

every object εἰδωλα (or images) of the object are continually being given off in all directions; these enter the organs of sense, and give rise to sensation. The rest of the theory remarkably anticipates certain famous modern theories of perception (1) by its reduction of all sensation, on the objective side, to touch, and (2) by the distinction which it involves between the qualities of extension and resistance, which are said to be the only qualities that really belong to objects of sense, and the other (or secondary) qualities, which are said to exist only through the action of the organs of sense modifying the εἰδωλα.

Sensation, Democritus appears to have taught, is our only source or faculty of knowledge; indeed his first principles admit the existence of no mental faculty of a nature distinct from sensation. He was classed among the most extreme sceptics of antiquity, and tradition attributes to him such sayings as—"There is nothing true, and if there is, we do not know it," "We know nothing, not even if there is anything to know."

The system of Democritus was altogether anti-theological. He denied that the creation of the world was in any way due to reason. He also rejected all the popular mythology; but, according to one account, he taught that, as men were produced by the motion of the atoms, so was produced a race of grander beings, of similar form, and, though longer-lived, still mortal, who influence human affairs, some benevolently, some malevolently, and who appear to men in dreams.

The moral system of Democritus is strikingly like the negative side of the system of Epicurus. The *summum bonum* is placed in an even tranquillity of mind. Fear, and too strong desire, and all that is likely to bring sorrow or even care, are to be avoided, as, for example, notably marriage, to which Democritus cherished the strongest objections. This habit of mind Democritus is said to have himself so well attained that the merry spirit with which he regarded all that happened earned him the title of "the laughing philosopher." Another version, however, asserts that he received the name on account of the scorn which he poured on human ignorance and weakness.

See Mullach, *Democriti Abderitæ operum fragmenta*, Berlin, 1843; Franck, "Fragments qui subsistent de Démocrite," in the *Mémoires de la Société royale de Nancy*, 1836; Ritter, *Geschichte der Philosophie*, vol. i.; Brandis, *Rhein. Museum*, vol. iii., and *Geschichte der Griech. und Röm. Philosophie*, vol. i.; H. Stephanus, *Poesis Philos.*; Burchardt, *Commentaria critica de Democriti de sensibus philosophia*, 1839; and *Fragmente der Moral des Democrit.*

DEMOIVRE, ABRAHAM (1667-1754), an eminent mathematician, was born at Vitry, in Champagne, May 26, 1667. He belonged to a French Protestant family, and was compelled to take refuge in England at the revocation of the Edict of Nantes, in 1685. Having laid the foundation of his mathematical studies in France, he prosecuted them further in London, where he read public lectures on natural philosophy for his support. The *Principia Mathematica* of Newton, which chance threw in his way, made him comprehend at once how little he had advanced in the science which he professed; but he pursued his studies with vigour, and soon became distinguished among first-rate mathematicians. He was among the intimate personal friends of Newton, and his eminence and abilities secured his admission into the Royal Society of London, and afterwards into the Academies of Berlin and Paris. His merit was so well known and acknowledged by the Royal Society that they judged him a fit person to decide the famous contest between Newton and Leibnitz. The life of Demoivre was quiet and uneventful. His old age was spent in obscure poverty, his friends and associates having nearly all passed away before him. He died at London, November 27, 1754. The *Philosophical Transactions* of London

contain several of his papers, all of them interesting. He also published some excellent works, such as *Miscellanea Analytica de Seriebus et Quadraturis*, 1730, in 4to. This then contained some elegant and valuable improvements on then existing methods, which have themselves, however, long been superseded. But he has been more generally known by his *Doctrine of Chances, or Method of Calculating the Probabilities of Events at Play*. This work was first printed in 1618, in 4to, and dedicated to Sir Isaac Newton. It was reprinted in 1738, with great alterations and improvements; and a third edition was afterwards published with additions. He also published a *Treatise on Annuities*, 1724, in 8vo, dedicated to Lord Carpenter.

DEMONOLOGY. The word *demon* (or *dæmon*) is the Greek δαίμων, the etymology of which is too doubtful to explain its original signification (see Pott, *Etym. Forsch.*, ii. 1, 947). Setting aside the use of the word in the general sense of deity (as in *Iliad*, i. 222), we find it employed in classic Greek literature with the more specific meaning under which it becomes an important term in the science of religion. Among the most instructive passages are those in which Hesiod tells how the men of the golden race became after death demons, guardians or watchers over mortals (*Hesiod, Op. et Dies*, 109, &c.; see Welcker, *Griech. Götterlehre*, vol. i. p. 731), and where the doctrines of Empedocles, Plato, and other philosophers are set forth, showing how the demons came to be defined as good and evil beings intermediate between gods and men (*Plutarch, De Defect. Orac., De Isid. et Osir., De Vitand. Ær. Alien.*, &c.; *Plato, Symposium*, 28; *Diog. Laert., Vit. Pythag.*; see Grote, *History of Greece*, vol. i. chaps. 2, 17). The religions of the world usually recognize an order of spiritual beings, below the rank of governing deities, and distinguished from nature-spirits such as elves and nymphs by being especially concerned with living men and their affairs; these beings, very often themselves considered to be ghosts of dead men, are the demons. The earlier and wider notion of demons includes the whole class of such spirits, who may be friendly or hostile, good or evil, persecuting and tormenting man or acting as his protecting and informing patron-spirits; while, when they are mediators or ministers of some higher deity, they will be, like the god himself, kindly or ill-disposed. A narrower definition was introduced in Christian theology, where the ideas of a good demon and guardian genius were merged in the general conception of good "angels," while the term demon was appropriated to evil spirits, or "devils." For scientific purposes, it is desirable to use the term in the wider sense. Demonology, the branch of the science of religion which relates to demons, is much obscured in the treatises of old writers by their taking the evidence too exclusively from among civilized nations, and neglecting what is to be learnt from barbarous tribes, whose ideas of demons, being nearer their primitive state, are comparatively clear and comprehensible. When savage notions of the nature and functions of these spirits are taken as the starting-point, the demon appears as only a more or less modified human soul—whether it is still actually considered to be a human ghost, or whether part of the human quality has fallen away, so that only traces are left to show that man's soul furnished the original model. But when such early and natural animistic conceptions were carried on into higher stages of culture, their original use as explaining natural phenomena was gradually superseded by the growth of knowledge, and they came to be maintained as broken-down and confused superstitions, only to be understood by comparison with their earlier forms. Such comparison, however, is facilitated by the primitive demon-ideas cropping up anew even in civilized life, as in the so-called "spirit-manifestations" of the present day. The following details will show the main

purposes which the doctrine of demons served in the philosophy of the primitive and savage world, as well as its large contribution to civilized superstition. The authorities, when not mentioned, will mostly be found referred to in Tylor, *Primitive Culture*, chaps. xiv. xv. Other cases are given in Spencer, *Principles of Sociology*, vol. i., and every reader may supplement them with similar instances from the works of travellers and missionaries. Prof. Adolf Bastian's *Der Mensch in der Geschichte und Beiträge zur Vergleichenden Psychologie* are of great value to students.

Among races of low culture, the conception of a ghost-soul being made to account for the phenomena of life (see article ANIMISM) readily leads to a corresponding theory of morbid states of body and mind. As the man's proper soul causes the functions of normal life by its presence, while its more or less continued absence induces sleep, trance, and at last death, so the abnormal phenomena of disease have a sufficient explanation at hand in the idea that some other soul or soul-like spirit is acting on or has entered into the patient. Among the cases which most strongly suggest this are—first, such derangements as hysteria, epilepsy, and madness, where the raving and convulsions seem to bystanders like the acts of some other being in possession of the patient's body, and even the patient is apt to think so when he "comes to himself," and, second, internal diseases where severe pain or wasting away may be ascribed to some unseen being wounding or gnawing within. The applicability of demoniacal possession as a theory to explain disease in general is best proved by the fact that it is so often thus applied by savage races. Especially, reasoning out the matter in similar ways, rude tribes in different countries have repeatedly arrived at the conclusion that diseases are caused by the surviving souls or ghosts of the dead, who appear to the living in dreams and visions, thus proving at once their existence after death, and their continued concern with mankind. This notion being once set on foot, it becomes easy to the savage mind to identify the particular spirit, as when the Tasmanian ascribes a gnawing disease to his having unwittingly pronounced the name of a dead man, who thus summoned has crept into his body, and is consuming his liver; or when the sick Zulu believes that some dead ancestor he sees in a dream has caused his ailment, wanting to be propitiated with the sacrifice of an ox; or when the Samoan persuades himself that the ancestral souls, who on occasion reveal themselves by talking through the voices of living members of the family, are the same beings who will take up their abode in the heads or stomachs of living men and cause their illness and death. Here, then, the demon appears in what seems its original character of a human ghost. We may notice in the last example the frequent case of the man's mind being so thoroughly under the belief in a spirit possessing him that he speaks in the person of that spirit, and gives its name; the bearing of this on oracular possession will appear presently. In many, perhaps in most cases, however, the disease-demon is not specially described as a human ghost; for instance, some Malay tribes in their simple theory of diseases are content to say that one kind of demon causes small-pox, another brings on swellings, and so on. The question is whether in such cases the human character has merely dropped away, and this seems likely from the very human fashion in which the demons are communicated with; they are talked to with entreaties or threats, enticed out with offerings of food, or driven away with noises and blows, just as though they were human souls accessible to the same motives as when they were in the body. Thus the savage theory of demoniacal possession has for its natural result the practice of exorcism or banishment of the spirit as the regular means of cure, as where, to select

these from hundreds of instances, the Antilles Indians in Columbus's time went through the pretence of pulling the disease off the patient and blowing it away, bidding it begone to the mountain or the sea or where the Patagonians till lately, believing every sick person to be possessed by an evil demon, drove it away by beating at the bed's head a drum painted with figures of devils.

That such modern savage notions fairly represent the doctrine of disease-possession in the ancient world is proved by the records of the earliest civilized nations. The very charms still exist by which the ancient Egyptians resisted the attacks of the wicked souls who, become demons, entered the bodies of men to torment them with diseases and drive them to furious madness. The doctrine of disease among the ancient Babylonians was that the swarming spirits of the air entered man's body, and it was the exorcist's duty to expel by incantations "the noxious neck-spirit," "the burning spirit of the entrails which devours the man," and to make the piercing pains in the head fly away "like grasshoppers" into the sky. (See *Records of the Past*, vols. i., iii., &c.; Birch's trans. of the *Egyptian Book of the Dead*, see below; Maspero, *Histoire Ancienne des Peuples de l'Orient*, p. 41; Lenormant, *La Magie chez les Chaldéens*, &c.) The transition-stage of the ancient belief in the classical period of Greece and Rome is particularly interesting. The scientific doctrine of medicine was beginning to encroach upon it, but it was still current opinion that a fit was an attack by a demon (ἐπιληψία = "seizure," hence English *epilepsy*), that fury or madness was demoniacal possession (δαμονιάω = to be possessed by an evil spirit, hence English *demoniac*, &c.), that madmen were "larvati," i.e., inhabited by ghosts, &c. No record shows the ancient theory more clearly than the New Testament, from the explicit way in which the symptoms of the various affections are described, culminating in the patient declaring the name of his possessing demon, and answering in his person when addressed. The similarity of the symptoms with those which in barbarous countries are still accounted for in the ancient way may be seen from such statements as the following, by a well-known missionary (Rev. J. L. Wilson, *Western Africa*, p. 217):—"Demoniacal possessions are common, and the feats performed by those who are supposed to be under such influence are certainly not unlike those described in the New Testament. Frantic gestures, convulsions, foaming at the mouth, feats of supernatural strength, furious ravings, bodily lacerations, gnashing of teeth, and other things of a similar character, may be witnessed in most of the cases." Among the early Christians the demoniacs or energumens (ἐνεργούμενοι) formed a special class under the control of a clerical order of exorcists, and a mass of evidence drawn from such writers as Cyril, Tertullian, Chrysostom, and Minutius Felix, shows that the symptoms of those possessed were such as modern physicians would class under hysteria, epilepsy, lunacy, &c. (See their works, and refs. in Bingham, *Antiquities of the Christian Church*; Maury, *La Magie et l'Astrologie*, part ii. ch. 2, &c.) Some theologians, while in deference to advanced medical knowledge they abandon the primitive theory of demons causing such diseases in our own time, place themselves in an embarrassing position by maintaining, on the supposed sanction of Scripture, that the same symptoms were really caused by demoniacal possession in the 1st century. A full statement of the arguments on both sides of this once important controversy will be found in earlier editions of the *Encyclopædia Britannica*, but for our times it seems too like a discussion whether the earth was really flat in the ages when it was believed to be so, but became round since astronomers provided a different explanation of the same phenomena. It is more profitable

to notice how gradual the change of opinion has been from the doctrine of demon-possession to the scientific theory of disease, and how largely the older view still survives in the world. Not only in savage districts, but in countries whose native civilization is below the European level, such as India and China, the curious observer may still see the exorcist expel the malignant ghost or demon from the patient afflicted with fever, dizziness, frenzy, or any unaccountable ailment. (See Ward, *History of the Hindoos*, vol. i. p. 155, vol. ii. p. 183; Robertts, *Oriental Illustrations of the Scriptures*, p. 529; Doolittle, *Social Life of the Chinese*.) The unbroken continuance of the belief in mediæval Europe may be gathered from such works as the excellent treatise by Maury, *La Magie et l'Astrologie dans l'Antiquité et au Moyen Age*, already referred to. Even in the 18th century was published with ecclesiastical approval a regular exorcist's manual, the *Fustis et Flagellum Dæmonum, Auctore R.P.F. Hieronimo Mengo* (1727), which among its curious contents gives instructions how to get the better of those cunning demons who hide in the bodies of men and vex them with diseases, and which are apt when expelled to take refuge in the patient's hair. The gradual shifting of opinion is marked by the attempt to reconcile the older demonology with the newer medicine. This argument, which appears among the early Christian fathers, is worked out most elaborately in that curious museum of demonology, the *Disquisitiones Magicæ* of Martin Delrio, published as late as 1720. While inveighing against those physicians who maintain that all diseases have natural causes, this learned Jesuit admits that men may be dumb, epileptic, or lunatic without being obsessed; but what the demons do is that, finding the disposition of epileptics suitable, they insinuate themselves into them; also they attack lunatics, especially at full moon, when their brains are full of humours, or they introduce diseases by stirring up the black bile, sending blacks into the brain and cells of the nerves, and setting obstructions in the ears and eyes to cause deafness and blindness. Looking at the date of this celebrated work, we cannot wonder that in benighted districts of Europe the old diabolical possession and its accompanying exorcism may still now and then be met with, as in 1861 at Morzine in Savoy.<sup>1</sup> (See A. Coustans, *Relation sur une Epidémie d'Hystéro-Démonopathie*, Paris, 1863.) One of the last notable cases of this kind in England was that of George Lukins of Yatton, a knavish epileptic out of whom seven devils were exorcised by seven clergymen, at the Temple Church at Bristol, on June 13, 1788. (See *Encyc. Brit.* 3d to 6th editions, art. "Possession".)

The derivation of the ideas of demons from the phantoms seen in dreams has already been instanced where the apparition is that of a dead man, but there are peculiar kinds of demons which are to be considered specially from this point of view. In savage animism, as among the Australians, what we call a *nightmare* is of course recognized as a demon; and though we have long learnt to interpret it subjectively as arising from some action of the sleeper's brain, it is interesting to remember that its name remains proof of the same idea among our ancestors (Anglo-

<sup>1</sup> The *Times*, in November 1876, contains an account in the casting out of devils by a priest in the Church of the Holy Spirit in Barcelona, during the preceding month. On one occasion the patient, a young woman of seventeen or eighteen, lay on the floor before the altar, writhing in convulsions with distorted features and foaming at the mouth, while the priest carried on a dialogue with the devil, whom he addressed by the name of Rusbel, the fiend's answers being of course spoken by the voice of the frantic girl herself. At last a number of demons were supposed to come out of the patient's body, and such scenes were repeated for days in the presence of many spectators till a riot arose, and the civil authorities intervening put a stop to the whole affair.

Saxon *mar* = spirit, elf, &c., compare old German *mar* = elf, demon, *nahtmar* = nightmare,—see Grimm, *Deutsche Mythologie*, p. 433). The *vampires*, or drinkers (Old Russian *upir*), well known in Slavonic regions, are a variety of the nightmare, being witch-souls or ghosts who suck the blood of living victims, thus accounting for their becoming pale and bloodless, and falling into decline. (See Grohmann, *Aberglauben aus Böhmen*, p. 24; Ralston, *Songs of the Russian People*, p. 410.) From dreams are avowedly formed the notions of *incubi* and *succubi*, those nocturnal demons who consort with women and men in their sleep. From the apparent distinctness of their evidence, these beings are of course well known in savage demonology, and in connection with them there already arises among uncultured races the idea that children may be engendered between spirits and human mothers. (See Martin, *Mariner's Tonga Islands*, vol. ii. p. 119.) For an ancient example of the general belief in this class of demons, no better could be chosen than that of the early Assyrians, whose name for a succubus, *lilit*, evidently gave rise to the Rabbinical tale of Adam's demon-wife *Lilith*. (See Lenormant, *op. cit.* p. 36.) The literature of mediæval sorcery abounds in mentions of this belief, of which the absurd pseudo-philosophical side comes well into view in the chapter of Delrio (lib. ii. quæst. 15), "An sint quædam dæmones incubi et succubæ, et an ex tali congressu proles nasci queat?" But its serious side is shown by the accusation of consorting with such demons being one of the main charges in the infamous bull of Innocent VIII., which brought judicial torture and death upon so many thousands of wretched so-called witches. (See Roskoff, *Geschichte des Teufels*, vol. ii. p. 222.) It further throws light on demonology that the frightful spectres seen in such affections as delirium tremens have of course been interpreted as real demons. It is needless to give instances from among savage tribes, for the connection between such phantoms and the doctrine of demoniacal possession is shown in its most primitive state in modern Europe. In the *Fustis Dæmonum*, p. 42, it is mentioned that demons before entering human bodies are apt to appear in some terrible form or deformity, human or bestial, and while they seem to the patients suddenly to vanish, then they enter into their bodies. By this supposition the disappearance of the phantom and the accompanying illness of the delirious patient are ingeniously accounted for at one stroke.

Though the functions ascribed to demons in savage philosophy are especially connected with disease, they are by no means exclusively so, but the swarming host of spirits pervading the world is called on to account for any events which seem to happen by some unseen but controlling influence. Some cause must lead the wild man to find game one day and come back empty another, to stumble and hurt himself in the dusk, to lose his way and become bewildered in the dark forest, where the cries of animals and other sounds seem to him spirit-voices misleading or mocking him. For all such events requiring explanation savages find personal causes in intervening demons, who are sometimes ghosts, as when an American Indian falling into the fire will say that an angry ancestral spirit pushed him in; or they may be simply spirits of undefined origin, like those whom the Australians regard as lurking everywhere, ready to do harm to the poor black-fellow. To compare this state of thought with that of the classic world, we have but to remember the remark of Hippocrates about the superstitious who believed themselves infested day and night by malicious demons, or the Romans' fear of those harmful ghost-demons the *lemures*, whom they got rid of by the quaint ceremonies of the annual *Lemuralia*. How permanent these demon-ideas

have been from the infancy of culture, may be well shown by the permanence of the practice of holding at intervals such special ceremonies to expel them. In Siam the people first hunt the demons out of the houses, and then drive them with cannon-shots through the streets till they get them outside the walls into the forest. In Old Calabar they put puppets along the streets leading to the sea, to entice the demons into, and then at dead of night a sudden rush is made by the negroes with whips and torches to drive the spirits down into the sea. Not only do other barbaric regions, such as the South Sea Islands and Peru, furnish similar examples of the expulsion of demons, but it may still be seen among European peasantry. In Sweden, Easter-tide is the season for a general purging of the land from the evil spirits and trolls of the old heathendom; and in many parts of Germany unseemly night with crack of whip and blast of horn. (See a collection of cases in Bastian and Hartmann, *Zeitschrift für Ethnologie*, 1869, p. 189; also Hylten-Cavallius, *Wärend och Wirdarne*, part i. p. 178). In these cases it is generally unfavourable influences which are considered as due to the demons. But favourable events are even by savages often recognized as due to the intervention of some kindly spirit, and especially to a guardian or patron demon, whose help accounts for what among ourselves is often not much more rationally considered to be "luck." It is often a recognized ancestral soul which from natural affection undertakes this duty, as when a Tasmanian has been known to account for escape from danger by the idea that his father's soul was still watching over him. But it need not be so; and among the American Indians or West Africans, where each man lives in constant imaginary intercourse with his patron-spirit, talking with it, making it offerings, and trusting to its guidance in difficulty and protection from danger, this spirit may be revealed in a dream or vision, and is often connected with some object known as a "medicine" or "fetish," but is seldom identified with any particular ghost. In Greek literature this idea is best exemplified by the lines of Menander on the good demon whom every man has from birth as his guide through the mysteries of life (ap. Clem. Alex., *Stromat.* v.); the most popularly known example is the so-called "demon" of Socrates, but he himself did not give such personal definiteness to the divine or dæmonic influence (*δαμόνιον*) which warned him by what he described as a voice or sign (see Zeller, *Socrates*, ch. 4). The primitive idea of the patron spirit is carried on in the Roman *genius*, whose name (even without the addition of "natalis") indicates that it is born with the person whom it accompanies through life. Its place very closely corresponds to that occupied in modern folklore by the guardian angel. There are districts in France where a peasant meeting another, salutes not only the man, but his "companion," the guardian angel who is supposed to be invisibly at his side.

Among attendant and patron demons, as recognized in the general belief of mankind, a specially important class is formed by the familiar spirits who accompany sorcerers, giving them mysterious knowledge, uttering oracular responses through their voices, enabling them to perform wonderful feats, bringing them treasure or injuring their enemies, and doing other spiritual services for them. From the descriptions of sorcerers among the lower nations, it is at once evident that their supposed intercourse with demons is closely connected with the symptoms of disease-possession. Thus among the Zulus, "the disease which precedes the power to divine" is distinctly hysterical, the patient's morbid sensitiveness and intensely vivid imagination of sights and voices fitting well with his persuasion that he is under the control of some ancestral ghost. So

well is this connection recognized among races like the Patagonians and rude tribes of Siberia, that children with an hereditary tendency to epilepsy are brought up to the profession of magicians. Where the sorcerer has not naturally such symptoms of possession by a controlling demon, he is apt to bring them on by violent dancing and beating drums, or by drugs, or to simulate them by mere knavery; which latter is really the most convincing proof that the original notion of the demon of the magician did not arise from imposture, but from actual belief that the morbid excitement, hallucination, and raving consequent on mental disease were caused by spirits other than the man's own soul, in possession of his body. The primitive and savage theory of inspiration by another spirit getting inside the body is most materialistic, and cheating sorcerers accordingly use *ventriloquism* of the original kind, which (as its name implies) is supposed to be caused by the voice of a demon inside the body of the speaker, who really himself talks in a feigned human voice, or in squeaking or whistling tones thought suitable to the thin-bodied spirit-visitor. The familiar spirit may be a human ghost or some other demon, and may either be supposed to enter the man's body or only to come into his presence, which is somewhat the same difference as whether in disease the demon "possesses" or "obsesses" a patient, *i.e.*, controls him from inside or outside. Thus the Greenland *angekok*, or sorcerer, is described as following his profession by the aid of a *torngak*, or familiar spirit (who may be an ancestral ghost), whom he summons by drumming, and with whom he is heard by the bystanders to carry on a conversation within the hut, obtaining information which enables him to advise as to the treatment of the sick, the prospect of good or bad weather, and the other topics of the business of a soothsayer. Passing over the intermediate space which divides the condition of savages from that of mediæval or modern Europeans, we shall find, so far as the doctrine of familiar demons has survived, that it has changed but little in principle. In the witch trials a favourite accusation was that of having a familiar demon. Sir Walter Scott's *Demonology and Witchcraft* contains among others the case of Bessie Dunlop, whose familiar was the ghost of one Thome Reid, killed at the battle of Pinkie (1547), who enabled her to give answers to such as consulted her about the ailments of human beings or cattle, or the recovery of things lost or stolen. This miserable woman, chiefly on her own confession, was as usual "convict and burnt." Here the imagined demon was a human soul; but other spirits thus attended sorcerers and diviners, such as the spirit called Hudhart, who enabled a certain Highland woman to prophesy as to the conspiracy to murder James I. of Scotland. Dissertations on the art of raising demons for the sorcerers' service, and even the actual charms and ceremonies to be used, form a large part of the precepts of magical books. (See Ennemoser, *History of Magic*; Horst, *Zauberbibliothek*, and other works already cited.) Among the latest English books treating seriously of this "black art" is Sibly's *Illustration of the Occult Sciences*, of which a 10th edition, in 4to, bears date London, 1807. The statute of James I. of England enacts that all persons invoking any evil spirit, or consulting, covenanting with, entertaining, employing, feeding, or rewarding any evil spirit, should be guilty of felony, and suffer death. This was not repealed till the reign of George II. Educated public opinion has now risen above this level; but popular credulity is still to be worked upon by much the same means as those employed by savage sorcerers professing intercourse with familiar spirits. At "spiritualistic séances" the convulsive and hysterical symptoms (pre-tended or real) of the "medium" under the "control" of his "guiding spirit" are much the same as those which

may be seen among the Fijians or the hill-tribes of Burmah, while the feigned voice, supposed to indicate that it is some Negro or Irish spirit speaking through the medium's organs, is often a clumsier performance than that of the New Zealand sorceress, producing in thin squeaking tones the voice of a family ghost. Many of the special "manifestations," such as thumping and drumming in the dark, are those usual in the performances of the Siberian shamans, who also, in common with the Greenland angekoks, impose on the bystanders by the miraculous performance of the "rope-trick;" the "planchette-writing," by the guiding hand of a familiar spirit, has long been done by an inferior class of magicians in China. The crowning incident in the English proceedings is the "materialization" of the familiar spirit in a dimly-seen figure which, when a rush is made to seize it, proves to be a doll or the medium himself in drapery.

Returning to the general theory of demonology, two important principles have to be brought together under notice. As the religions of the world become more complexly organized, the various kinds of spirits divide into orders or ranks of a hierarchy; while with the growth of dualism the class of demons further arrange themselves as it were in two opposite camps, under the presiding good and evil deities. The way in which such views may be developed is well seen in Bishop Callaway's *Religion of the Amazulu*, among whom the ancestral ghosts (amatongo) carry on after death their friendly or hostile character, so that in general the ghosts of a man's own family or tribe are friendly demons helping him and fighting on his side, while the ghosts of enemies remain hostile demons. In the religion of Congo, according to Magyar (*Reisen in Süd-Afrika*, 1849-57), the highest deity, Suku-Vakange, takes little interest in mankind, and the real government of the world belongs to the good and bad kilulu,—spirits or demons. When a man dies, according to his circumstances in life he becomes a friend or enemy of the living, and thus passes among the good or bad kilulu. But as there are more bad spirits who torment than good who favour, man's misery would be unbearable did not Suku-Vakange from time to time, enraged at the wickedness of the evil spirits, terrify them with thunder and smite the more obstinate with his bolts; then he returns to rest and leaves the demons to rule again. In the religion of the ancient Egyptians the dualistic system is worked out in the antagonism between the gods of light and the evil powers under the serpent Apap, whose long undulating form may be seen in those portions of the pictorial ritual of the dead which are painted on the mummy-cases. (See Birch's translation of the *Book of the Dead*, in vol. v. of Bunsen, *Egypt's Place in Universal History*.) In the ancient Babylonian system the demons were classified in orders, and the minuteness with which their functions as personal causes of evil are assigned to them is well shown by the following passage from a cuneiform inscription:—"They assail country after country; they make the slave set himself up above his place; they make the son of the house leave his father; they make the young bird fly out of its nest; they make the ox and the lamb run away—the evil demons who set snares" (Lenormant, p. 29.) In Brahmanism and Buddhism which sprang from it, as well as in the ancient Persian religion, the various orders of spirits who come under the general definition of demons have large place. The latter faith, as represented in the *Zend-Avesta*, worked out to its extreme development the doctrines of the good and evil deities, Ahuramazda and Anra-mainyu (Ormuzd and Ahriman), each with his innumerable armies of spirits or demons, those of light, purity, and goodness being met in endless contention by the legions of darkness who seek to undo all good and

spread foulness and sin around them. This remarkable system exercised strong influence on religions of later civilization. The later Jewish or Talmudic ideas are strongly leavened by it, and to it is in great measure due the rise of the Manichæan doctrine. The demonology of these systems may best be studied as part of their general doctrine, while their relation to the angelology and demonology of Christianity belongs to Christian theology.

Though in this short notice only a few illustrative cases are given as to the belief in demons, the great mass of details of the kind in the various religions of the world will be found to conform with them both as to the notion of demons being derived from the idea of the human soul, and as to their function in primitive philosophy being to serve as personal causes of events. The principles of demonology thus form an interesting branch of intellectual history. But beside this, its names and formulas transmitted as they have been by the blind reverence of generations of magicians, preserve for the historical student some curious relics of antiquity. As a pendant to the already-mentioned Talmudic *Lilith*, the female nocturnal demon of ancient Assyria, may be noticed *Asmodeus*, famous in Le Sage's novel *Le Diable Boiteux*, who is not only to be found in the book of Tobit and the Talmudic legend of King Solomon (see Eisenmenger, *Entdecktes Judenthum*), but may be traced back still farther to his real origin in *Aeshma daeva*, one of the evil demons of the ancient Persian religion. The conjurations and formulas for raising demons in the curious old book of magic which bears the name of Doctor Faustus (see reprint in Horst) are a wonderful medley of scraps from several religions. Their principal source, beside Christian invocations and fragments of ritual, is Hebrew, whether biblical or from the later Rabbinical books; Aziel, Faust's own familiar, chosen because he can do his errands swift as thought, is apparently the fallen angel Azael of the Talmud, to whom Solomon goes every day for wisdom; Michael, Raphael, Uriel, and Gabriel guard the four quarters of a mystic demon-circle; while the names of Satan and Pluto, Ariel and Hesper, Petrus and Adonis, figure among incantations in dog-Latin and good high Dutch, and a mass of words reduced to gibberish beyond comprehension. The study of demonology also brings into view the tendency of hostile religions to degrade into evil demons the deities of a rival faith. The ancient schism between two branches of the Aryan race, which separated the Zarathustrian religion from the Vedic religion, now represented by Brahmanism, is nowhere better marked than in the fact that the *devas*, the bright gods of the Hindoo, have become the *devs* or evil demons of the Persian. So the evil beings recognized in the folk-lore of Christendom are many of them the nature-spirits, lares, and other deities of the earlier heathendom, not discarded as imaginary, but lowered from their high estate and good repute to swell the crowd of hateful demons. (E. B. T.)

DE MORGAN, AUGUSTUS (1806-1871), one of the most eminent mathematicians and logicians of his time, was born June 1806, at Madura, in the Madras presidency. His father was Colonel John De Morgan, employed in the East India Company's service, and his grandfather and great-grandfather had served under Warren Hastings. On the mother's side he was descended from James Dodson, F.R.S., author of the *Anti-logarithmic Canon* and other mathematical works of merit, and a friend of Demoisire.

Very shortly after the birth of Augustus, Colonel De Morgan brought his wife, daughter, and infant son to England, where he left them during a subsequent period of service in India, dying in 1816 on his way home. Augustus, then ten years of age, received his early education in several private schools, and before the age of four-

teen years had learned Latin, Greek, and some Hebrew, in addition to acquiring much general knowledge. At the age of sixteen years and a half he entered Trinity College, Cambridge, and studied mathematics, partly under the tuition of Airy, subsequently the astronomer royal. In 1825 he gained a Trinity scholarship. De Morgan's attention was by no means confined to mathematics, and his love of wide reading somewhat interfered with his success in the mathematical tripos, in which he took the fourth place in 1827, before he had completed his twenty-first year. He was prevented from taking his M.A. degree, or from obtaining a fellowship, to which he would doubtless have been elected, by his conscientious objection to signing the theological tests then required from masters of arts and fellows at Cambridge. A strong repugnance to any sectarian restraints upon the freedom of opinion was one of De Morgan's most marked characteristics throughout life.

A career in his own university being closed against him, he entered Lincoln's Inn; but had hardly done so when the establishment, in 1828, of the university of London, in Gower Street, afterwards known as University College, gave him an opportunity of continuing his mathematical pursuits. At the early age of twenty-two years he gave his first lecture as professor of mathematics in a college which he served with the utmost zeal and success for a third of a century. His connection with the college, indeed, was interrupted in 1831, when a disagreement with the governing body caused De Morgan and some other professors to resign their chairs simultaneously. When, in 1836, his successor Mr White was accidentally drowned, De Morgan was requested to resume the professorship. It may be added that his choice of a literary and scientific career was made against the advice of his relatives and friends, who, on his entering Lincoln's Inn, confidently anticipated for him a distinguished and lucrative career at the bar.

In 1837 De Morgan married Sophia Elizabeth, daughter of William Frend, a Unitarian in faith, a mathematician and actuary in occupation, a notice of whose life, written by his son-in-law, will be found in the *Monthly Notices of the Royal Astronomical Society* (vol. v). Henceforward De Morgan's life is scarcely more than a record of his constant labours, and his innumerable publications. As in the case of many scholars, the even tenor of his life was unbroken by remarkable incidents. Surrounded by a growing family, ultimately seven in number, he sought happiness in his home, in his library, and in the energetic and vigorous discharge of his college duties. He seldom travelled or enjoyed relaxation, and could with difficulty be induced to remain many days from home.

As a teacher of mathematics De Morgan was unrivalled. He gave instruction in the form of continuous lectures delivered *extempore* from brief notes. The most prolonged mathematical reasoning, and the most intricate formulae, were given with almost infallible accuracy from the resources of his extraordinary memory. De Morgan's writings, however excellent, give little idea of the perspicuity and elegance of his *viva voce* expositions, which never failed to fix the attention of all who were worthy of hearing him. Many of his pupils have distinguished themselves, and, through Mr Todhunter and Mr Routh, he has had an important influence on the modern Cambridge school. In addition to occasional extra courses, it was his habit to give two lectures on each of the six week days throughout the working session of thirty weeks or more. Each lecture was exactly one hour and a quarter in length, and at the close a number of questions and problems were always given, to which the pupils returned written answers. These were all corrected by the professor's own hand, and personal explanations given before or after the lecture.

Although the best hours of the day were thus given to arduous college work, his public labours in other directions were extensive. For thirty years he took an active part in the business of the Royal Astronomical Society, editing its publications, supplying obituary notices of members, and for 18 years acting as one of the honorary secretaries. His work for this society alone, it is said, would have been occupation enough for an ordinary man. He was also frequently employed as consulting actuary, a business in which his mathematical powers, combined with sound judgment and business-like habits, fitted him to take the highest place.

De Morgan's mathematical writings contributed powerfully towards the progress of the science. His memoirs on the "Foundation of Algebra," in the 7th and 8th volumes of the *Cambridge Philosophical Transactions*, contain some of the most important contributions which have been made to the philosophy of mathematical method; and Sir W. Rowan Hamilton, in the preface to his *Lectures on Quaternions*, refers more than once to those papers as having led and encouraged him in the working out of the new system of quaternions. The work on *Trigonometry and Double Algebra*, published by De Morgan in 1849, contains in the latter part a most luminous and philosophical view of existing and possible systems of symbolic calculus. But De Morgan's influence on mathematical science in England can only be estimated by a review of his long series of publications, which commence, in 1828, with a translation of part of Bourdon's *Elements of Algebra*, prepared for his students. In 1830 appeared the first edition of his well-known *Elements of Arithmetic*, which has been widely used in schools, and has done much to raise the character of elementary training. It is distinguished by a simple yet thoroughly philosophical treatment of the ideas of number and magnitude, as well as by the introduction of new abbreviated processes of computation, to which De Morgan always attributed much practical importance. Second and third editions were called for in 1832 and 1835, and more than 20,000 copies have been sold; the book is still in use, a sixth edition having been issued in 1876.

De Morgan's other principal mathematical works were *The Elements of Algebra*, 1835, a valuable but somewhat dry elementary treatise; the *Essay on Probabilities*, 1838, forming the 107th volume of *Lardner's Cyclopædia*, still much used, being probably the best simple introduction to the theory in the English language; and *The Elements of Trigonometry and Trigonometrical Analysis, preliminary to the Differential Calculus*, 1837.

Several of his mathematical works were published by the Society for the Diffusion of Useful Knowledge, of which De Morgan was at one time an active member. Among these may be mentioned the great *Treatise on the Differential and Integral Calculus*, 1842, which still remains the most extensive and complete English treatise on the subject; the *Elementary Illustrations of the Differential and Integral Calculus*, first published in 1832, but often bound up with the larger treatise; the valuable essay, *On the Study and Difficulties of Mathematics*, 1831; and a brief treatise on *Spherical Trigonometry*, 1834. By some accident the work on probability in the same series, written by Lubbock and Drinkwater-Bethune was attributed to De Morgan, an error which seriously annoyed his nice sense of bibliographical accuracy. For fifteen years he did all in his power to correct the mistake, and finally wrote to the *Times* to disclaim the authorship. (See *Monthly Notices of the Royal Astronomical Society*, vol. xxvi p. 118.)

Two of his most elaborate treatises are to be found in the *Encyclopædia Metropolitana*, namely the articles on the

Calculus of Functions, and the Theory of Probabilities. The former article contains a profound investigation into the principles of symbolic reasoning; the latter is still the most complete mathematical treatise on the subject in the English language, giving as it does a resumé of Laplace's *Théorie Analytique des Probabilités*. De Morgan's minor mathematical writings are scattered over various periodicals; five papers will be found in the *Cambridge Mathematical Journal*, ten in the *Cambridge and Dublin Mathematical Journal*, several in the *Philosophical Magazine*, while others of more importance are printed in the *Cambridge Philosophical Transactions*. A list of these and other papers will be found in the *Royal Society's Catalogue*, which contains 42 entries under the name of De Morgan.

In spite of the excellence and extent of his mathematical writings, it is probably as a logical reformer that De Morgan will be best known to future times. In this respect he stands alongside of his great contemporaries Hamilton and Boole, as one of several independent discoverers of the all-important principle of the quantification of the predicate. Unlike most mathematicians, De Morgan always laid much stress upon the importance of logical training. In his admirable papers upon the modes of teaching arithmetic and geometry, originally published in the *Quarterly Journal of Education* (reprinted in *The Schoolmaster*, vol. ii.), he remonstrated against the neglect of logical doctrine. In 1839 he produced a small work called *First Notions of Logic*, giving what he had found by experience to be much wanted by students commencing with *Euclid*.

In October 1846 he completed the first of his original investigations, in the form of a paper printed in the *Transactions of the Cambridge Philosophical Society* (vol. viii. No. 29). In this paper the principle of the quantified predicate was referred to, and there immediately ensued a memorable controversy with Sir W. Hamilton regarding the independence of De Morgan's discovery, some communications having passed between them in the autumn of 1846. The details of this dispute will be found by those interested in the original pamphlets, in the *Athenæum* newspaper, or in the appendix to De Morgan's *Formal Logic*. Suffice it to say that the independence of De Morgan's discovery was subsequently recognized by Hamilton, and that those acquainted with De Morgan's character could never suppose that it was otherwise. Moreover, the eight forms of proposition adopted by De Morgan as the basis of his system partially differ from those which Hamilton derived from the quantified predicate. The general character of De Morgan's development of logical forms was wholly peculiar and original on his part.

Not a year passed before De Morgan, late in 1847, published his principal logical treatise, called *Formal Logic, or the Calculus of Inference, Necessary and Probable*. This contains a reprint of the *First Notions*, an elaborate development of his doctrine of the syllogism, and of the numerically definite syllogism, together with chapters of great interest on probability, induction, old logical terms, and fallacies. The severity of the treatise is relieved by characteristic touches of humour, and by quaint anecdotes and allusions furnished from his wide reading and perfect memory.

There followed at intervals, in the years 1850, 1858, 1860, and 1863, a series of four elaborate memoirs on the "Syllogism," printed in volumes ix. and x. of the *Cambridge Philosophical Transactions*. These papers taken together constitute a great treatise on logic, in which he substituted improved systems of notation, and developed a new logic of relations, and a new onymatic system of logical expression. Apart, however, from their principal purpose,

these memoirs are replete with acute remarks, happy illustrations, and abundant proofs of De Morgan's varied learning. Unfortunately these memoirs are accessible to few readers, otherwise they would form invaluable reading for the logical student. In 1860 De Morgan endeavoured to render their contents better known by publishing a *Syllabus of a Proposed System of Logic*, from which may be obtained a good idea of his symbolic system, but the more readable and interesting discussions contained in the memoirs are of necessity omitted. The article "Logic" in the *English Cyclopædia* (1860) completes the list of his logical publications.

Throughout his logical writings De Morgan was led by the idea that the followers of the two great branches of exact science, logic and mathematics, had made blunders,—the logicians in neglecting mathematics, and the mathematicians in neglecting logic. He endeavoured to reconcile them, and in the attempt showed how many errors an acute mathematician could detect in logical writings, and how large a field there was for discovery. But it may be doubted whether De Morgan's own system, "horrent with mysterious spicula," as Hamilton aptly described it, is fitted to exhibit the real analogy between quantitative and qualitative reasoning, which is rather to be sought in the logical works of Boole. (See BOOLE, vol. iv. p. 47.)

Perhaps the largest part, in volume, of De Morgan's writings remains still to be briefly mentioned; it consists of detached articles contributed to various periodical or composite works. During the years 1833-43, he contributed very largely to the first edition of the *Penny Cyclopædia*, writing chiefly on mathematics, astronomy, physics, and biography. His articles of various length cannot be less in number than 850, as may be ascertained from a signed copy in the British Museum, and they have been estimated to constitute a sixth part of the whole *Cyclopædia*, of which they formed perhaps the most valuable portion. He also wrote biographies of Newton and Halley for Knight's *British Worthies*, various notices of scientific men for the *Gallery of Portraits*, and for the uncompleted *Biographical Dictionary of the Useful Knowledge Society*, and at least seven articles in Smith's *Dictionary of Greek and Roman Biography*.

Some of De Morgan's most interesting and useful minor writings are to be found in the *Companions to the British Almanack*, to which he contributed without fail one article each year from 1831 up to 1857 inclusive. In these carefully written papers he treats a great variety of topics relating to astronomy, chronology, decimal coinage, life-assurance, bibliography, and the history of science. Most of them are as valuable now as when written.

Among De Morgan's miscellaneous writings may be mentioned his *Explanation of the Gnomonic Projection of the Sphere*, 1836, including a description of the maps of the stars, published by the Useful Knowledge Society; his *Treatise on the Globes, Celestial and Terrestrial*, 1845; and his remarkable *Book of Almanacks*, (second edition 1871), which contains a series of 35 almanacks, so arranged with indices of reference, that the almanack for any year, whether in old style or new, from any epoch, ancient or modern, up to 2000 A.D., may be found without difficulty, means being added for verifying the almanack and also for discovering the days of new and full moon from 2000 B.C. up to 2000 A.D. De Morgan expressly draws attention to the fact that the plan of this book was that of Françoer and Ferguson, but the plan was developed by one who was an unrivalled master of all the intricacies of chronology. The two best tables of logarithms, the small five-figure tables of the Useful Knowledge Society (1839 and 1857), and Shroen's Seven Figure-Table (5th ed. 1865), were printed under De Morgan's superintendence. Several works edited by him will be found mentioned in the *British Museum Catalogue*. His numerous anonymous contributions through a long series of years to the *Athenæum*, and to *Notes and Queries*, and his occasional articles in the *North British Review*, *Macmillan's Magazine*, &c., must be passed over with this bare mention.

Considerable labour was spent by De Morgan upon the subject of decimal money. He was a great advocate of the pound and mil scheme. His evidence on this subject was sought by the Royal Commission, and, besides constantly supporting the Decimal Association in periodical publications, he published several separate pamphlets on the subject.

One marked character of De Morgan was his intense, and yet reasonable love of books. He was a true bibliophil, and loved to surround himself, as far as his means allowed, with curious and rare books. He revelled in all the mysteries of watermarks, title pages, colophons, catch-words, and the like, yet he treated biblio-

graphy as an important science. As he himself wrote, "the most worthless book of a bygone day is a record worthy of preservation; like a telescopic star, its obscurity may render it unavailable for most purposes; but it serves, in hands which know how to use it, to determine the places of more important bodies." His evidence before the Royal Commission on the British Museum in 1850, (Questions 5704-5815,\* 6481-6513, and 8966-8967), should be studied by all who would comprehend the principles of bibliography or the art of constructing a catalogue, his views on the latter subject corresponding with those carried out by Panizzi in the *British Museum Catalogue*. A sample of De Morgan's bibliographical learning is to be found in his account of *Arithmetical Books, from the Invention of Printing* (1847), and finally in his *Budget of Paradoxes*. This latter work consists of articles most of which were originally published in the *Athenæum*, describing the various attempts which have been made to invent a perpetual motion, to square the circle, or to trisect the angle; but De Morgan took the opportunity to include many curious bits gathered from his extensive reading, so that the *Budget* as reprinted by his widow (1872), with much additional matter prepared by himself, forms a remarkable collection of scientific *ana*. De Morgan's correspondence with contemporary scientific men was very extensive and full of interest. It remains unpublished, as does also a large mass of mathematical tracts which he prepared for the use of his students, treating all parts of mathematical science, and embodying some of the matter of his lectures. De Morgan's library was purchased by Lord Overstone, and presented to the university of London.

From the above enumeration it will be apparent that the extent of De Morgan's literary and scientific labours was altogether extraordinary; nor was quality sacrificed to quantity. On the contrary every publication was finished with extreme care and accuracy, and no writer can be more safely trusted in every thing which he wrote. It is possible that his continual efforts to attain completeness and absolute correctness injured his literary style, which is wanting in grace; but the estimation in which his books are held is shown by the fact that they are steadily rising in market price. Apart from his conspicuous position as a logical and mathematical discoverer, we may conclude that hardly any man of science in recent times has had a more extensive, though it may often be an unfeeling influence, upon the progress of exact and sound knowledge.<sup>1</sup>

De Morgan has left no published indications of his opinions on religious questions, in regard to which he was extremely reticent. He seldom or never entered a place of worship, and declared that he could not listen to a sermon, a circumstance perhaps due to the extremely strict religious discipline under which he was brought up. Nevertheless there is reason to believe that he was of a deeply religious disposition. Like Faraday and Newton he entertained a confident belief in Providence, founded not on any tenuous method of inference, but on personal feeling. His hope of a future life also was vivid to the last.

In the year 1866 a life as yet comparatively free from trouble became clouded by the circumstances which led him to abandon the institution so long the scene of his labours. The refusal of the council to accept the recommendation of the senate, that they should appoint an eminent Unitarian minister to the professorship of logic and mental philosophy, revived all De Morgan's sensitiveness on the subject of sectarian freedom; and, though his feelings were doubtless excessive, there is no doubt that gloom was thrown over his life, intensified in 1867 by the loss of his son George Campbell De Morgan, a young man of the highest scientific promise, whose name, as De Morgan expressly wished, will long be connected with the London Mathematical Society, of which he was one of the founders. From this time De Morgan rapidly fell into ill-health, previously almost

<sup>1</sup> In a notice of De Morgan's character it is impossible to omit a reference to his witty sayings, some specimens of which are preserved in Dr Sadler's most interesting *Diary of Henry Crabb Robinson* (1869), which also contains a humorous account of H. C. R. by De Morgan. It may be added that De Morgan was a great reader and admirer of Dickens; he was also fond of music, and a fair performer on the flute.

unknown to him, dying on the 18th March 1871. An interesting and truthful sketch of his life will be found in the *Monthly Notices of the Royal Astronomical Society*, for the 9th February 1872, vol. xxii. p. 112, written by Mr Ranyard, who says, "He was the kindest, as well as the most learned of men—benignant to every one who approached him, never forgetting the claims which weakness has on strength." (w. s. j.)

DEMOSTHENES was born in 384 B.C. His father, who bore the same name, was an Athenian citizen belonging to the deme of Paania. His mother, Cleobule, was the daughter of Gylon, a citizen who had been active in procuring the protection of the kings of Bosphorus for the Athenian colony of Nymphæon in the Crimea, and whose wife was a native of that region. On these grounds the adversaries of Demosthenes, in after-days, used absurdly to taunt him with a traitorous or barbarian ancestry. The boy had a bitter foretaste of life. He was seven years old when his father died, leaving property (in a manufactory of swords, and another of upholstery) worth about £3500, which, invested as it seems to have been (20 per cent. was not thought exorbitant), would have yielded rather more than £600 a year. £300 a year was a very comfortable income at Athens, and it was possible to live decently on a tenth of it. Nicias, a very rich man, had property equivalent, probably, to not more than £4000 a year. Demosthenes was born, then, to a handsome, though not a great fortune. But his guardians—two nephews of his father, Aphobus and Demophon, and one Therippides—abused their trust, and handed over to Demosthenes, when he came of age, rather less than one-seventh of his patrimony, perhaps between £50 and £60 a year. Demosthenes, after studying with Isæus—then the great master of forensic eloquence and of Attic law, especially in will cases<sup>2</sup>—brought an action against Aphobus, and gained a verdict for about £2400. But it does not appear that he got the money; and, after some more fruitless proceedings against Onetor, the brother-in-law of Aphobus, the matter was dropped,—not, however, before his relatives had managed to throw a public burden (the equipment of a ship of war) on their late ward, whereby his resources were yet further straitened. He now became a professional writer of speeches or pleas for the law-courts, sometimes speaking himself. Biographers have delighted to relate how painfully Demosthenes made himself a tolerable speaker,—how, with pebbles in his mouth, he tried his lungs against the waves, how he declaimed as he ran up hill, how he shut himself up in a cell, having first guarded himself against a longing for the haunts of men by shaving one side of his head, how he wrote out Thucydides eight times, how he was derided by the Assembly and encouraged by a judicious actor who met him moping about the Peiræus. He certainly seems to have been the reverse of athletic (the stalwart Æschines upbraids him with never having been a sportsman), and he probably had some sort of defect or impediment in his speech as a boy. Perhaps the most interesting fact about his work for the law-courts is that he seems to have continued it, in some measure, through the most exciting parts of his great political career. The speech for Phormio belongs to the same year as the plea for Megalopolis. The speech for Boeotus "Concerning the Name" comes between the First Philippic and the First Olynthiac. The speech against Pantænetus comes between the speech "On the Peace" and the Second Philippic.

<sup>2</sup> In Jebb's *Attic Orators from Antiphon to Isæus*, vol. ii. p. 267 f. the traditions of the relation between Demosthenes and Isæus are examined in detail. It is there shown that the intercourse of the men can scarcely have been either intimate or prolonged, but that Demosthenes undoubtedly learned from Isæus the art of grappling with a forensic adversary in close and strenuous argument.