisci quidem nostri perpetuo talia credidere, difficilimumque ex his etiam fulmina elici, ut suo loco docuimus."

Pliny seems inclined to narrow down the problem of the power of words to the question whether the gods answer prayer or not, a question which takes us out of the field of magic unless he regarded prayer as a means of coercing the gods.

¹ Bk. xxi, ch. 19.

patient be fasting. Touching the sufferer with the back of her hand, she is to say, "Apollo forbids a disease to increase which a naked virgin restrains." Then, withdrawing her hand, she is to repeat the same words thrice and to join with the patient in spitting on the ground each time.¹

Pliny occasionally prefaces his marvelous remedies by some such expression as "it is said." This circumstance is scarcely to be taken as a sign of mental reservation, however, as the following absurd statement, which he makes upon his own authority and declares is easily tested by experiment, will indicate. "If a person repents of a blow given to another, either by hand or with a missile, let him spit at once into the palm of the hand which inflicted the blow, and all resentment in the person struck will instantly vanish." This is often proved, according to Pliny, in the case of beasts of burden, which can be induced to increase their speed by this method after the use of the whip has failed.²

One can, perhaps, make some distinction between the strange influences which Pliny credited and the statements of the magi which he rejected. I believe that he did not go to the length of affirming that plants or parts of animals could cause panics, procure provisions, win you royal favor, gain for you vengeance on your enemies, or make you invisible. But he was inconsistent enough. After asserting that a single fish but a few inches long could immediately

¹ Bk. xxvi, ch. 60. "Experti adfirmavere plurimum referre, si virgo inponat nuda ieiuna ieiuno et manu supina tangens dicat; 'Negat Apollo pestem posse crescere cui nuda virgo restinguat,' atque ita retrorsa manu ter dicat totiensque despuant ambo."

² Bk. xxviii, ch. 7. "Mirum dicimus, sed experimento facile: si quem paeniteat ictus eminus comminusve inlati et statim exspuat in mediam manum qua percussit, levatur ilico in percusso culpa. Hoc saepe delumbata quadripede adprobatur statim a tali remedio correcto animalis ingressu."

arrest the progress of the largest vessel by attaching itself to the keel of the ship,¹ was it for him to declare false the notion that a stone can calm winds or ward off hail and swarms of locusts? He characterized as "idle talk" the assertion of the magi that the stone "gorgonia" counteracted fascination,² but he had already written: "Id quoque convenit, quo nihil equidem libentius crediderim, tactis omnino menstruo postibus inritas fieri magorum artes, generis vanissimi, ut aestimare licet."³ Apparently, then, the only charge which he could bring against magicians without reflecting upon himself was that of malicious and criminal practices. His beliefs were much like theirs.

Indeed, the varieties of magic in the *Natural History* have not yet been exhausted. For one thing, we must consider Pliny's position in regard to magic properties of the stars as well as of terrestrial matter. He believed in astrology, at least to some extent, although one might not think it if one read only the passage in which he speaks of the debt of gratitude mankind owe to the great geniuses who have freed them from superstitious fear of eclipses.⁴ He could, nevertheless, in naming some prominent personage in each of the primary arts and sciences, mention Berosus, to whom a public statue has been erected by the Athenians in honor of his skill in prognostication, in connection with astrology.⁵

Pliny himself holds that the universe is a divinity, "holy eternal, vast, all in all—nay, in truth is itself all," a propo-

¹ Bk. xxxii, ch. 1.

² Bk. xxxvii, ch. 59.

³ Bk. xxviii, ch. 23.

⁴ Bk. ii, ch. 9. Indeed, in bk. ii, ch. 30, he gives examples of ominous eclipses of the sun, although it is true that they were also of unusual length.

⁵ Bk. vii, ch. 37. "Astrologia Berosus cui ob divinas praedictiones Athenienses publice in gymnasio statuam inaurata lingua statuere."

sition rather favorable to astrological theory.¹ The sun is the mind and soul of the whole world and the chief governor of nature.² The planets affect each other. A cold star renders another approaching it pale; a hot star causes its neighbor to redden; a windy planet gives those near it a lowering aspect.³ Saturn is cold and rigid; Mars a flaming fire; Jupiter, located between them, is temperate and salubrious.⁴ When the planets reach a certain point in their orbits, they are deflected from their regular course by the rays of the sun.⁵

Besides effects upon each other the planets exert especial influence upon the earth. "Potentia autem ad terram mag-nopere eorum pertinens."⁶ They govern, each according to its nature, the weather on our globe.⁷ The planets also have great influence upon diseases and on animal and plant life in general, although Pliny does not dwell upon this point at any length.⁸ The moon, a feminine and nocturnal star, stirs up humors on earth and is powerful in producing

¹ Bk. ii, ch. 1. "Mundum . . . numen esse credi par est. Sacer est, aeternus, inmensus, totus in toto, immo vero ipse totum."

² Bk. ii, ch. 4. "Hunc esse mundi totius animum ac planius mentem, hunc principale naturae regimen ac numen credere decet opera eius aestimantes."

³ Bk. ii, ch. 16.

⁴ Bk. ii, ch. 6.

⁵ Bk. ii, ch. 13.

⁶ Bk. ii, ch. 6. See also bk. ii, ch. 39. "Ut solis ergo natura temperando intellegitur anno sic reliquorum quoque siderum propria est quibusque vis et ad suam cuique naturam fertilis."

⁷ Bk. ii, ch. 39. For the general physical interaction of earth and stars as conceived by Pliny see bk. ii, ch. 38. "Terrena in caelum tendentia deprimit siderum vis, eademque quae sponte non subeant ad se trahit. Decidunt imbres, nebulae subeunt, siccantur amnes, ruunt grandines, torrent radii et terram in medio mundi undique inpellunt, iidem infracti resiliunt et quae potuere auferunt secum. Vapor ex alto cadit rursumque in altum redit. Venti ingruunt inanes iidemque cum rapina remeant. Tot animalium haustus spiritum e sublimi trahit, at ille contra nititur, tellusque ut inani caelo spiritum fundit."

⁸ Bk. ii, ch. 41.

putrefaction and corruption in matter.¹ By the nature of Venus every thing on earth is generated.²

To what extent the planets rule man's life Pliny does not specify—an instance of prudent reticence on his part, if he really consciously avoided the question. He disclaims any belief in the vulgar notion that a star, varying in brightness according to our wealth, is assigned to each of us, and that the eternal stars rise and fade at the birth or death of insignificant mortals. "Non tanta caelo societas nobiscum est ut nostro fato mortalis sit ibi quoque siderum fulgor."³ But thus to deny that the stars are ruled by man's destiny or doings is far from refusing to believe that men's lives are ordered by the stars. Pliny, as we have seen, holds that Venus has a considerable influence over the process of birth in all animals. Also he certainly accepts the portentous character of various particular celestial phenomena. "From the stars celestial fire is vomited forth bearing omens of the future."⁴ He gives instances from Roman history of comets which signalled disaster, expounds the theory that their significance is to be determined from the direction in which they move and the heavenly body whose powers they receive, and states that the particular phase of life to which they apply may be deduced from the shape which they assume or from their position in relation to the signs of the zodiac.⁵

¹ Bk. ii, ch. 104.

² Bk. ii, ch. 6. "Huius natura cuncta generantur in terris, namque in alterutro exortu genitili rore conspergens non terrae modo conceptus inplet verum animantium quoque omnium stimulat."

³ Bk. ii, ch. 6.

⁴ Bk. ii, ch. 18. "A sidere caelestis ignis exspuitur praescita secum adferens."

⁵ Bk. ii, ch. 23. The part dealing with the shape and position of the comet reads: "Tibiarum specie musicae arti portendere, obscenis autem moribus in verendis partibus signorum, ingeniis et eruditioni, si tri-

Pliny's belief in portents seems to have been general and not limited to celestial phenomena. In a passage on earthquakes he declares, "Never has the city of Rome shaken but that this was a forewarning of some future event."¹

Pliny is less certain in regard to the superstitious observances so common then, to secure good luck or ward off evil fortune. In chapter five of his twenty-eighth book he gives quite a list of practices, such as selecting persons with lucky names to lead the victims at public lustrations, saluting those who sneeze, placing saliva behind the ear to escape mental anxiety, removing rings while eating, averting the ill-omen of mentioning fire at meal-time by pouring water beneath the table, and other superstitious table etiquette. He cites beliefs of the same nature, as that odd numbers are for every purpose the more efficacious, that medicines do no good if placed on a table before being administered, that baldness and headaches may be prevented by cutting the hair on the seventeenth and twenty-ninth days of the moon, and that women who walk along country roads twirling distaffs, or even having these uncovered, bring very bad luck, especially to the crops. He seems to have inclined to the belief that there was a modicum of truth, at any rate, in these notions and customs—and certainly we have already seen him affirming the validity of analogous practices—but he finally decides that amid the great variety of opinion existing in the matter he will not be dogmatic and that each person may think as he deems best. His attitude is much the same in regard to divination from thunder and lightning.²

quetram figuram quadratamve paribus angulis ad aliquos perennium stellarum situs edant, venena fundere in capite septentrionalis austrinaeve serpentis."

¹ Bk. ii, ch. 86. "Numquam urbs Roma tremuit, ut non futuri eventus alicuius id praeunntium esset." See also bk. ii, ch. 85.

² Bk. ii, ch. 54.

With all the foolish notions which he imbibed from antiquity or into which his mind, over-hospitable to the fantastic and marvelous, led him, Pliny had one good scientific trait. He might believe in magic but he had no liking for the esoteric. His mind might be confused but it was not mystical. He had no desire to hide the "secrets" of science and philosophy from the public gaze, to wrap them up in obscure and allegorical verbiage lest the unworthy comprehend them. On the contrary, he sharply remarked apropos the lack of information about the medicinal properties of plants, that there was a most shameful reason for this scarcity, namely, that even those who knew were unwilling to give forth their knowledge, "as if that would be lost to themselves which they passed on to others."¹

Such, then, is the *Natural History*. Pliny gives evidence that many of the most intelligent men were coming to doubt a large part of the superstitious beliefs and observances once universally prevalent, and he himself makes a brave effort to assume a critical and judicious attitude. Yet his work contains a great deal of magic and reveals, what this essay in its entirety will make further evident, the error of such a statement as the following from Dr. White's *Warfare of Science and Theology*:

Under the old Empire a real science was coming in and thought progressing. Both the theory and practice of magic were more and more held up to ridicule. Even as early a writer as Ennius ridiculed the idea that magicians, who were generally poor and hungry themselves, could bestow wealth on others; Pliny, in his *Natural Philosophy*, showed at great length their absurdities and cheatery; others followed in the same line

¹ Bk. xxv, ch. 6. "Turpissima causa raritatis quod etiam qui sciunt demonstrare nolunt, tamquam ipsis perituum sit quod tradiderint aliis."

of thought, and the whole theory, except among the very lowest classes, seemed dying out.¹

¹ Vol. i, p. 382. Dr. White's book, which imputes well-nigh every fantastic feature of mediæval science to Christian institutions and theology, is written with too little use of primary sources, and considerable ignorance of the character of ancient science.

Aside from unfairness in the general tone and mode of presentation,—Cosmas Indicopleustes, for instance, is set forth as a typical representative of mediæval science of the clerical type, while Albertus Magnus is not permitted to stand as a representative of "theological" science at all but is pictured as one inclined to true science who was frightened into the paths of theology by an ecclesiastical tyranny bitterly hostile to scientific endeavor—the author makes some inexcusable mistakes in details. For instance, after speaking of "theological" methods, he proceeds (vol. i, p. 33): "Hence such contributions as that the basilisk kills serpents by his breath and men by his glance," apparently in serene ignorance of the fact that this statement about the basilisk was a commonplace of ancient science. Again (vol. i, p. 386) he tells us that in 1163 the Council of Tours and Alexander III "forbade the study of physics to ecclesiastics, which of course in that age meant the prohibition of all such scientific studies to the only persons likely to make them." On turning to the passage cited we find the prohibition to be that persons who have vowed to lead a monastic life shall not absent themselves from their monasteries for the purpose of studying "physica" (which the context indicates means medicine, not physics), or reading law. The canon does not apply to all ecclesiastics, and it is as absurd to infer from it that "all such scientific studies were prohibited to the only persons likely to make them" as to conclude that henceforth no one could study civil law. To argue from a single piece of legislation is hazardous in any case. (For the canon, see Harduin, vol. vi, pt. ii, p. 1598. Canon viii.)

On the whole the book strikes one as an unscientific eulogy of science and a bigoted attack on bigotry. The inconsistency of the author's professions and practice, to say nothing of the somewhat perplexing arrangement of his material, reminds one of Pliny's *Natural History*.

CHAPTER IV

SOME ANTECEDENTS OF THE BELIEF IN MAGIC IN THE ROMAN EMPIRE

WRITERS who have discussed the intellectual life under the Roman Empire generally agree that it was not marked by originality and creative power, and owed a perhaps unusually large debt to the past. The cosmopolitan character of the Empire, the mingling at that time of the science, theology, philosophy and superstition of different nations, religions and races, deserve equal emphasis. The lore of the magi of Persia, the occult science of Egypt, perhaps even the doctrines of the gymnosophists of India, may be regarded, together with that belief in divination which played such a rôle in classical religion and government and with other superstitious notions of Greeks and Italians, as contributory to the prominence of magic in the Empire.

To discuss with any attempt at completeness the influence of the past upon the belief in magic in the Empire lies, however, outside the province of this essay. Pliny has shown us something of the union of magic with science in the literature before his day. Philo of Alexandria, Apuleius and the fame of Hermes Trismegistus may give us some notion of the influence of the East. In other writers of the period of which we treat one may discern further traces of the thought and learning of the past. In general such evidence must suffice. We shall, however, presently take occasion to support our contention that Pliny gives one

a fairly good idea of science before his day, by a few citations from two writers of repute, one a Greek and one a Roman, of the period before the Empire. Moreover, the great historical importance of Greek philosophy and the fact that, besides playing a prominent part in Roman culture, it exercised a powerful direct influence on Christian Europe long after the fall of Rome, seem to justify some treatment of its doctrines. Especially may we mention Plato and Aristotle, who exerted great influence not only during classical times, but also the one in the Middle Ages, the other in the period following the decline of Scholasticism.

We naturally incline to regard this earlier period of more or less distinctively Greek thought and learning as a golden age, comparatively speaking, characterized by sane thinking if not also by careful investigation of nature, and free from superstition, credulity and mysticism. The general opinion seems to be that magic entered science and learning and was accepted by men of intellectual prominence only when mental decay had set in and when Oriental influence had become a powerful force.

Yet something might be said for the opposite view that this earlier age combined magic with its science and philosophy as much, if not more, than the later time. We know that Greek philosophy had its beginnings in mythology; and if the representatives of its maturity accepted the Greek religion with its auspices drawn from sacrifices, its oracles and the like, we may with reason ask, is it probable that they would hesitate to give similar doctrines a place in their scientific and philosophical systems? Pliny, for his part, evidently regarded himself as less credulous and as less inclined to magic than the ancient Greeks, although it is true that he attributed their belief to Oriental influence. He declared that Pythagoras, Empedocles, Democritus and Plato had learned the magic art abroad and had taught it on their

return.¹ Beside the name of Hippocrates in the field of medicine he set that of Democritus in the domain of magic.² Elsewhere he said that Pythagoras and Democritus, having embraced the doctrine of the magi, first expounded the properties of magic plants in the Western world.³ In Cicero's *De Divinatione*, Epicurus is alone of the Greek philosophers declared free from trust in divination, and Panaetius is said to have been the only Stoic to reject astrology.⁴

Fortunately we are not here concerned to measure either relatively or absolutely with any attempt at exactness the amount of magic in the learning of the closing centuries of Greek national life, but only to investigate whether in the philosophy of the Greeks there were not theories at least liable to encourage a later age to belief in magic. There

¹ *Nat. Hist.*, bk. xxx, ch. 2. "Certe Pythagoras, Empedocles, Democritus, Plato ad hanc discendam navigavere exsiliis verius quam peregrinationibus susceptis. Hanc reversi praedicavere, hanc in arcanis habuere." Philostratus, as we shall see, mentioned the same men as associating with the magi, although he denied that they embraced the magic art. (See *infra*, p. 66.)

² Bk. xxx, ch. 2. "Plenumque miraculi et hoc, pariter utrasque artis effloruisse, medicinam dico et magicenque, eadem aetate illam Hippocrate, hanc Democrito inlustrantibus." Pliny may have got a false idea of the teachings of Democritus by accepting as genuine works which were not. He tells us (bk. xxx, ch. 2) that some persons have vainly tried to save Democritus' reputation by denying that certain works are his. "Democritus Apellobechen Coptiten et Dardanum et Phoenicem inlustravit voluminibus Dardani in sepulchrum eius petitis, suis vero ex disciplina eorum editis, quae recepta ab ullis hominum atque transisse per memoriam aequae ac nihil in vita mirandum est. In tantum fides istis fasque omne deest, adeo ut qui cetera in viro probant, haec opera eius esse inficiuntur. Sed frustra. Hunc enim maxime adfixisse animis eam dulcedinem constat."

³ Bk. xxiv, ch. 9. "In promisso herbarum mirabilium occurrit aliqua dicere et de Magicis. Quae enim mirabiliores? Primi eas in nostro orbe celebravere Pythagoras atque Democritus, consecrati Magos."

⁴ *De Divinatione*, bk. i, ch. 39, and bk. ii, ch. 42.

was, for instance, the view of the Stoics that the universe is a single living whole—a theory well fitted to form the starting-point for a belief in sympathetic magic. Also their doctrine that events are all arranged in a fatal causal series was favorable to divination. Quintus Cicero, represented as upholding the truth of that art, cites the Stoics as authority, and we may safely assume that Seneca drew his view of divination largely from the same source.

The doctrine of Pythagoras also deserves mention, for it has played a great rôle in history. He is said to have held that the whole world is, and that the life of man ought to be, harmoniously ordered in accordance with mathematical principles; nay more, that such principles are living things and that numbers are the essence of the universe. The logical conclusion is that by skilful use of mere numbers man can move heaven and earth. As the poet, eulogizing Michael Scot, put it; the “mathematici” by their art affect numbers, by numbers affect the procession of the stars, and by the stars move the universe. The employment of characters constructed of numbers or of geometrical figures, the use of numerical formulæ as remedies or of compounds of three portions of three kinds of drugs applied during three successive days, is raised from the plane of superstition to the level of science. It is not unreasonable to suppose that the heavenly bodies with their apparently unchanging regularity of movement are the governors of our existence. Plato, who adopted the Pythagorean doctrines at least to a considerable extent, declared that the loftiest function of the sense of sight was to survey the heavens, an occupation by which we gain philosophy.¹ Like the Pythagoreans also, he associated the four elements with regular solids. The

¹ *Timæus*, p. 47 (Steph.). The passage may be found in English translation in vol. iii, p. 466, of B. Jowett's *Plato's Dialogues* (3d edit.), London, 1892.

cube represented earth; the octohedron was water; the tetrahedron, fire; and the icosahedron, air.¹ The remaining regular solid, the dodecahedron, was held to represent the universe as a whole.

Towards magic, as he understood it, Plato's attitude seems to have been sceptical, though perhaps not confidently so. He maintained that persons acquainted with medicine and prophets or diviners were the only ones who could know the nature of poisons which worked naturally, and of such things as incantations, magic knots and waxen images; and that since other men had no certain knowledge of such things, they ought not to fear but to despise them. He admitted, however, that there was no use in trying to convince most men of this and that legislation against sorcery was necessary.² He himself occasionally mentioned charms or soothsaying in a matter-of-fact way.

Whatever Plato's opinion of vulgar magic, his view of nature was much like that of primitive man. He humanized material objects and materialized spiritual characteristics. For instance, he asserted that the gods placed the lungs about the heart "as a soft spring that, when passion was rife within, the heart, beating against a yielding body, might be cooled and suffer less, and might thus become more ready to join with passion in the service of reason."³ He affirmed that the liver was designed for divination, and was a sort of mirror on which the thoughts of the intellect fell and in which the images of the soul were reflected, but that its predictions ceased to be clear after death.⁴ Plato spoke of the existence of harmonious love between the ele-

¹ *Timaeus*, pp. 53-56 (Steph.); Jowett, vol. iii, pp. 473-476.

² *Laws*, bk. xi, p. 933 (Steph.).

³ *Timaeus*, p. 70 (Steph.). The translation is that of Jowett, vol. iii, p. 492.

⁴ *Ibid.*, p. 71 (Steph.).

ments as the source of health and plenty for vegetation, beasts and men. Their "wanton love" he made the cause of pestilence and disease. To understand both varieties of love "in relation to the revolutions of the heavenly bodies and the seasons of the year is," he tells us, "termed astronomy."¹ This suggests that he believed in astrology—in the potent influence of the stars over all changes in earthly matter. He called the stars "divine and eternal animals, ever abiding."² The "lower gods," of whom many at least are identical with the heavenly bodies, form men who, if they live well, return after death each to a happy existence in his proper star.³ The implication is, though Plato does not say so distinctly, that the stars influence human life.

Aristotle's doctrine was similar. Windelband has well expressed his view:

The stars themselves were . . . for Aristotle beings of super-human intelligence, incorporate deities. They appeared to him as the purer forms, those more like the deity, and from them a purposive rational influence upon the lower life of the earth seemed to proceed—a thought which became the root of mediæval astrology.⁴

Moreover, "his theory of the subordinate gods of the spheres of the planets . . . provided for a later demonology."⁵ And a belief in demons fosters a belief in magic. For such subordinate gods—on the one hand movers of nature's forces, and on the other hand subject to passions like man and open to influence through symbols and con-

¹ *Symposium*, p. 188 (Steph.). Translated by Jowett, vol. i, p. 558.

² *Timæus*, p. 40 (Steph.). Jowett, vol. iii, p. 459.

³ *Ibid.*, pp. 41, 42 (Steph.).

⁴ W. Windelband, *History of Philosophy*, p. 147. English translation by J. H. Tufts. Macmillans, 1898.

⁵ Windelband, *Hist. of Ancient Philos.*, p. 272. Eng. transl. by H. E. Cushman. Scribners, 1899.

jurations—are evidently most suitable agents for the worker of magic to employ. We must also mention Aristotle's attribution of "souls" to plants and animals, a theory which would readily lend itself to an assumption of magic properties in herbs and beasts.

Aristotle himself in his works upon natural science accepts such properties to a considerable extent. A few citations from his *History of Animals*¹ will show that we have not been misled in inferring from Pliny that Greek science at its best was not untainted by magic. The *History of Animals* seems to attribute undue influence to the full moon and the dog-star,² and to hold that honey is distilled from the air by the stars and that the wax alone is made by the bees.³ Aristotle repeats the story that the salamander is a fire-extinguisher.⁴ He mentions as a cure for the sting of a certain snake the drinking of a small stone "taken from the tomb of one of the ancient kings." Like Pliny, he makes human saliva a defense against serpents.⁵ He says of certain things that they are ominous of certain events.⁶

¹ *Aristotelis De Animalibus Historiæ Libri X* (Graece et Latine. Io. Gottlob Schneider. Lipsiae, 1811). Vol. i contains the Greek text. In the following foot-notes I shall refer to the book, chapter and section by Roman and arabic numerals, but in the text the book and chapters are denoted by letters of the Greek alphabet. There is an English translation of the work by Richard Creswell, London, 1862. (Bohn Library.)

² Bk. v, ch. xx, sec. 2; bk. vi, ch. xi, sec. 2; bk. vi, ch. xiv, sec. 1; bk. vii, ch. xi; bk. viii, ch. xvii, sec. 4; bk. viii, ch. xx, sec. 12.

³ Bk. v, ch. xix, sec. 4. Γίγνεται δὲ κηρίον μὲν ἐξ ἀνθέων. κήρωσιν δὲ φέροσιν ἀπὸ τοῦ δακρύου τῶν δένδρων, μέλι δὲ τὸ πίπτον ἐκ τοῦ ἀέρος καὶ μάλιστα ἐν ταῖς τῶν ἀστρῶν ἐπιτολαῖς, καὶ ὅταν κατασκήψῃ ἡ Ἥλιος. Ὅλως δ' οὐ γίγνεται μέλι πρὸς πλειάδος ἐπιτολῆς. τὸν μὲν οὖν κηρὸν ποιεῖ, ὡσπερ εἶρηται, ἐκ τῶν ἀνθέων, τὸ δὲ μέλι ὅτι οὐ ποιεῖ, ἀλλὰ φέρει τὸ πίπτον, σημεῖον. ἐν μᾶ γὰρ ἢ ἐν δυσὶν ἡμέραις πλήρη εὐρίσκουσι τὰ σμήνη οἱ μελιττοῦργοι μέλιτος. Ἐπι δὲ τοῦ μετοπάρου ἄνθη γίγνεται μὲν, μέλι δ' οὐ, ὅταν ἀφαιρεθῇ.

⁴ Bk. v, ch. xvii, sec. 13.

⁵ Bk. viii, ch. xxviii, sec. 2.

⁶ Bk. iii, ch. ix, sec. 7 and bk. vi, ch. ii, sec. 4.

He affirms that the hen-partridge is affected by the mere breath of the cock or by a breeze from his direction.¹ He thinks that insects are spontaneously generated from mud, dung, wood, or flesh.² He says it is plain that the Narce causes stupefaction in both fish and men.³ He has not only an idea that those with lice in their hair are less subject to headaches, but also a notion that those who have lice and take baths become more liable to the pest when they change the water in which they wash themselves.⁴ Another amusing illusion which he records is that calves will suffer less in their feet if their horns are waxed.⁵ Thus the pages of Aristotle give ground for belief that the fantasticalness of mediæval science was due to "the clear light of Hellas" as well as to the gloom of the "Dark Ages."

The book by a Roman which we are to consider as illustrative of the condition of science before the age of the Empire is Cato's treatise on agriculture. Several passages emphasize the importance of such conditions as that the moon should be new or waning or not shining during the performance of such acts as the transplanting of trees or the manuring of meadows.⁶ It is also directed that in administering medicine to oxen the man giving the dose shall have fasted previously and that both he and the ox stand upright during the operation.⁷ One medicine prescribed

¹ Bk. v, ch. iv, sec. 7 and bk. vi, ch. ii, sec. 9. See also bk. vi, ch. xvii, sec. 4.

² Bk. v, ch. xvii, sec. 2.

³ Bk. ix, ch. xxv, sec. 2.

⁴ Bk. v, ch. xxv, sec. 2.

⁵ Bk. viii, ch. ix, sec. 1.

⁶ *De Re Rustica*, chs. 26, 31, 37, 40, 50. *Scriptores Rei Rusticae Veteres Latini. Tomus Primus. Io. Matthias Gesnerus, Lipsiae, 1773.* The speed with which I progressed through the *De Re Rustica* was accelerated by the fact that Mr. E. H. Oliver, Ph. D., then of the School of Political Science, Columbia University, kindly lent me an English translation which he had made of that work.

⁷ *De Re Rustica*, ch. 71. See also *ibid.*, ch. 70.

for cattle is a mixture of 3 grains of salt, 3 leaves of laurel, 3 fibres of leek, 3 tufts of ulpican leek, 3 sprigs of the savin, 3 leaves of rue, 3 stalks of the white vine, 3 white beans, 3 live coals, 3 sextarii of wine. Each ox is to be given a portion for three days and the whole is to be divided so that it will suffice for exactly three doses.¹ To heal a sprain or fracture the singing of the following nonsensical incantation or formula is recommended: "In alios S. F. motas vaeta daries dardaries astataries dissunapiter."² This was written by a man generally supposed to have had much common sense and who was enlightened enough to wonder how two augurs could let their eyes meet without laughing.

¹ *De Re Rustica*, ch. 70.

² *De Re Rustica*, ch. 160. "S. F." probably means "Sanitas Fracto." Two alternative charms are also suggested, namely, "Huat hanat huat ista pista sista domiabo damnaustra" and "Huat huat huat ista sis tar sis ardannabon dunnaustra."

CHAPTER V

BELIEF IN MAGIC IN THE EMPIRE

HAVING shown reason for believing that the *Natural History* is a fairly accurate mirror of the science of the past, we come now to examine Pliny's own age and to observe to what extent his attitude towards magic was characteristic of it. "His own age," I say, but this is only roughly speaking, for it is the general period of the Roman Empire that we shall now consider, with the exception of the closing century which we reserve for later discussion. We shall have now to speak first of the general attitude towards magic in the Empire, and then in particular of two or three men or works that corroborate the rich evidence which Pliny, for the most part unconsciously, gave of the place of magic in the intellectual life of the time.

I. *General attitude.*—At the start, just as in our discussion of the *Natural History*, we find it necessary to distinguish the position of men towards what they called "magic." Pliny's condemnation of the magi and of all their beliefs as a matter of general principle was probably the regular attitude. A stigma seems to have been attached to the word "magic;" and magi seem to have been regarded as dangerous characters. In his history Dio Cassius represents Mæcenas as warning Octavius Cæsar that while the practice of divination is necessary, and augury by sacrifices and flight of birds an art to be encouraged, magicians ought to be entirely done away with. For, telling the truth in some cases

but lying in more, they incite many persons to revolt.¹ The prejudice in the Empire against magic is further illustrated by the fact that pagan and Christian controversialists seldom failed to impute to the opposing religion the practice of this malign art.

Now and then some learned man like Eudoxus might hold that the doctrines of the magi of Persia called for eulogy rather than reproach. Thus Apuleius, in his *Defensio* against the accusation of magic brought against him, explained that *magus* in the Persian language was equivalent to the Latin *sacerdos* or priest, and that among the four greatest men of the realm selected to educate the heir to the Persian throne, one had the task of instructing him in the magic of Zoroaster. This magic dealt with "the rules of ceremonial, the due observance of the sacred, the law of religious rites."² It was the cult of the gods.

Do you hear, you who rashly charge me with magic, that this is acceptable to the immortal gods, consists of celebrating and reverencing them, is pious and prophetic, and long since held by Zoroaster and Oromagus, its authors, to be not divine? Nay, it is included among the chief studies of the Persians and the Persians no more think of rashly allowing any to become a magician than to become a king.³

¹Dio Cassius, ch. lii, sec. 36. *μαντικὴ μὲν γὰρ ἀναγκαία ἐστὶ, τινὲς καὶ ἱερῶν καὶ οἰωνιστὰς ἀπέδειξον, οἷς οἱ βουλόμενοι τι κοινόμεσθαι τοὺς δὲ δὴ μαγευτὰς πᾶν οὐκ εἶναι προσήκει. πολλοὺς γὰρ πολλὰκις οἱ μὲν τινα ἀληθῆ, τὰ δὲ δὴ πλείω ψευδῆ λέγοντες, νευχμοῖν ἐπαίρουσι.*

Lecky translates the passage in his *History of European Morals*, vol. i, p. 399. The next sentence of the passage is also worth noting: *τὸ δ' αὐτὸ τοῦτο καὶ τῶν φιλοσοφῶν προσποιουμένων οὐκ ἕλιγοι ποιοῦσι.*

²*Apologia*, ch. xxv (Van der Vliet, 1900). "Leges cerimoniarum, f"

³*Ibid.*, ch. xxvi. "Auditisme, esse diis immortalibus accept"

Apologia et Rhetorica
rum, ius re
qui est
li est

But if his accusers mean magic in the popular sense, that is, Apuleius grants, a different matter.

Even educated men, however, probably more often, like Pliny, regarded the magi as all one with other magicians. Philostratus, in his life of Apollonius of Tyana, seems to approximate much closer to this position than to that taken by Apuleius, although one would expect a biographer of that mystic personage to view the magi with favor. Philostratus declares that Apollonius was no magician, although he did associate with the magi of Babylonia, the Brahmins of India, and the gymnosophists of Egypt. For he was like Empedocles, Pythagoras, Democritus and Plato who frequented those sects and yet did not embrace the (magic) art.¹

Of what we should call magic, however, there was a plenty in the Roman Empire, as in fact the words of Dio Cassius have indicated.² Besides the general acceptance of divination there was a great deal of superstitious medicine. There seems to be little room for doubt that Pliny's diatribes against the medical art were justifiable, and that his own trust in marvelous medicinal properties of animals and plants was often equalled. Men of the highest eminence in public life, whom one would expect to have had at their disposal the best medical talent of the time, are reported to

piam scilicet et divini scientem, iam inde a Zoroastro et Oromazo, auctoribus suis nobilem, caelitum antistitam? Quippe qui inter prima regalia docetur, nec ulli temere inter Persas concessum est magum esse, haud magis quam regnare." This definition reminds one of Agrippa von Nettesheim's praise of "that science divine beyond all human tracing." In a less degree—for with Apuleius magic is the cult of the gods and not much concerned with material things—it recalls the high place assigned to magic by Porta and Francis Bacon.

¹ Bk. i, ch. 2 of the life of Apollonius in the works of Philostratus as edited by Gottfridus Olearius. Lipsiae, 1709. *ὀμιλήσαντες μάγους καὶ πολλὰ δαιμόνια εἰπόντες οὐκ ὑπέχθησαν τῆ τέχνη.*

² Indeed "magic," though condemned, was popular, and charlatans calling themselves "magi" did a thriving business.

have employed the most absurd remedies. Suetonius tells us that the Emperor Augustus wore seal's skin, his successor Tiberius laurel leaves, as a protection against lightning.¹ Pliny recounts how M. Servilius Nonianus, *princeps civitatis*, fearing ophthalmia, had fastened to his neck a piece of linen containing some paper on which were written the Greek letters P and A. This was done before any mention of the disease was allowed to be made to him or by him. Mucianus, thrice consul, carried a live fly around in a bit of white linen for a similar purpose, and of course both men attributed their escape from disease to these bizarre methods.² Moreover, much magic has been supposed to have been involved in the numerous Mysteries to which men sought initiation and in the Oriental cults which became so popular. Astrology was seemingly as universally cultivated as in the Middle Ages, and that, too, though perhaps in Roman times it was in appearance less of a science and more of a superstition.

There were occasional imperial edicts against astrologers, it is true, and even sporadic persecution of them. But the explanation of such measures is belief, not scepticism, and they denote not disbelief in the art itself but disapproval of the use to which it was put—such as revealing the fate of the present and the name of the coming ruler. Almost every emperor had an astrologer at his court, and the historians of the period delighted in telling stories of astrologers who foretold their own deaths, or of monarchs who in vain attempted to thwart the decrees of fate.³ Alexander Seve-

¹ Suetonius, *Aug.*, ch. xc; *Tiber.*, ch. lxix. Cited by W. E. H. Lecky. *Hist. of European Morals* (London, 1899), vol. i, p. 367. Lecky gives a large amount of material on superstition in the Roman Empire.

² *Nat. Hist.*, bk. xxviii, ch. 5.

³ A. Bouché Leclercq. "L'Astrologie dans le monde romain." *Revue Hist.*, vol. lxxv, pp. 249 *et seq.* If we may believe the Roman historians,

rus is said to have founded chairs of astrology salaried by the state and with provision for scholarships for students.¹ Occasional persecution perhaps made the *mathematici* more highly valued, and the jibes of the satirists against astrologers and their followers attest rather than disprove the popularity of the art. Pliny the Elder and Tacitus asserted its great currency.²

The best science of the Empire reflected to a considerable extent these superstitions sanctioned by public opinion, as our discussion of Seneca and Ptolemy will indicate in some detail. For the present we may observe how the great Galen—whose authority reduced to a single school the many quarreling medical sects of his day, was later implicitly accepted by the Arabs, and then dominated European medicine to the time of Paracelsus—was not above astrological medicine or the use of fantastical remedies. He displayed trust in amulets and believed that such things as the ashes of frogs or “hippocampi” have remedial power.³ He held that the critical days of disease are largely influenced by the moon, and affirmed that we receive “the force of all the stars above.”⁴ It should be noted moreover that in one passage,

Tiberius was a devotee of astrology; Caligula was warned of his death by the stars; Nero, among other acts dictated by his trust in the art, ordered a number of executions in order to avoid the evils threatened by a comet; Galba, the three Flavians and Vespasian all had their astrologers; Titus was himself an adept in the art; Domitian, when disposing of persons whom the stars designated as dangerous, made the fatal error of sparing Nerva because the constellations allowed him but a brief additional term of life; etc.

¹ *Revue Hist.*, vol. lxxv, p. 252.

² *Nat. Hist.*, bk. xxx, ch. 1, and Tacitus, *Annals*, bk. vi, ch. 22 (28 in some editions).

³ Carolus Gottlob Kuhn. *Claudii Galeni Opera Omnia*. (Lipsiae, 1821, 19 vols.), vol. xii, p. 362. *De simplicium medicamentorum temperamentis ac facultatibus*.

⁴ *De diebus decretoriis*, *ibid.*, vol. ix, pp. 901 et seq. πάντων μὲν τῶν ἄνωθεν ἀστρῶν ἀπολαύομεν τῆς δυνάμεως.

in giving expression to his zeal for astronomy as the handmaid of the healing art, Galen accused many physicians of paying no attention to the stars. But he asserted that in this neglect they were no true followers of the great Hippocrates, whom they extolled but never imitated, for Hippocrates had maintained that astronomy had no small bearing on the art of the physician and that geometry was its indispensable precursor.¹

Philosophy as well as science was not unfavorable to some varieties of magic. Neo-Platonism, the most prominent school of philosophy in the Empire, probably led men on to belief in magic more than any previous classical system. Nature was looked upon as real only in so far as it was soul, and its process were regarded as the expression of the world-soul's mysterious working. The investigation of nature thus tended to become an inquiry concerning spirits and demons, a study into the strange and subtle relations existing between things united, as all things are, by bonds of spiritual sympathy. True, the earlier Alexandrines are said to have condemned magic arts,² but we have seen that such condemnation need not amount to much. Plotinus attacked only the most extreme pretensions of astrology, and was ready to grant that the stars were celestial characters and signs of the future. He even conceded that prediction might be made from birds. But to him astrology and augury seemed of comparatively small importance, for he believed everything to be joined to and dependent upon every other thing and that in any object the wise man might see signs of everything else.³ Succeeding Neo-Platonists,

¹ "Quod optimus medicus sit quoque philosophus." *Ibid.*, vol. i, p. 53.

² Vacherot, *L'Ecole d'Alexandria*, vol. ii, p. 115.

³ Ricardus Volkman, *Plotini Enneades*, Lipsiae (Teubner) 1883. Ennead ii, ch. iii, sec. 7. ἄλλ' εἰ σημαίνουσιν οἴτοι τὰ ἐσόμενα, ὥσπερ φημὲν πολλὰ καὶ ἄλλα σημαντικὰ εἶναι τῶν ἐσομένων, τί ἂν τὸ ποιοῦν εἴη; καὶ ἡ τάξις

at any rate, were often devoted to magic. The name of Iamblichus, for instance, is one of the most prominent in the field of the occult.

Moreover, in the time of the Empire a tendency was noticeable to confuse philosophy with magic. If this tendency was not justifiable, it is at least suggestive. Dio Cassius, in the passage above quoted, represents Maecenas as saying that not a few of those who pretend to be philosophers practice magic.¹ Apuleius, accused of magic, stated in his *Apologia* that he was undertaking not only his own defense but that of philosophy.² The accusation against him also suggests similar charges brought against mediæval men of learning during their lives or reputations which they won after death. Apuleius, having married a rich widow older than himself, was charged by some sycophant, jealous rival or other personal enemy with having obtained her affections by use of sorcery. Apuleius seems

πῶς; οὐ γὰρ ἂν ἐσημαίνετο τεταγμένως μὴ ἐκάστων γιγνομένων. ἔστω τοίνυν ὡς περ γράμματα ἐν οὐρανῷ γραφόμενα αἰεὶ ἢ γεγραμμένα καὶ κινούμενα, ποιῶντα μέντοι ἔργον καὶ ἄλλο, ἐπακολουθεῖτω δὲ τὰ δεῖ ἢ παρ' αὐτῶν σημασία, ὡς ἀπὸ μᾶς ἀρχῆς ἐν ἐνὶ ζῳῆ παρ' ἄλλου μέρους ἄλλο ἂν τις μάθοι. καὶ γὰρ καὶ ἦθος ἂν τις γνοίη εἰς ὀφθαλμούς τινος ἰδῶν ἢ τι ἄλλο μέρος τοῦ σώματος καὶ κινδύνους καὶ σωτηρίας. καὶ οὖν μέρη μὲν ἐκεῖνα, μέρη δὲ καὶ ἡμεῖς. ἄλλα οὖν ἄλλοις. μετὰ δὲ πάντα σημείων καὶ σοφῆς τις ὁ μαθὼν ἐξ ἄλλου ἄλλο. πολλὰ δὲ ἤδη συνθεῖα γιγνώμενα γινώσκειται πάσι. τίς οὖν ἢ οὐνταξίς ἢ μία; οὕτω γὰρ καὶ τὸ κατὰ τοὺς ὄρνεις εὐλογον καὶ τὰ ἄλλα ξέφα, ἀφ' ὧν σημαίνόμεθα ἕκαστα. συνηρτῆσθαι δὴ δεῖ ἀλλήλοισι τὰ πάντα, καὶ μὴ μόνον ἐν ἐνὶ τῶν καθ' ἕκαστα τοῦ εὐ εἰρομένου σύμπνοια μία, ἀλλὰ πολλὸν μᾶλλον καὶ πρότερον ἐν τῷ παντί. This entire third chapter of the *Ennead* deals with the subject. *περὶ τοῦ εἰ ποιεῖ τὰ ἀστρο.*

See *The Philosophy of Plotinus*, Dunlap Printing Co., Phila., 1896, page 40, for further references to passages in his works giving his views anent astrology. He believed that the souls of the dead are still able to benefit men and to inspire with powers of divination. *Ennead*, iv, ch. vii, sec. 15.

¹ Page 66, note 1.

² *Apologia*, ch. iii. Even if the oration was a satire and not a speech actually delivered, the inferences to be drawn from it would be practically the same.

to have studied medicine, if no other branch of physical science, for he asserts that certain verses laid to his charge by the accuser deal with nothing more harmful than a recipe for making tooth-powder, and that a woman whom he was said to have bewitched had merely fallen into an epileptic fit while consulting him concerning an ear-ache.¹ This might be taken to show that the pursuit of science was already liable to give one a bad reputation as a wizard; but it should be said that the love-verses of Apuleius, as well as his poetical prescriptions, were used to support the accusation, and that the purchase of fish was also brought forward as a suspicious circumstance. Apuleius affirms in his oration that "philosophers" have always been subjected to such charges. He says, however, that the investigators of physical causes like Anaxagoras, Leucippus, Democritus and Epicurus generally have the epithet atheist cast in their teeth, while it is the seekers into the mysteries of theology and religion like Epimenides, Orpheus, Pythagoras and Ostanes who are reputed to be magi.²

II. *Philo of Alexandria and allegorical interpretation.*—Allegorical interpretation, unless of a very mild character, is usually a fantastic and mystical method of deriving information or inspiration. Even if an author intended to conceal secret mysteries beneath the letter of his text, there

¹ Apuleius may have been guilty of attempting to practice magic. Certainly he believed in its possibility. He affirmed the existence of subordinate gods, or demons,—interpreters and ambassadors between mankind and the superior gods, who live far away from us and have no direct concern with our affairs. The demons, he believed, were susceptible to human influence and capable of working marvels. He stated that the art of divination was due to them. See his *De Deo Socratis*.

² *Apologia*, ch. xxvii. Evidently hostility to magic did not commence with Christianity. Not even, as Roger Bacon thought, did the practice of confusing philosophy with magic originate among Christian writers. Bridges, *Opus Maius*, vol. i, p. 29.

is very slight chance that the far-fetched and intricate mode of solution employed by the interpreter will be the one which the writer had in mind. In most cases, however, after due allowance has been made for figures of speech and play of poetical imagination, it is an erroneous and absurd assumption to suppose that an author did not mean what his language indicates and no more. Therefore the believer in allegorical interpretation would seem to be accepting something quite like a magical doctrine. Indeed, allegorical interpretation is liable to lead one into a belief that words, besides possessing a mystical significance with which the thought of their writer had endowed them, have in and of themselves great power. It borders upon the occult reveries of the Cabalists and upon that magic power of words which we have seen upheld by Roger Bacon, John Reuchlin and Henry Cornelius Agrippa.

This allegorical interpretation of literature has played a great part in human history. It was rife in the age of the Roman Empire, when Philo Judaeus of Alexandria (approximate date, 30 B. C. to 54 A. D.) was perhaps its greatest exponent, as he was also the chief member of the Jewish-Alexandrian school of philosophy.

Philo carried allegorical interpretation to an absurd extreme even if he did not go quite so far as Reuchlin and Agrippa. Not only did he make such assertions as that by Hagar was typified "encyclical education," that Ishmael was her "sophist son," and that Sarah stood for "the ruling virtue,"¹ but in general he tried to read into the Old

¹ See Philo's treatise *De Cherubim*, cited in vol. ii, p. 243, of Rev. James Drummond's *Philo Judaeus; or The Jewish Alexandrian Philosophy in its Development and Completion* (2 vols., London, 1888). Concerning Philo see also Edouard Herriot, *Philon le Juif* (Paris, 1898), where a full bibliography of Philonian and Jewish-Alexandrian literature may be found. A third important secondary book on Philo is by Siegfried: *Philo von Alexandria* (Jena, 1875).

Testament all the doctrines of Greek philosophy and science. He declared that all knowledge, whether in religion, philosophy or natural science, might be acquired by allegorical interpretation of the Pentateuch. Now we can say without manifesting any semblance of irreverence towards true religion, that to endeavor to gain from the books of the Old Testament—especially by the methods which Philo employed—either the key to all philosophy or adequate knowledge of natural science and extensive control of the forces of nature, would, if possible, be as marvelous a feat, and is as fallacious and fantastic a proceeding, as to try to coin gold from copper, or to learn the future from the stars, or even to obtain a solution of the problems of philosophy and a knowledge and control of nature by invoking demons to instruct and to assist you. The very notion that some man like Moses a thousand or more years ago had at his command all the knowledge that can ever be got is magical itself. Moses must have been a magician to know so much. Philo, moreover, if he did not believe in a magic power of words, at least showed that they seemed to him to have a most extraordinary significance. In his treatise, *De Mutatione Nominum*, he relates with great unction the just punishment of hanging which overtook an impious scoffer who derided the notion that the change in the names of Abraham and of Sarah had any profound meaning.¹ As one would naturally expect from what has been said about Philo thus far, he regarded knowledge as something sacred and esoteric. In his writings he liked to talk of mysteries and to request the uninitiated to withdraw. This attitude, while in itself not exactly magic, is, as has been already suggested, the product of a mind attuned to magic. Finally, Philo, following Pythagoras, attached great significance to numbers.

¹ Drummond, vol. i, p. 13.

Philo not only represents a widespread tendency during the Roman Empire, but probably well illustrates the influence of that tendency upon later times. His numerous works were apparently much consulted by the church fathers, and thereby exerted a strong influence upon the Middle Ages. It is needless to enlarge upon the prominence of allegorical interpretation in the works of mediæval ecclesiastical writers. The conception of knowledge as esoteric was also prevalent then, though perhaps to a less extent. To give an early instance from patristic literature, Clement of Alexandria, in his *Stromata*, insists upon the necessity of veiling divine truth in allegories, and has a long discussion in favor of mysticism in learning, citing as examples Greek philosophers as well as Hebrew writers.¹ Moreover, to Philo as source we may trace back the disquisitions upon the mystic, if not magic, properties of six and other numbers which we find in Augustine² and apparently in almost every mediæval writer who had occasion to speak of the six days of creation and of the seventh day of rest.

III. *Seneca's Problems of Nature and divination.*—We shall next consider the *Problems of Nature*—or *Natural Questions*, if one prefers merely to transcribe the Latin—of Seneca, who was practically a contemporary of Pliny. Seneca impresses one as a favorable representative of ancient science. He tells us that already in his youth he had written a treatise on earthquakes and their causes.³ His

¹ *Stromata*, bk. v, ch. 9. Nor was such mysticism advocated by theological writers alone. Roger Bacon—but one instance from many—declared that one lessened the majesty of knowledge who divulged its mysteries, and even went to the length of enumerating seven methods by which the arcana of philosophy and science might be concealed from the crowd (*a vulgo*), *De Secretis Artis et Naturae et de Nullitate Magiae*. Rolls Series, vol. xv, pp. 543-544.

² *De Civitate Dei*, bk. xi, ch. 30.

³ "Aliquando *De Motu Terrarum* volumen iuvenis ediderim." L.

aim is to inquire into the natural causes of phenomena; he wants to know why things are so. He is aware that his own age has only entered the vestibule of the knowledge of natural phenomena and forces, that it has but just begun to know five of the many stars, that "there will come a time when our descendants will wonder that we were ignorant of matters so evident."¹

One must admit, however, that along with Seneca's consciousness of the very imperfect knowledge of his own age there goes a tendency to esotericism. The following language would come fittingly from the mouth of a magician:

There are sacred things which are not revealed all at once. Eleusis reserves sights for those who revisit her. Nature does not disclose her mysteries in a moment. We think ourselves initiated; we stand but at her portal. Those secrets open not promiscuously nor to every comer. They are remote of access, enshrined in the inner sanctuary.²

Seneca seems to regard scientific research as a sort of religious exercise. His enthusiasm in the study of natural forces appears largely due to the fact that he believes them to be of a sublime and divine character, and above the petty affairs of men.

Annaei Senecae *Naturalium Quaestionum Libri Septem*, bk. vi, ch. 4. The edition by G. D. Koeler, Gottingen, 1819 has convenient summaries indicating contents at the head of each book, and devotes several hundred pages to a "Disquisitio" and "Animadversiones" upon Seneca's work. In Pancoucke's *Library*, vol. cxxxxvii, a French translation accompanies the text.

¹ "Veniet tempus, quo posteri nostri tam aperta nos nescisse mirentur. Harum quinque stellarum . . . modo coepimus scire." Bk. vii, ch. 25.

² Bk. vii, ch. 31. "Non semel quaedam sacra traduntur. Eleusin servat quod ostendit revisentibus. Rerum natura sacra sua non simul tradit. Initiatos nos credimus; in vestibule eius haeremus. Illa arcana non promiscue nec omnibus patent; reducta et in interiore sacrario clausa sunt."

Indeed, the phenomena which he discusses are mainly meteorological manifestations, such as winds, rain, hail, snow, comets, rainbows, and—what he regards as allied subjects—earthquakes, springs and rivers. Probably he would not have regarded the study of zoölogy or of physiology as so sublime. At any rate he considers only a comparatively few “natural questions,” and hence the amount and variety of belief in magic which he has occasion to display is correspondingly limited.

It is evident enough, however, that Seneca by no means accepted magic as a whole. He tells us that uncivilized antiquity believed that rain could be brought on or driven away by incantations, but that to-day no one needs a philosopher to teach him that this is impossible.¹ And, although he affirms that living beings are generated in fire, believes in some rather peculiar effects of lightning, such as removing the venom from snakes which it strikes, and recounts the old stories of floating islands and of waters with power to turn white sheep black, he is sceptical about bathing in the waters of the Nile as a means of increasing the female's capacity for child-bearing.² He qualifies by the phrases, “it is believed” and “they say,” the assertions that certain waters produce foul skin-diseases and that dew in particular, if collected in any quantity, has this evil property.³ I imagine he did not believe the story he repeats that the river Alphæus of Greece reappears in Sicily

¹ Bk. iv, ch. 7. “Et apud nos in duodecim tabulis cavetur ne quis alienos fructus excantassit. Rudis adhuc antiquitas credebat et attrahi imbres cantibus, et repelli; quorum nihil posse fieri, tam palam est, ut huius rei causa nullius philosophi schola intranda sit.”

² Bk. v, ch. 6 for animals being generated in flames.

Bk. ii, ch. 31 for snakes struck by lightning.

Bk. iii, ch. 25 for the Nile. Bk. iii *passim*, for marvelous fountains, etc.

³ Bk. iii, ch. 25.

as the Arethusa, and there every four years, on the very days when the victims are slaughtered at the Olympian games, casts up filth from its depths.¹ The themes Seneca discusses of course afford him less opportunity for the taking up of the magic properties of plants, animals and other objects, but he was probably less credulous in this respect than Pliny, unless his pretensions are even more deceptive.

Seneca did believe, however, that whatever is caused is a sign of some future event.² He accepts divination in all its ramifications. Only he holds that each flight of a bird is not caused by direct act of God nor the vitals of the victim altered under the axe by divine interference, but that all has been arranged beforehand in a fatal and causal series.³ He believes that all unusual celestial phenomena are to be looked upon as prodigies and portents.⁴ But no less truly do the planets in their unvarying courses signify the future. The stars are of divine nature and we ought to approach the discussion of them with as reverent an air as when with lowered countenance we enter the temples for worship.⁵ Not only do the stars influence our upper atmosphere as earth's exhalations affect the lower, but they announce what is to occur.⁶ Seneca employs the statement of Aristotle that comets signify the coming of storms and winds and foul weather, to prove that comets are stars;

¹ Bk. iii, ch. 26.

² Bk. ii, ch. 32. "Quidquid fit, alicuius rei futurae signum est."

³ Bk. ii, ch. 46.

⁴ Bk. i, ch. 1.

⁵ Bk. vii, ch. 30. "Egregie Aristoteles ait, numquam nos verecundiores esse debere, quam quum de diis agitur. Si intramus templa compositi, si ad sacrificium acceduri vultum submittimus, togam adducimus, si in omne argumentum modestiae fingimur; quanto hoc magis facere debemus, quum de sideribus, de stellis, de deorum natura disputamus, ne quid temere, ne quid impudenter, aut ignorantem affirmemus, aut scientes mentiamur?"

⁶ Bk. ii, ch. 10.

and declares that a comet is a portent of a storm in the same way as the Chaldeans say that a star brings good or ill fate to men at birth.¹ In fact, his chief, if not sole, objection to the Chaldeans would seem to be that in their predictions they take into account only five stars.

What? Think you so many thousand stars shine on in vain? What else, indeed, is it which causes those skilled in nativities to err than that they assign us to a few stars, although all those that are above us have a share in the control of our fate? Perhaps those nearer direct their influence upon us more closely; perhaps those of more rapid motion look down on us and other animals from more varied aspects. But even those stars that are motionless, or because of their speed keep equal pace with the rest of the universe and seem not to move, are not without rule and dominion over us.²

Seneca accepts a theory of Berosus, whose acquaintance we have already made, that whenever all the stars are in conjunction in the sign of Cancer there will be a universal conflagration, and a second deluge when they all unite in Capricorn.³

It is on thunderbolts as portents of the future that Seneca dwells longest, however. "They give," he declares, "not

¹ Bk. vii, 28. "Chaldean" was often used to denote an astrologer without reference to the person's nationality.

² Bk. ii, ch. 32. "Quinque stellarum potestatem Chaldaeorum observatio exceptit. Quid tu? tot millia siderum judicas otiosa lucere? Quid est porro aliud, quod errorem incutiat peritis natalium, quam quod paucis nos sideribus assignant: quum omnia quae supra nos sunt, partem sibi nostri vindicent? Submissiora forsitan in nos propius vim suam dirigunt; et ea quae frequentius mota aliter nos, aliter cetera animalia prospiciunt. Ceterum et illa quae aut immota sunt, aut propter velocitatem universo mundo parem immotis similia, non extra ius dominiumque nostri sunt. Aliud aspice et distributis rem officiis tractas. Non magis autem facile est scire quid possint, quam dubitari debet, an possint."

³ Bk. iii, ch. 29.

signs of this or that event merely, but often announce a whole series of events destined to occur, and that by manifest decrees and ones far clearer than if they were set down in writing.”¹ He will not, however, accept the theory that lightning has such great power that its intervention nullifies any previous and contradictory portents. He insists that divination by other methods is of equal truth, though perhaps of minor importance and significance. Next he attempts to explain how dangers of which we are warned by divination may be averted by prayer, expiation or sacrifice, and yet the chain of events wrought by destiny not be broken. He maintains that just as we employ the services of doctors to preserve our health, despite any belief we may have in fate, so it is useful to consult a *haruspex*. Then he goes on to speak of various classifications of thunderbolts according to the nature of the warnings or encouragements which they bring.²

IV. *Ptolemy's Tetrabiblos and astrology*.—Astrology was more than a popular belief which extended to men high in social rank and public life; it was held by scientists as well, though naturally in a less naïve and more scientific form. Nevertheless, the astrology of the scientist might be of an extreme enough type and of a more clearly magical variety than we were able to gather from Pliny, who, moreover, does not seem to have been acquainted with any systematic doctrine of the influence of the stars.

Such a systematized treatment Claudius Ptolemaeus set

¹ Bk. ii, ch. 32. Seneca has been describing other manifestations of the “*divina et subtilis potentia*” of thunderbolts; he proceeds, “*Quid, quod futura portendunt: nec unius tantum aut alterius rei signa dant, sed saepe totum fatorum sequentium ordinem nuntiant, et quidem decretis evidentibus, longeque clarioribus, quam si scriberentur?*”

² His discussion of divination by thunderbolts is contained in bk. ii, ch. 31-50.

forth in the little volume known as the *Tetrabiblos*, or *Quadripartitum*. It would seem as if we ought to be able to regard a book by that noted geographer and astronomer as an example of the best science of his time, the middle of the second century. His works quickly became classics, and in the third century Porphyry commented on the *Tetrabiblos*. The Arabs eagerly accepted his writings, and it is generally held that in the Middle Ages his word was law in all the subjects of which he treated. The *Tetrabiblos*, therefore, would seem a landmark in the entire history of astrology as well as a crucial instance of how that branch of magic formed a part of science in the Roman Empire. True, Ptolemy does not cover the whole field of sidereal influence. He limits himself to the effects of the stars on man and does not attempt to trace out how they affect all varieties of matter and of life upon our globe. However, to make the stars control each individual man is the climax of astrology and implies that the heavenly bodies govern everything else here on earth. So the *Tetrabiblos* is a very satisfactory instance of belief in astrology by a scientist and its contents may well be briefly considered.¹

The first of the four books opens with the trite contention that the art itself is not to be rejected because fre-

¹ The edition of the *Tetrabiblos* which I used is that by Philip Melancthon, 1553. It gives the Greek text, a Latin translation and an introduction of interest, in which Melancthon affirms his own more modest trust in astrology.

Two other treatises of considerable length setting forth the principles of astrology and which have come down to us from the Roman Empire, are a poem consisting of five books of about 900 lines each by Manilius, probably of the Augustan age; and a prose treatise in eight books, and apparently left unfinished, by Firmicus who was a Neo-Platonist of about 350 A. D. M. Manilii *Astronomicon*, London, 1828, Delphin edition. Iulii Firmici Materni *Matheseos Libri VIII*, (ediderunt W. Kroll et K. Skutsch, Lipsiae, 1897, 2 vols., (Teubner edition). The essay on astrology purporting to be by Lucian is probably spurious.

quently abused by imposters, and with the admission that even the skilful investigator often makes mistakes owing to the incompleteness of human knowledge. In the first place, our doctrine of the nature of matter rests, Ptolemy says, more on conjecture than on certain knowledge. Secondly, old configurations of the stars cannot be safely used as the basis of present-day predictions. Indeed, so many are the different possible positions of the stars and the different possible arrangements of terrestrial matter in relation to the stars that it is difficult to collect enough instances on which to base judgment. Moreover, such things as diversity of place, of education and of custom must be reckoned with in foretelling the future of persons born under the same stars. But although predictions frequently fail, yet the art is not to be condemned any more than one rejects the art of navigation because of frequent shipwrecks.

Thus far one might take Ptolemy for a well-balanced and accurate scientist in the modern sense of the term, but he does not maintain this level. After showing that it is useful to know the future and that astrology does not depend on fatal necessity, he proceeds to explain why the stars give knowledge of the future. This he intends to show from natural causes: *ubique naturalium causarum rationem sequentes*. This sounds well but his reasoning is superficial and childish, as his discussion of the influence exercised by the planets will indicate.

In each planet one of the four elemental qualities predominates (or perhaps two divide the supremacy) and endows the star with a peculiar nature and power. The sun warms and, to some extent, makes dry, for the nearer it comes to our pole the more heat and drought it produces. The moon, on the contrary, causes humidity, since it is close to the earth and gets the effect of vapors from the latter. Evidently the moon influences other bodies

in this way, rendering them soft and producing putrefaction. It also warms a little owing to the light it receives from the sun. Saturn, however, chills and, to some extent, dries, for it is very far from the heat of the sun and the damp mists of the earth. Mars emits a parching heat, as its color and proximity to the sun lead one to infer. Jupiter, situated between cold Saturn and burning Mars, is of a sort of lukewarm nature, but tends more to warmth and moisture than to the other two qualities. So does Venus, but conversely, for it warms less than Jupiter but makes moist more, since its large area catches many damp vapors from the neighboring earth. In Mercury, situated near the sun, moon and earth, neither drought nor dampness predominates; but that planet, incited by its own velocity, is a potent cause of sudden changes. In general, the planets are of good or evil influence according as they abound in the two rich and vivifying qualities, heat and moisture, or in the detrimental and destructive ones, cold and drought.

Ptolemy then goes on to discuss the powers of fixed stars. These powers he would seem to make depend chiefly on the relation of the fixed star to the planets or on its position in some constellation. Then he treats of the influence of the seasons and of the four cardinal points, to each of which he assigns some one predominating quality. A discussion of the importance of such things as the twelve signs of the zodiac, the twelve "houses," the *Trigones* (equilateral triangles each comprising three signs of the zodiac), and the position of the star in reference to the horizon, ends the first book and also the presentation of fundamental considerations.

The other three books contain "doctrinam de praedictione singularium." The second book, however, deals in the main with four points of general though subordinate bear-

ing: under what stars different regions belong, how the effects of the stars vary according to time as well as place, how the heavenly bodies influence the nature of events, and finally how they determine their quality, good or bad. The third and fourth books, besides taking up separately the particular effects of each planet as it enters into conjunction with each of the others, comprise chapters with such headings as the following: "*de parentibus*," "*de fratribus*," "*de masculis et femellis*," "*de geminis*," "*de natis qui nutrire non possunt sed mox extinguuntur*," "*de dignitate*," "*de magisterio*," "*de coniugiis*," "*de liberis*," "*de amicis et inimicis*," "*de servis*," "*de perigrinatione*," "*de genere mortis*." These two books discuss how length of years, fortune, diseases, and various qualities of body and mind may be predicted from the stars; in short, how man's entire life is ordered by the constellations. Such is the book which Bouché-Leclercq calls "science's surrender."¹

V. *The hermetic books and occultism.*—An account of belief in magic in the Roman Empire would be incomplete without some reference to the famous hermetic books. Hermes Trismegistus might, as deservedly as any other man—had he only been a man and not a myth—be called the father of magic, just as he used to be known as the father of Egyptian science and just as he was regarded by many as the inventor of all philosophy.² In the time of Plato the Egyptian god Thoth acquired the name of Hermes from the similarity of his functions to those of the Greek god. He also came to be considered as the author of pretty much all knowledge and was given the epithet of "Thrice Great." The entire body of Egyptian occult lore

¹ "C'était la capitulation de la science." *Rev. Hist.*, vol. lxxv, p. 257, note 3.

² Roger Bacon, *Opus Minus*, Rolls Series, vol. xv, p. 313, speaks of "Hermes Mercurius, pater philosophorum."

was attributed to him, and Manetho, who pictured him as reigning over the ancient Egyptians, declared that in addition to his royal duties he succeeded in turning off some 36,000 volumes. Clement of Alexandria, however, speaks of but forty-two books as "indispensably necessary," and says that the priests having charge of the hermetic books, by memorizing these forty-two, cover the entire philosophy of the Egyptians.¹ Diocletian is said to have dispersed the priests and burned their books, because he came to the conclusion that the frequent revolts in the locality received pecuniary aid by means of gold artificially manufactured in the temples.² Before that, however, lore supposed to be similar to that contained within the books had become disseminated. In the days of Hadrian and the Antonines, Jews and other Orientals at Rome offered to initiate persons into those occult sciences previously the monopoly of the Egyptian priesthood. Marcus Aurelius, in his later years, was thus instructed by an Egyptian diviner, who followed him in all his campaigns.³ Also the custom grew up rather early of passing off works on occult subjects under Hermes' name and of ascribing to him all such books which were of doubtful authorship. Of alchemy was this tendency especially true, so that it came to be known as the hermetic art. Sosimus, Stephanus and other Greek writers cited alchemical treatises under Hermes' name, and the practice of publishing spurious hermetic books continued well into

¹ *Stromata*, bk. vi, ch. 4.

² Ammianus Marcellinus, however, writing during the latter fourth century, says of Egypt: "Hic primum homines longe ante alios ad varia religionum incunabula, ut dicitur, pervenerunt et initia prima sacrorum caute tumentur condita scriptis arcanis." Bk. xxii, ch. xvi, sec. 20. Again, in bk. xxii, ch. xiv, sec. 7, Ammianus speaks of the Egyptian mystical books as still extant.

³ F. J. Champagny, *Les Antonins*, vol. iii, p. 81 (Paris, 1863).

the Middle Ages.¹ Several such alchemical treatises are still extant; and writings on astrological medicine and the magical powers of gems, plants and animals have also come down to us under Hermes' name.²

Some of the supposed writings of Hermes were mystical rather than magical; for instance, the famous *Poemander*,³ which consists mainly of brief and disconnected utterances concerning God and the human soul and other subjects of a religious character. Still, one does not have to read far into its sixteen "books" before finding evidence of belief in astrology, of the mysticism of number and of an esoteric view of knowledge. It tells us "to avoid all conversation with the multitude" and to "take heed of them as not understanding the virtue and power of the things that are said." It speaks frequently of the seven circles of heaven, the seven zones, and the seven "Governors." It affirms that "the

¹ See article on "Hermes" in *La Grande Encyclopédie* by Berthelot who has made an extended study of the history of alchemy; and who, in his *La Chimie au Moyen Age* holds that Greek alchemistic treatises were continuously extant in Italy during the Dark Ages—a circumstance which diminishes the importance of Arabian influence on the study of the hermetic art in the later Middle Ages.

² See Anthon's *Classical Dictionary*, 1855 (no adequate account of Hermes Trismegistus exists in any of the more recent classical dictionaries).

³ The *Poemander* (or *Pymander*) has been reproduced in the *Bath Occult Reprint Series* (London, 1884) from the translation "from the Arabic by Dr. Everard, 1650." It has an introduction by Hargrave Jennings, "author of the Rosicrucians," giving some account of Hermes Trismegistus. Vol. ii in the same *Bath Occult Reprint Series*—which seems to have been instituted on behalf of "students of the occult sciences, searchers after truth and Theosophists"—is Hermes' *Virgin of the World*. Besides Berthelot's article, an account of Hermes may be found in pages 181-190 of *The Literary Remains of the late Emanuel Deutsch* (London, 1879). There is a French translation of the *Poemander* by Menard with an introductory essay which, however, Deutsch characterized as "deplorably shallow."

Gods were seen in their Ideas of the Stars with all their signs, and the stars were numbered with the Gods in them." Hence, it is probably safe enough, when, for instance, we hear that Theon, father of Hypatia, celebrated in his day as a mathematician, and professor at the Alexandrian Museum, lectured upon the writings of Hermes Trismegistus and of Orpheus¹—another legendary worthy charged with works of an occult character—to conclude that we have met one more case of the mingling of magic with learning.

In short, then, the mythical figure of Hermes Trismegistus became an actuating ideal to the Middle Ages, and the works appearing under his name had a considerable influence in extending belief in magic. Secondly, the hermetic books serve to typify that mass of Eastern occult philosophy and occult science which was so strong a force in the mental life of the Roman Empire.

¹ J. B. Bury, *Later Roman Empire* (N. Y., 1899), vol. i, p. 208.

CHAPTER VI

CRITICS OF MAGIC

THE reader will remember how men in the Roman Empire condemned "magic" but understood the word in a restricted and bad sense; how Pliny made pretensions to complete freedom from all belief in magic and how inconsistent was his actual attitude; how Seneca rejected magic only in part, accepting divination in all its ramifications. This partial rejection and partial acceptance of magic by the same individual seem characteristic of the age of the Empire, as one would expect of a time when magic was in a state of decay and science in a process of development. It is true that this rejection of certain varieties of magic often proceeded from the motive of morality rather than of scepticism. Thus in Cicero's *De Divinatione*, Quintus Cicero is represented as closing his long argument in favor of the truth of divination by solemnly asserting that he does not approve of sorcerers, nor of those who prophesy for sake of gain, nor of the practice of questioning spirits of the dead—which nevertheless, he says, was a custom of his brother's friend Appius.¹ But there were some men, we may well believe, who would reject even those varieties of magic which found a welcome in the minds of most educated people and in the general mass of the thought and science of the age. Such cases we shall now consider.

¹ *De Divinatione*, bk. i, ch. 58. "Haec habui, inquit, de divinatione quae dicerem. Nunc illa testabor non me sortilegos neque eos qui quæstus causa hariolentur, ne psychomantia quidem quibus Appius amicus tuus uti solebat, agnoscere."

I. *Opponents of astrology*.—Astrology, as we have seen, was very popular. Yet there was some scepticism as to its truth beyond the ridicule of satirists, who perhaps at bottom were themselves believers in the art. Outside of Christian writers the three chief opponents of astrology in the Roman world, judging by the works that have come down to us, were Cicero—who lived before the Empire in the constitutional sense can be said to have begun—in his *De Divinatione*; Favorinus, a Gaul who resided at Rome in the reigns of Hadrian and Trajan, and was a friend of Plutarch, and whose arguments against astrology have been preserved only in the pages of Aulus Gellius; and Sextus Empiricus, a physician who flourished at about the beginning of the third century of our era.¹

When, however, we come to examine both the men and their arguments, we somehow do not find their assault upon astrology especially impressive or satisfactory. First, as to the men. Gellius says that he heard Favorinus make the speech the substance of which he repeats, but that he is unable to state whether the philosopher really meant what he said or argued merely in order to exercise and to display his genius.² There was reason for this perplexity of Gel-

¹ For the arguments of Favorinus, see Aulus Gellius, *Noctes Atticae*, bk. xiv; ch. i. (Delphin & Variorum Classics [1824] ex editione Jacobi Gronovii.) Fragments of Favorinus's writings are also to be found in Stobæus.

The edition of the *Opera* of Sextus Empiricus which I used was that by Johannes Albertus Fabricius, (Lipsiae, 1718), giving the Greek text and a Latin translation.

For Cicero's arguments, see *De Divinatione*, bk. ii, chs. 42-47.

² "Adversum istos qui sese chaldæos seu genethliacos appellant, ac de motu deque positu stellarum dicere posse, quae futura sunt, profitentur, audivimus quondam Favorinum philosophum Romae Graece disserentem egregia atque illustri oratione; exercendine autem, anne ostentandi gratia ingenii, an quod ita serio judicatoque existamaret, non habeo dicere. *Noctes Atticae*, bk. xiv, ch. i, sect. i. A foot-note in the

lius, since Favorinus was fond of writing such essays as Eulogies of Thersites and of Quartan Fever. There is no particular reason for doubting Sextus's seriousness, but, besides being a medical man, he was a member of the sceptical school of philosophy, a circumstance which warns one not to attribute too much emphasis to his attack on astrology. Indeed, the attack occurs in a work directed against learning in general, in which he assails grammarians, rhetoricians, geometricians, arithmeticians, students of music, logicians, "physicists," and students of ethics as well as astrologers. Cicero was not prone to such sweeping scepticism or sophistry, but the force of his opposition to astrology is somewhat neutralized by the fact that in his *Dream of Scipio* he apparently attributes to planets influence over man.

Now as to their arguments. We have spoken of their "attack on astrology," but in reality they can scarcely be said to attack astrology as a whole. Indeed, it is the doctrines of the Chaldeans which Cicero makes the object of his assault; he says nothing about astrology. Favorinus will not even admit that he attacks the "disciplina Chaldaeorum" in any true sense, but affirms that the Chaldeans were not the authors of such theories at all, but that these have originated of late among traveling fakirs who beg their bread by means of such deceits and trickeries.¹ Some of the arguments of our sceptics are really directed merely

Delphin edition expresses preference in place of the words "exercendine autem, anne ostentendi" for the shorter reading "exercendi autem, non ostentandi" — which reading is adopted by Hertz in his edition of the year, 1885.

¹ "Disciplinam istam Chaldaeorum tantae vetustatis non esse, quantae videri volunt; neque eos principes eius auctoresque esse, quos ipsi ferant: sed id praestigiarum atque officinarum genus commentos esse homines aeruscatores, et cibum quaestumque ex mendaciis captantes." *Noctes Atticae*, bk. xiv, ch. 1, sect. 2.

against the methods of interpreting the decrees of the stars which they give us to understand that the astrologers employ. Such objections might suffice to pierce the presumption of the ordinary popular astrologer but they fall back blunted from the system of Ptolemy.¹ If our sceptics thought that they were overthrowing the astrology of the man of learning by such arguments, they labored under a misapprehension, and in the eyes of one who really understood the art must have cut the figure of ignoramuses making false charges against a science of which they knew next to nothing.

As some of the arguments of our sceptics apply solely to defects in method of which the best astrologers were not guilty, so others do not deny the existence of sidereal influence over the life of man, but contend that it is impossible to determine with essential accuracy what will be the effects of that influence. Sextus, for example, seems to lay most stress upon such points as the difficulty of exactly determining the date of birth or of conception, or the precise moment when a star passes into a new sign of the zodiac. He calls attention to the fact that observers at varying altitudes, as well as in different localities, would arrive at different conclusions, that differences in eyesight would also affect results, and that it is hard to tell just when the sun sets owing

¹ For instance, the charge that astrologers disregard the differing aspects of the heavens in different regions does not hold true in the case of Ptolemy. Also the objection to the doctrine of nativities, that men born at different times often suffer a common fate in battle or some such general disaster, is a weak argument at best, for the fact that you and I are born under different stars does not necessitate that our careers have absolutely nothing in common, and it was nullified by Ptolemy's explanation that great general events like earthquakes, wars, floods and plagues overrule any contradictory destiny which the constellations may seem to portend for the individual. See Bouché-Leclercq, *Rev. Hist.*, vol. lxxv, p. 268.

to refraction.¹ He almost becomes scholastic in the minuteness of his objections, leaving us somewhat in doubt whether they are to be taken as indicative of a spirit of captious criticism towards an art the fundamental principles of which he tacitly recognized as well-nigh incontestible, or whether he is simply trying to make his case doubly sure by showing astrology to be impracticable as well as unreasonable.

The main thing to be noted about Cicero, Favorinus and Sextus is that they pay almost no attention to the general problem of sidereal influence on terrestrial matter and life. It is to the denial of an absolute, complete and immutable rule of the heavenly bodies over man that they devote their energies. The premises of astrology they leave pretty much alone. One might accept almost all their statements and still believe in a large influence of the stars over our physical characteristics and mental traits. The question of sidereal influence upon lower animal life, vegetation and inert matter they avoid with a sneer.²

¹ Similarly Favorinus declared that, if the different fate of twins was to be explained by the fact that after all they are not born at precisely the same moment, then to determine one's destiny the time of his birth and the position of the stars at the same instant must be measured with an exactness practically impossible. "Atque id velim etiam, inquit, ut respondeant: si tam parvum atque rapidum est momentum temporis, in quo homo nascens fatum accipit, ut in eodem illo puncto, sub eodem circulo coeli, plures simul ad eandem competentiam nasci non queant; et si idcirco gemini quoque non eadem vitae sorte sunt, quoniam non eodem temporis puncto editi sunt; peto, inquit, respondeant, cursum illum temporis transvolantis, qui vix cogitatione animi comprehendi potest, quonam pacto aut consulto assequi queant, aut ipsi perspicere et deprehendere; quum in tam praecipiti dierum noctiumque vertigine minima momenta ingentes facere dicant mutationes." *Noctes Atticae*, bk. xiv, ch. I, sect. 10.

² Favorinus declares that the astrologers may congratulate themselves that he does not propose such a question to them as that of astral influence on minute animals; Cicero says that if all animals

II. *Cicero's attack upon divination.*—A more satisfactory example of scepticism may be found in other chapters of the *De Divinatione* than those which assail the art of the Chaldeans. Moreover, although the discussion is limited to the specific theme of divination, still that is a subject which admits of very broad interpretation, and Cicero employs some arguments which are capable of an even wider application and oppose the hypotheses on which magic in general rests. He rejects divination as unscientific. It is to such arguments that we shall confine our attention. "Natural divination," that is, predictions made under direct divine inspiration without interposition of signs and portents, is not magic and so the discussion of it will not concern us. Much less shall we waste any time over such trite contentions against divination in general as that there is no use of knowing predetermined events since you cannot avoid them,¹ and that even if we can learn the future we shall be happier not to do it.

are to be subjected to the stars, then inanimate things must be too, than which nothing could be more absurd.

"Illud autem condonare se iis dicebat, quod non id quoque requiret, si vitæ mortisque hominum rerumque humanarum omnium tempus et ratio et causa in coelo et apud stellas foret, quid de muscis aut vermiculis aut echinis, multisque aliis minutissimis terra marique animantibus, dicerent? An ista quoque isdem, quibus homines, legibus nascerentur, isdemque itidem exstinguerentur." Aulus Gellius, *Noctes Atticæ*, bk. xiv, ch. I, sect. 12.

"Et si ad rem pertinet, quo modo coelo affecto compositisque sideribus quodque animal oriatur; valeat id necesse est etiam in rebus inanimis. Quo quid dici potest absurdius?" *De Divin.*, bk. ii, ch. 47.

Favorinus, however, does hint in one place that the sole evidence that we possess of any influence of the stars upon us is a few such causal connections as that between the phases of the moon and the tides of the ocean.

¹ Ptolemy made a fair retort to this argument by holding that foreknowledge, even if it could not enable us to avoid the coming event, at least served the purpose of breaking the news gently and saving us the more vivid shock which the actual event, if unexpected, would cause by its raw reality.

De Divinatione takes the form of a supposititious conversation, or better, informal debate, between the author and his brother Quintus. In the first book Quintus, in a rather rambling and leisurely fashion, and with occasional repetition of ideas, upholds divination to the best of his ability, citing many reported instances of successful recourse to it in antiquity. In the second book Tully proceeds, with an air of somewhat patronizing superiority, to pull entirely to pieces the arguments of his brother, who assents with cheerful readiness to their demolition.

It is interesting to note that as Pliny's magic was not his own, so Cicero's scepticism did not originate wholly with himself. As his other philosophical writings draw their material largely from Greek philosophy, so the second book of the *De Divinatione* is supposed to have been under considerable obligations to Clitomachus and Panætius.¹ As for the future, the *De Divinatione* was known in the Middle Ages but its influence seems to have often been scarcely that intended by its author.

One of the main points in the argument of Quintus had been his appeal to the past. What race or state, he asked, has not believed in some form of divination?

For before the revelation of philosophy, which was discovered recently, public opinion had no doubt of the truth of this art; and after philosophy came forth no philosopher of authority thought otherwise. I have mentioned Pythagoras, Democritus, Socrates. I have left out no one of the ancients save Xenophanes. I have added the Old Academy, the Peripatetics, the Stoics. Epicurus alone dissented.²

¹ See T. Schiche, *De Fontibus Librorum Ciceronis qui sunt de Divinatione*, (Jena, 1875) and K. Hartfelder, *Die Quellen von Ciceros zwei Büchern de Divinatione* (Freiburg, 1878).

² Bk. i, ch. 39. "Neque ante philosophiam patefactam, quae nuper

When Tully's turn to speak came, he rudely disturbed his brother's reliance upon tradition. "I think it not the part of a philosopher to employ witnesses, who are only haply true, often purposely false and deceiving. He ought to show why a thing is so by arguments and reasons, not by events, especially those I cannot credit."¹ "Antiquity," Cicero declared later, "has erred in many respects."² The existence of the art of divination in every age and nation had little effect upon him. There is nothing, he asserted, so widespread as ignorance.³

Both brothers distinguished divination from the natural sciences and assigned it a place by itself.⁴ Quintus said that medical men, pilots and farmers foresee many things, yet their arts are not divination. "Not even Pherecydes, that famous Pythagorean master, who prophesied an earthquake when he saw there was no water in a well usually full, should be regarded as a diviner rather than a physicist."⁵ In like manner Tully pointed out that the sick seek a doctor, not a soothsayer, that diviners cannot instruct us in astron-

inventata est, hac de re communis vita dubitavit; et postea, quam philosophia processit, nemo aliter philosophus sensit, in quo modo esset auctoritas. Dixi de Pythagora, de Democrite, de Socrate; excepi de antiquis praeter Xenophanem neminem; adiunxi veterem academiam, peripateticos, stoicos. Unus dissentit Epicurus." This trust in tradition, it may be here observed, formed one of the chief grounds for mediæval belief in magic as well.

¹ Bk. ii, ch. 11. "Hoc ego philosophi non arbitror, testibus uti, qui aut casu veri aut malitia falsi fictique esse possunt. Argumentis et rationibus oportet quare quidque ita sit docere, non eventis, iis praesertim quibus mihi liceat non credere."

² Bk. ii, ch. 33. "Errabat enim multis in rebus antiquitas."

³ Bk. ii, ch. 36.

⁴ As Tully (bk. ii, ch. 5) puts it, "Quae enim praesentiri aut arte aut ratione aut usu aut conjectura possunt, ea non divinis tribuenda putas sed peritis."

⁵ Bk. i, ch. 50.

omy, that no one consults them concerning philosophic problems or ethical questions, that they can give us no light on the problems of the natural universe, and that they are of no service in logic, dialectic or political science.¹ Such would be the ideal condition, but in practice, as we have seen much reason to believe, divination, at least in the broad sense, was confused with science and with other subjects to no small extent both under the Empire and in the Middle Ages. A doctor might be something of a diviner as well: the astrologer was skilled in astronomy; "mathematicus" came within a short time after Cicero's own day to be the word regularly used to denote a soothsayer;² Pierre du Bois and Bodin found astrology an aid to political science.

Cicero, however, went further than the assertion that divination had no connection with science and declared that it was contrary to science. Such a figment, he scornfully affirmed, as that the heart will vanish from a corpse for one man's benefit and remain in the body to suit the future of another, was not believed even by old wives now-a-days.³ Nay more, he asked, how can the heart vanish from the body? Surely it must be there while life lasts, and can it disappear in an instant?

Believe me, you are abandoning the citadel of philosophy while you defend its outposts. For in your effort to prove soothsaying true you utterly pervert physiology. . . . For there will be something which either springs from nothing or suddenly vanishes into nothingness. What scientist ever said that? The soothsayers say so? Are they then, do you think, to be trusted rather than scientists? ⁴

Cicero does not think they are.

¹ Bk. ii, chs. 3, 4.

² We saw Pliny use "mathematicae artes" as an equivalent of divination or astrology.

³ Bk. ii, ch. 15.

⁴ Bk. ii, ch. 16. "Urbem philosophiae, mihi crede, proditis dum

Also he shows that the methods of divination are not scientific. He asks: Why did Calchas deduce from the devoured sparrow that the Trojan war would last ten years rather than ten weeks or ten months? ¹ He points out that the art is conducted in different places according to quite different rules of procedure, even to the extent that a favorable omen in one locality is a sinister warning elsewhere. ² In short, whether he got his idea from the Greeks or not, he has come, long before most men had reached that point, to have a clear idea of the essential contradiction between science and magic. "Quid igitur," he asks, "minus a physicis dici debet quam quidquam certi significari rebus incertis?" ³

Besides this sharp separation of divination from science and besides his rejection of tradition, a third creditable feature of Cicero's book is his question: What intimate connection, what bond of natural causality can there be between the liver or heart or lung of a fat bull and the divine eternal cause of things which rules the world? ⁴ He refuses to believe in any extraordinary bonds of sympathy between things which, in so far as our daily experience and

castella defenditis. Nam dum aruspicinam veram esse vultis, physiologiam totam pervertitis. Caput est in jecore, cor in extis: iam abscedet, simul ac molam et vinum inspersionis; deus id eripiet, vis aliqua conficiet, aut exedet. Non ergo omnium interitus atque obitus natura conficiet; et erit aliquid quod aut ex nihilo oriatur, aut in nihilum subito occidat. Quis hoc physicus dixit unquam? Aruspices dicunt? His igitur quam physicis potius credendum existimas?"

¹ Bk. ii, ch. 28.

² Bk. ii, ch. 12.

³ Bk. ii, ch. 19.

⁴ Bk. ii, ch. 12. "Atqui divina cum rerum natura tanta tamque praeclara in omnes partes motusque diffusa, quid habere potest commune, non dicam gallinacum fel (sunt enim qui vel argutissima haec exta esse dicant) sed tauri opimi jecur aut cor aut pulmo, quid habet naturale, quo declarari possit quid futurum sit?"

our knowledge of nature's workings can inform us, have absolutely no connection. He appeals to the canons of common sense. In fact, it is generally true throughout his treatise that where he cannot disprove, he pooh-poohs superstition.

On the whole Cicero's attitude probably represents the most enlightened scepticism to be found in the ancient world. Though some of his arguments seem weak, he deserves credit for having argued at all. Against what they were pleased to call magic, men, especially during the Middle Ages, were apt to rant rather than reason.

But, alas, unless we assume that the famous *Dream of Scipio* is a purely imaginative production, that the fantastic beliefs there set forth (borrowed, no doubt, from Greek thought) are presented for dramatic purposes alone and do not represent Cicero's actual views, we must grant that our sceptical Cicero believed in some magic after all. For the *Dream*, despite its author's animadversions against Chaldean astrology, speaks of Jupiter as a star wholesome and favorable to the human race, of Mars as most unfavorable.¹ Also it calls the numbers seven and eight perfect and speaks of their product as signifying the fatal year in Scipio's career.²

¹ "Deinde est hominum generi prosperus et salutaris ille fulgor qui dicitur Jovis. Tum rutilus horribilisque terris, quem Martium dicitis. Deinde subter mediam fere regionem Sol obtinet, dux et princeps et moderator luminum reliquorum, mens mundi et temperatio," etc.

² "Nam cum aetas tua septenos octies solis anfractus reditusque converterit, duoque hi numeri, quorum uterque plenus, alter altera de causa habetur, circuitu naturali summam tibi fatalem confecerint, etc."

CHAPTER VII

THE LAST CENTURY OF THE EMPIRE

WE come now to consider some indications of the intermixture of magic with learning in the last century of the Roman Empire, the border-time of the Middle Ages. It was a time when interest in science was slight and when the ability to use florid rhetoric was apparently the chief aim of those who assumed to be the highest intellectual class. What science there was was largely permeated with magic, as a glance at a few men of intellectual prominence then will illustrate.

Marcellus of Bordeaux, court physician of Theodosius I, and a writer upon medicine, throws some light upon the state of medicine in his day. He affirmed that pimples might be removed by wiping them the instant you saw a falling-star. He said that a tumor could be cured if one half of a root of vervain were tied about the sufferer's neck and the other half suspended over a fire. His theory was that as the vervain dried up in the smoke of the fire, the tumor would by force of magic sympathy likewise dry up and disappear. Marcellus added for the benefit of unpaid physicians that so persistent would be the sympathetic bond established that if the root of the vervain were later thrown into water, its absorption of moisture would produce a return of the tumor.¹

Ammianus Marcellinus, who wrote at the close of the

¹ These recipes are given in Frazer's *Golden Bough*, vol. i, p. 23, from the *De Medicamentis* of Marcellus, bk. xv, ch. 82 and bk. xxxiv, ch. 100.

fourth century, and who has been regarded by his critics from Gibbon down as a historian of distinguished merit, gives us an idea of mental conditions in his time, and was himself not free from belief in magic. It is true that in declaiming against the degeneracy of the Roman aristocracy he ridicules their trust in astrology, saying that many of them deny the existence of higher powers in heaven, yet think it imprudent to appear in public or dine or take a bath without first having consulted an almanac as to Mercury's whereabouts or the exact position of the moon in Cancer.¹ Yet he believed in omens, portents and auspices, as the following citations will indicate and as one might show by other passages.

The first passage is one in which Ammianus speaks of Alexandria as formerly having been a great place of learning and as even in his degenerate days a considerable intellectual centre. According to him, it is a sufficient recommendation for any medical man if he say that he was educated at Alexandria.²

There whatever lies hidden is laid bare by geometry; music

¹ Ammianus Marcellinus. *Rerum gestarum libri qui supersunt*. F. Eyssenhardt recensuit. Berlin, 1871. Book xxviii, ch. iv, sec. 24. "Multi apud eos negantes esse superas potestates in caelo, nec in publico prodeunt nec prandent nec lavari arbitrantur se cautius posse, antequam ephemeride scrupulose sciscitata didicerint, ubi sit verbi gratia signum Mercurii, vel quotam cancri sideris partem polum discurrens optineat luna." Very likely, however, Ammianus—whom we shall see defending divination in general—himself cherished a moderate trust in astrology and was rather satirizing the infidelity of the nobles—their inconsistency in so minutely ruling their lives by the planets when they denied the existence of "superas potestates in caelo." There is an English translation of Ammianus by C. D. Yonge (London, 1862; Bohn Library).

² *Ibid.*, bk. xxii, ch. xvi, sec. 18. "Pro omni tamen experimento sufficiat medico ad commendandam artis auctoritatem, si Alexandriae se dixerit eruditum."

is not utterly forgotten nor harmony neglected; among some men, though their number may not be great, the motion of the world and stars is still a matter of consideration; there are not a few of those skilled in numbers.

This is not all. "Besides these things they cherish the science which reveals the decrees of fate."¹

The Emperor Julian was continually inspecting entrails of victims and interpreting dreams and omens, and even proposed to reopen a prophetic fountain which Hadrian was said to have blocked up for fear that others, like himself, might win the imperial throne through obedience to its predictions.² The mention of such practices of Julian leads Ammianus in another passage to attempt a justification of divination as a science worthy of the study and respect of the most erudite and intelligent. He says:

Inasmuch as to this ruler, who was a man of culture and an inquirer into all branches of learning, malicious persons have attributed the use of evil arts to learn the future, we shall briefly indicate how a wise man is able to acquire this by no means trivial variety of knowledge. The spirit behind all the elements, seeing that it is incessantly and everywhere active in the prophetic movement of everlasting bodies, bestows upon us the gift of divination by those methods which we acquire through divers studies; and the forces of nature, propitiated by various rites, as from exhaustless springs provide mankind with prophetic utterances.³

¹ *Ibid.*, bk. xxii, ch. xvi, sec. 17. "Et quamquam veteres cum his, quorum memini florere conplures, tamen ne nunc quidem in eadem urbe doctrinae variae silent; nam et disciplinarum magistri quodam modo spirant et nudatur ibi geometrico radio quidquid reconditum latet, nondumque apud eos penitus exaruit musica nec harmonica conticuit, et recalet apud quosdam adhuc licet raros consideratio mundani motus et siderum, doctique sunt numeros haud pauci; super his scientiam calcent quae factorum vias ostendit."

² Bk. xxii, ch. xii, sec. 8.

³ Bk. xxi, ch. i, sec. 7. "Et quoniam erudito et studioso cognitionum

That is, we can foreknow, if not control, the results of the processes of universal nature. Since it is through the forces of nature that we do this, augury, oracular utterances, oneiromancy and astrology all become for Ammianus but subdivisions of physical science. He admits that there are persons who disagree with him, who object that predictions are often erroneous; but against such persons he employs the old refutation that occasional mistakes are to be attributed to man's imperfect knowledge and faulty observation, and that by such mistakes the validity of divination is no more disproved than is grammar forever discredited because a grammarian speaks incorrectly, or music because a musician sings out of tune.¹ Opposition to the arts of divination he calls "vanities plebeia," and upon such loud-mouthed ignorance of the vulgar he looks down with much the same superior smile that the lover of speculative philosophy to-day bestows upon the man in the street who irritably disputes the utility of that subject.

Indeed, the strength of Ammianus's attachment to divination is so great that he quotes its arch-opponent, Cicero, in its support. For he concludes his discussion of the subject in these words: "Wherefore in this as in other matters Tully says most admirably, 'Signs of future events are shown by the gods.'" ² Unless perchance Ammianus was

omnium principi malivoli praenoscenti futura pravas artes adsignant, advertendum est breviter unde sapienti viro hoc quoque accidere poterit doctrinae genus haud leve. Elementorum omnium spiritus, utpote perennium corporum praesentendi motu semper et ubique vigens ex his quae per disciplinas varias affectamus, participat nobiscum munera divinandi; et substantiales potestates ritu diverso placatae, velut ex perpetuis fontium venis vaticina mortalitati subpeditant verba."

¹ Bk. xxi, ch. i, sec. 13.

² Bk. xxi, ch. i, sec. 14. "Unde praeclare hoc quoque ut alia Tullius 'signa ostenduntur' ait 'a dis rerum futurarum.'" "Dis" seem to be practically identical in Ammianus's mind with natural forces.

acquainted with the first book only of *De Divinatione*, this remark—which ought to have proved more potent than any necromantic spell in invoking Cicero's slandered Manes—must be taken as a startling revelation of the mental calibre of both its maker and his age.

Synesius (370-430 A. D.), Bishop of Ptolemais, furnishes a good example of what was probably the position of the average Neo-Platonist who did not go to extremes in the last period of the Roman Empire. In the present survey we are not concerned with Christian belief in the Empire, and so it is only as a Neo-Platonist that Synesius will at present interest us. He is the more interesting for us in that he was a man with some taste for science. He knew some medicine and was well acquainted with geometry and astronomy, subjects which he probably studied under his friend Hypatia. He believed himself to be the inventor of an astrolable and of a hydroscope. He played his part in secular politics and as bishop defended his people from oppression. He was fond of the chase and of his dogs and horses, and said so. He was a great lover of books also, but thought that their true use was to call one's own mental powers into action. Philosophy, mathematics and literature all claimed his attention. Yet broad and independent-minded as he was for his age, and interested as he was in science, he believed in magic. Indeed, there was apparently no form of magic in which he would not have believed.

Synesius regarded the universe as a unit and all its parts as closely correlated. This belief not only led him to maintain, like Seneca, that whatever had a cause was a sign of some future event, or to hold with Plotinus that in any and every object the sage might discern the future of every other thing, and that the birds themselves, if endowed with sufficient intelligence, would be able to predict the future by

observing the movements of human bipeds.¹ It led him also to the conclusion that the various parts of the universe were more than passive mirrors in which one might see the future of the other parts; that they further exerted, by virtue of the magic sympathy which united all parts of the universe, a potent active influence over other objects and occurrences. The wise man might not only predict the future; he might, to a great extent, control it.

For it must be, I think, that of this whole, so joined in sympathy and in agreement, the parts are closely connected as if members of a single body. And does not this explain the spells of the magi? For things, besides being signs of each other, have magic power over each other. The wise man, then, is he who knows the relationships of the parts of the universe. For he draws one object under his control by means of another object, holding what is at hand as a pledge for what is far away, and working through sounds and material substances and forms.²

Synesius explained that plants and stones are related by

¹ *Περὶ ἐνυπνίων*. (*On Dreams*) ch. 2. *Synesii Cyrenæi Quæ Extant Opera Omnia*. Io. Georgius Krabinger. Landshuti, MDCCL. Tomus I.) All following references to and quotations from the works of Synesius apply to this edition. There is a French translation with several introductory essays by H. Druon, Paris, 1878. For an account in English of Synesius and his writings see W. S. Crawford, *Synesius the Hellene*, London, 1901. See also, H. O. Taylor, *Classical Heritage of the Middle Ages*, pp. 78-82, New York, 1901. This interesting work gives illustrations in various fields of the continuity of culture during the transition from Roman times to the Middle Ages.

² *Περὶ ἐνυπνίων* (*On Dreams*) ch. 3. "Ἐδει γὰρ, οἶμαι, τοῦ παντὸς τοῦτου συμπαθοῦς τε δινοῦς καὶ σύμπνου τὰ μέρη προσήκειν ἀλλήλοις, ἅτε ἐνὸς ὄλου τὰ μέλη τυγχάνοντα. Καὶ μὴ ποτε αἱ μάγων ἰνγυγες αὐταὶ καὶ γὰρ θέλγεται παρ' ἀλλήλων, ὡσπερ σημαίνεται καὶ σοφὸς ὁ εἰδὼς τὴν τῶν μερῶν τοῦ κόσμου συγγενεῖαν. Ἐλκει γὰρ ἄλλο δι' ἄλλον, ἔχων ἐνέχυρα παρόντα τῶν πλείστον ἀπόντων, καὶ φωνῆς, καὶ ὕλης καὶ σχήματα Evidently Synesius did not regard the magi as mere imposters.

bonds of occult sympathy to the gods who are within the universe and who form a part of it, that plants and stones have magic power over these gods, and that one may by means of such material substances attract those deities.¹ He evidently believed that it was quite legitimate to control the processes of nature by invoking demons. His devotion to divination has been already implied. He regarded it as among the noblest of human pursuits.² Dreams he viewed as significant and very useful events. They aided him, he wrote, in his every-day life, and had upon one occasion saved him from magic devices against his life.³ Of course, he had faith in astrology. The stars were well-nigh ever present in his thought. In his *Praise of Baldness* he characterized comets as fatal omens, as harbingers of the worst public disasters.⁴ In *On Providence* he explained the supposed fact that history repeats itself by the periodical return to their former positions of the stars which govern our life.⁵ In *On the Gift of an Astrolabe* he declared that "astronomy" besides being itself a noble science, prepared men for the diviner mysteries of theology.⁶ Finally, he held the view common among students of magic that knowledge should be esoteric; that its mysteries and marvels should be confined to the few fitted to receive them and that they should be expressed in language incomprehensible to the vulgar crowd.⁷

¹ Περὶ ἐνυπνίων, ch. 3. Καὶ δὴ καὶ θεῶ τινὶ τῶν εἰσω τοῦ κόσμου λίθος ἐνθένδε καὶ βοτάνη προσήκει, οἷς ὁμοιοπαθῶν εἰκεὶ τῇ φύσει καὶ γοητεύεται. In his *Praise of Baldness* (Φαλάκρας ἐγκώμιον), ch. 10, Synesius tells how the Egyptians attract demons by magic influences.

² Περὶ ἐνυπνίων, ch. 1. Αὐταὶ μὲν ἀποδείξεις ἔστων τοῦ μαντείου ἐν τοῖς ἀρίστοις εἶναι τῶν ἐπιτηθενομένων ἀνθρώποις.

³ *Ibid.*, ch. 18.

⁴ Φαλάκρας ἐγκώμιον, ch. 10.

⁵ Αἰγύπτῳ ἢ περὶ προνοίας, bk. ii, ch. 7.

⁶ Πρὸς παιόνων περὶ τοῦ δώρον, ch. 5.

⁷ Δίων, ch. 7. Περὶ ἐνυπνίων, ch. 4. Ἐπιστολαί, 4 and 49.

Macrobius, who wrote at the beginning of the fifth century and displayed considerable interest in physical questions for a person of those days, reinforces the evidence of Ammianus and of Synesius, although he held no very extreme views. Unless, however, we except his Philonian notion that all knowledge may be derived from a few past writings. For Macrobius affirmed that Virgil contains practically all man needs to know, and that Cicero's brief story of the dream of Scipio was a work second to none and contained the entire substance of philosophy.¹ Macrobius also believed that numbers possess occult power. He dilated at considerable length upon each of those from one to eight, emphasizing their perfection and far-reaching significance. He held the good old Pythagorean and Platonic notions that the world-soul is constructed of number, that the harmony of celestial bodies is ruled by number, and that we derive the numerical values proper to musical consonance from the music of the spheres.² He was of the opinion that to the careful investigator dreams and other striking occurrences will reveal an occult meaning.³ As for astrology, he believed that the stars are signs but not causes of future events, just as birds by their flight or song reveal matters of which they themselves are ignorant.⁴ The sun and planets, though in a way divine, are but material bodies, and it is not from them but from the world-soul (pure mind), whence they too come, that the human spirit takes

¹ "Universa philosophiae integritas." Commentary on *Dream of Scipio*, bk. ii, ch. 17. For Macrobius on Virgil see T. R. Glover, *Life and Letters in the Fourth Century A. D.* (Cambridge, Eng., 1901), p. 181, and Macrobius, *Saturnalia*, bk. i, ch. xvi, sec. 12. Macrobius has been edited in French and Latin by Nisard. Paris, 1883.

² *Commentary*, bk. i, chs. 5 and 6; ii, ch. 1 and 2.

³ *Ibid.*, bk. i, ch. 7.

⁴ *Ibid.*, bk. i, ch. 19.

its origin.¹ Macrobius also displayed some belief in the possession of occult properties by objects about us. In the *Saturnalia*, Disaurius the physician is asked and answers such questions as why a brass knife stuck in game prevents decay.² Macrobius by the way, had considerable influence in the Middle Ages. Abelard makes frequent reference to him, and called him "no mean philosopher."³ Aquinas cited him as an authority for the doctrines of Neo-Platonism.

¹ *Commentary*, bk. i, ch. 14.

² Glover, *op cit.*, p. 178.

³ Glover, *op cit.*, p. 187, note 1.

CHAPTER VIII

CONCLUSION

OUR survey of the Roman Empire and of the ancient world of thought which it represented is finished. We have found reason to believe that hatred and dread of "magic," the confusion of science or of philosophy with magic, the incurring of reputations as wizards by men of learning, were phenomena not confined to the Middle Ages. We have seen some evidence of the prominence of magic in the intellectual life of the Roman Empire, in the writings and in the conduct of physicians and astronomers, of statesmen and philosophers. Just how prominent magic was one hesitates to estimate, but one may safely affirm that it was sufficiently prominent to merit the attention of the student of those times. It is almost useless to chronicle the events if we do not understand the spirit of an age.

Can the student of that age, we may ask in concluding, rightly interpret and appreciate it, can he make proper use of its extant records, unless he recognizes not merely that men made mistakes then and accepted a mass of false statements concerning nature, but that the best minds were liable to be esoteric and mystical, to incline to the occult and the fantastic, to be befogged by absurd credulity and by great mental confusion, to be fettered by habits of childish and romantic reasoning such as occurs in Ptolemy's *Tetrabiblos* and in Plato's *Timaeus*? Have we a right to attribute to the minds of that age our definiteness and clarity of thought, our common sense, our

scientific spirit? Is it fair to take the words in which they expressed their thought and to interpret these according to our knowledge, our frame of mind; to read into their words our ideas and discoveries; to rearrange their disconnected utterances into systems which they were incapable of constructing; to endeavor by nothing else than a sort of allegorical interpretation to discover our philosophy, our science, our ideals in their writings? Have not even words a greater definiteness and value now than once? When we translate a passage from an ancient language are we not apt to transfigure its thought? These are, however, only questions.

Certainly there was much true scientific knowledge in the Roman Empire. There was sane medical theory and practice, there was a great deal of correct information in regard to plants, animals and the stars. Science was in the ascendant; magic was in its latter stages of decay. We flatter ourselves that it has now quite vanished away; then its doctrines were accepted only in part or in weakened form by men of education. Perhaps, though I am far from asserting this, magic played a less prominent part than in science and in philosophy than in the later Middle Ages. Perhaps we may picture to ourselves the minds of men in the twelfth and thirteenth and succeeding centuries as awakening from a long, intellectual torpor during the chaotic and dreary "Dark Ages," and, eager for knowledge and for mental occupation, but still inexperienced and rather bewildered, as snatching without discrimination at whatever came first to hand of the lore of the past. Thus for a time we might find the most able men of the later age taking on the worst characteristics of the earlier time. But this again is mere speculation.

Moreover, we must remember that, if magic was accepted only in part by men of learning in the Roman Empire, there

was no thoroughgoing scepticism. We sought in vain for an instance of consistent disbelief. If, too, there was an effort to make the magic, which was accepted, scientific by basing it upon natural laws, as Quintus Cicero, Seneca and Ptolemy tried to do, there was also, besides the definite approval of magical doctrines, often a mystical tone in the science and philosophy of the time. The question of the relative strength of magic and of science in those days must, then, be left unsettled. It is difficult enough to judge even a single individual; to tell, for instance, just how superstitious Cato was.

In closing we may, however, sum up very briefly those elements which we selected as combining to give a fairly faithful picture of the belief in magic which then prevailed among educated people. Native superstitions from which science had not yet wholly freed itself; much fantastical and mystical lore from Oriental nations; allegorizing and mysticizing in the interpretation of books—which in Philo went to the length of a belief that all knowledge could be secured by this means; a portrayal of nature which attributed to her many magic properties and caused medicine to be infected with magic ceremony and to be based to some extent on the principle of sympathetic magic; a widespread and often extreme belief in astrology; a speculative philosophy which was often favorable to the doctrines of magic or even advanced some itself; and the system of Neo-Platonism in especial, with which we may associate the view—prevalent long before Plotinus, however—that everything in the universe is in close sympathy with everything else and is a sign of coming events—these were the forces ready at the opening of the Middle Ages to influence the future.

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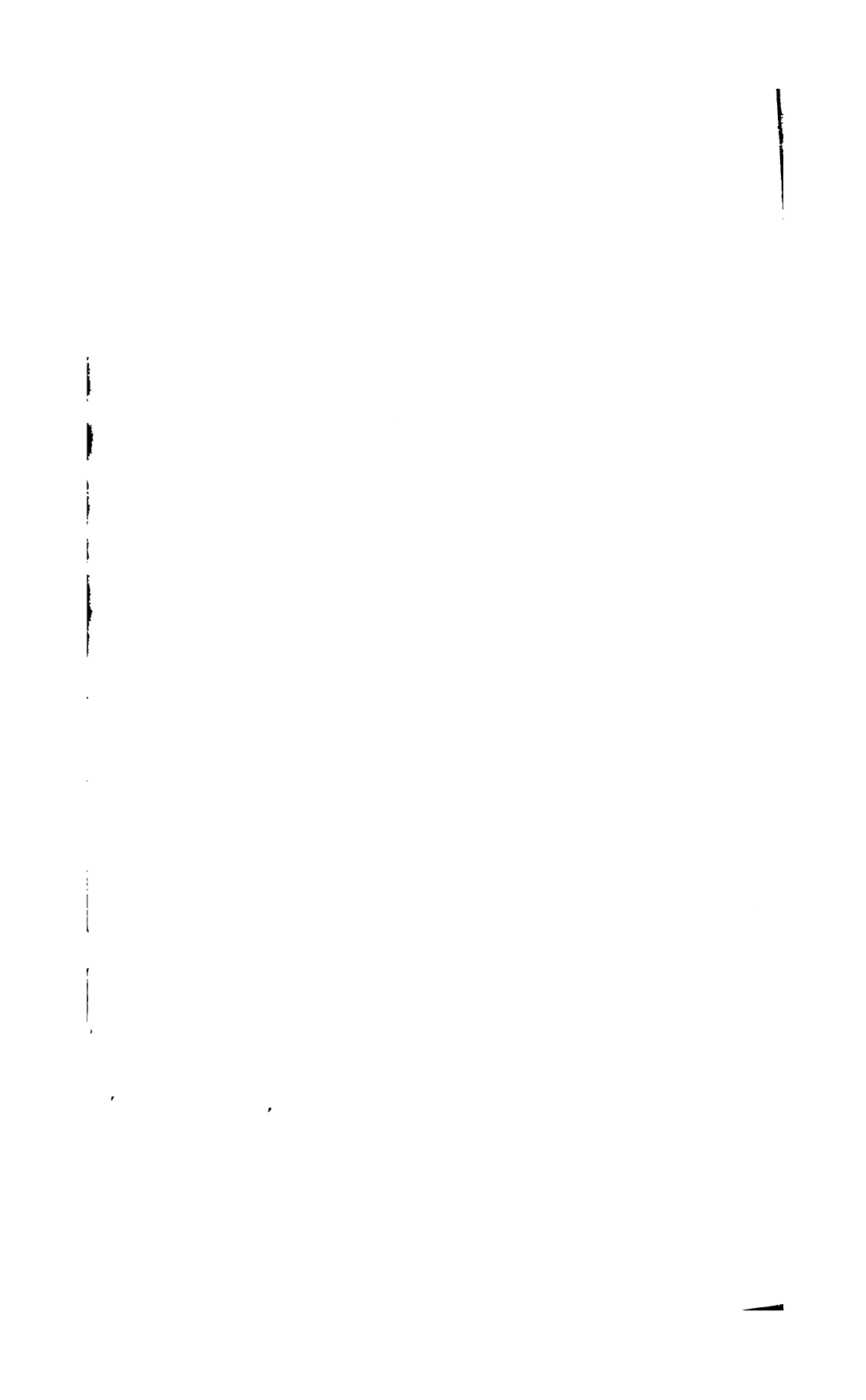
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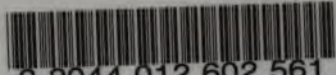
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