

in any way mending matters. Let them send into Ireland 10,000 foot and 1000 horse, disperse them in garrisons—a complete scheme of localities is submitted,—give the Irish twenty days to come in; if they did not come in then, give no quarter afterwards, but hunt them down like wild beasts in the winter time when the covert is thin; “if they be well followed one winter, ye shall have little work to do with them the next summer”; famine would complete the work of the sword; and in eighteen months’ time peace would be restored and the ground cleared for plantation by English colonists. There must be no flinching in the execution of this plan,—“no remorse or drawing back for the sight of any such rueful object as must thereupon follow, nor for compassion of their calamities, seeing that by no other means it is possible to recover them, and that these are not of will but of very urgent necessity.” The Government had out of foolish compassion drawn back before when Lord Grey had brought the recalcitrant Irish to the necessary extremity of famine; the gentle poet warns them earnestly against a repetition of the blunder.

Such was Spenser’s plan for the pacification of Ireland, propounded not on his own authority, but as having support in “the consultations and actions of very wise governors and counsellors, whom he had sometimes heard treat thereof.” He knew that it was “bloody and cruel”; but he contended passionately that it was necessary for the maintenance of English power and the Protestant religion. Commentary on the plan, which has been so much and so warmly discussed, would be out of place here. The method was repugnant to the kindly nature of average Englishmen; from the time of Lord Grey no English authority had the heart to go through with it till another remorseless zealot appeared in the person of Cromwell. That Cromwell knew the treatise of “the sage and serious Spenser,” perhaps through Milton, is probable from the fact that the poet’s Irish estates were secured to his grandson by the Protector’s intervention in 1657. These estates had been granted to Spenser as his share in the redistribution of Munster,—3000 acres of land and Kilcolman castle, an ancient seat of the Desmonds, in the north of the county of Cork. The elaborate and business-like character of the *View* shows that the poet was no sinecurist, but received his reward for substantial political services. He ceased to be secretary to the lord-deputy when Lord Grey was recalled in 1582; but he continued in the public service, and in 1586 was promoted to the onerous position of clerk to the council of Munster.

Amidst all the distractions of his public life in Ireland, Spenser seems to have proceeded steadily with the composition of the *Faery Queen*, translating his varied experience of men and affairs into the picturesque forms of his allegory, and expressing through them his conception of the immutable principles that ought to regulate human conduct. He had, as we have seen, conceived a work of the kind and made a beginning before he left England. The conception must have been very much deepened and widened and in every way enriched by his intimate daily contact with the actual struggle of conflicting individuals and interests and policies in a great crisis. Some four or five years later, being asked in a mixed company of English officials in Ireland (as recorded in Lodowick Bryskett’s *Discourse of Civil Life*) to give offhand a short sketch of “the ethical part of moral philosophy” and the practical uses of the study, Spenser explained to these simple-minded men that the subject was too intricate for an impromptu exposition, but that he had in hand a work called the *Faery Queen* in which an ethical system would be exhibited in action. The respect paid by his official brethren to Spenser as a man, “not only perfect in the Greek tongue, but also very well read in philosophy, both moral and natural,” is an interesting item in his biography. Some years later still, when Spenser was settled at Kilcolman castle, Sir Walter Raleigh found him with three books of the *Faery Queen* completed, and urged him to come with them to London. London accordingly he re-

visited in 1589, after nine years’ absence. There is a very pretty record of this visit in *Colin Clout’s Come Home Again*, published in 1595, but written in 1591, immediately after his return to Kilcolman. The incidents of the visit, by that time matters of wistful memory, are imaged as a shepherd’s excursion from his quiet pastoral life into the great world. Colin Clout calls round him once again the masked figures of the *Shepherd’s Calendar*, and describes to them what he saw, how he fared, and whom he met at the court of Cynthia, and how through the influence of “the Shepherd of the Ocean” he was admitted at timely hours to play on his oaten pipe in the great queen’s presence.

How much is pure fiction and how much veiled fact in this picture cannot now be distinguished, but it is undoubted that Spenser, though his chief patrons Leicester and Sidney were now dead, was very graciously received by the great world on his return to London. Not only did the queen grant him an audience, but many ladies of the court, several of whom he afterwards honoured with dedications, honoured him with their patronage. The first three books of the *Faery Queen*, which were entered at Stationers’ Hall on the 1st December 1589, were published in 1590, and he was proclaimed at once with remarkable unanimity by all the writers of the time as the first of living poets.

From the first week of its publication the literary world has continued unanimous about the *Faery Queen*, except on minor points. None of our great poets has been welcomed with such universal acclaim and upheld without loss of favour through so many changes of fashion. When romanticism was at its lowest ebb Pope read Spenser in his old age with as much delight as in his boyhood. He speaks himself of having had his detractors, of having suffered from the venomous tooth of the Blatant Beast, and he seems to have had in more than ordinary share the poet’s sensitiveness to criticism; but the detractors or indifferentists have generally been found among men who, like the lord high treasurer Burghley, have no liking for poetry of any kind. The secret of Spenser’s enduring popularity with poets and lovers of poetry lies specially in this that he excels in the poet’s peculiar gift, the instinct for verbal music. Shakespeare, or the author of the sonnet usually assigned to him, felt and expressed this when he drew the parallel between “music and sweet poetry.”—

“Thou lovest to hear the sweet melodious sound
That Phoebus’ lute, the queen of music, makes;
And I in deep delight am chiefly drowned
Whenas himself to singing he betakes.”

This is an early word in criticism of Spenser, and it is the last word about his prime and unquestionable excellence,—a word in which all critics must agree. Whether he had imagination in the highest degree or only luxuriant fancy, and whether he could tell a story in the highest epic manner or only put together a richly varied series of picturesque incidents, are disputable points; but about the enchantment of his verse there can be no difference of opinion. It matters not in the least that he gains his melody often by archaic affectations, licences of diction that should make Dr Richard Morris “stare and gasp”; there, however purchased, the marvellously rich music is. In judging of the structure of the *Faery Queen* we must always remember that, long and diffuse as it is, what we have is but a fragment of the poet’s design, and that the narrative is regulated by an allegorical purpose; but, however intricate, however confused, the reader may feel the succession of incidents to be, when he studies the succession of incidents, it is only at the call of duty that he is likely to occupy himself with such a study in reading Spenser.

The ethical value of the allegory has been very variously estimated. The world would probably never have divined that there was any allegory if he had not himself drawn attention to it in a prose dedication and in doggerel headings to the cantos. It was apparently at his friend Raleigh’s suggestion that the poet condescended to explain his ethical purpose; otherwise it would have been as problematical as the similar intention in the case of the *Idyls of the King* before that intention was expressly declared. It is almost to be regretted, as far as the allegory is concerned, that the friendly “E. K.” was not employed to furnish a “glosse” to the *Faery Queen* as he had done to the *Shepherd’s Calendar*. Undoubtedly the peculiar “poetic luxury” of the *Faery Queen* can be enjoyed without any reference to the allegory; even Professor Dowden, the most eloquent champion of Spenser’s claims as a “teacher,” admits that it is a mistake to look for minute correspondence between outward symbol and underlying sense, and that the poet is least enjoyable where he is most ingenious. Still the

allegory governs the structure of the poem, and Spenser himself attached great importance to it as determining his position among poets. The ethical purpose is distinctive of the poem as a whole; it was foremost in Spenser’s mind when he conceived the scheme of the poem, and present with him as he built up and articulated the skeleton; it was in this respect that he claimed to have “overpassed” his avowed models Ariosto and Tasso. If we wish to get an idea of Spenser’s imaginative force and abundance, or to see his creations as he saw them, we must not neglect the allegory. It is obvious from all that he says of his own work that in his eyes the ethical meaning not only heightened the interest of the marvellously rich pageant of heroes and heroines, enchanters and monsters, but was the one thing that redeemed it from romantic commonplace. For the right appreciation of many of the characters and incidents a knowledge of the allegory is indispensable. For example, the slaughter of Error by the Red Cross knight would be merely disgusting but for its symbolic character; the iron Talus and his iron flail is a revolting and brutally cruel monster if he is not regarded as an image of the executioner of righteous law; the Blatant Beast, a purely grotesque and ridiculous monster to outward view, acquires a serious interest when he is known to be an impersonation of malignant detraction.

After the publication of the *Faery Queen* Spenser seems to have remained in London for more than a year, to enjoy his triumph. It might be supposed, from what he makes the Shepherd of the Ocean say in urging Colin Clout to quit his banishment in Ireland, that Raleigh had encouraged him to expect some permanent provision in London. If he had any such hopes they were disappointed. The thrifty queen granted him a pension of £50, which was paid in February 1591, but nothing further was done for him. Colin Clout’s explanation that the selfish scrambling and intriguing of court life were not suited to a lowly shepherd swain, and that he returned to country life with relief, may be pastoral convention, or it may have been an expression of the poet’s real feelings on his return to Kilcolman, although as a matter of fact there seems to have been as much scrambling for good things in Munster as in London. Certain it is that he did return to Kilcolman in the course of the year 1591, having probably first arranged for the publication of *Daphnida* and *Complaints*. *Daphnida* is a pastoral elegy on the death of the niece of the mistress of the robes. The fact implied in the dedication that he was not personally known to the lady has more than once provoked the solemn remark that the poet’s grief was assumed. Of course it was assumed; and it is hardly less obvious that sincerity of personal emotion, so far from being a merit in the artificial forms of pastoral poetry, the essence of which lies in its dreamy remoteness from real life, would be a blemish and a discord. Any suggestion of the poet’s real personality breaks the charm; once raised the question of the poet’s personal sincerity and the pastoral poem may at once be thrown aside. The remark applies to all Spenser’s minor poetry, including his love-sonnets; the reader who raises the question whether Spenser really loved his mistress may have a talent for disputation but none for the full enjoyment of hyperbolic poetry. *Complaints*, also published in 1591, is a miscellaneous collection of poems written at different periods. The volume contained *The Ruins of Time*; *The Tears of the Muses*; *Virgil’s Gnat*; *Mother Hubbard’s Tale*; *The Ruins of Rome*; *Mviopotmos*; *Visions of the World’s Vanity*; *Bellay’s Visions*; *Petrarch’s Visions*. Some of these pieces are translations already alluded to and interesting only as the exercises of one of our greatest masters of melodious verse; but two of them, *The Tears of the Muses* and *Mother Hubbard’s Tale*, have greater intrinsic interest. The first is the complaint of the decay of learning alluded to in *Midsummer Night’s Dream*, v. 1, 52—

“The thrice three Muses mourning for the death
Of Learning late deceased in beggary.”

The lament, at a time when the Elizabethan drama was “mewing its mighty youth,” was not so happy as some

of Spenser’s political prophecies in his *View of Ireland*; but it is idle work to try to trace the undercurrents and personal allusions in such an occasional pamphlet. *Mother Hubbard’s Tale*, a fable in Chaucerian complets, shows a keenness of satiric force not to be paralleled in any other of Spenser’s writings, and suggests that he left the court in a mood very different from Colin Clout’s.

Spenser returned to London probably in 1595. He had married in the interval a lady whose Christian name was Elizabeth,—Mr Grosart says Elizabeth Boyle. The marriage, celebrated on the 11th of June 1594, was followed by a rapid succession of publications. The first was a volume (entered at Stationers’ Hall, 15th November 1594, published 1595) containing the *Amoretti*, a series of exquisite sonnets commemorative of the moods and incidents of his courtship, and the magnificent *Epithalamion*, incomparably the finest of his minor poems. As in the case of the *Complaints*, the publisher for obvious reasons issued this volume nominally without his authority. *Colin Clout’s Come Home Again* was published in the same year, with a dedication to Sir Walter Raleigh, dated 1591. Early in 1596 the second three books of the *Faery Queen* were entered in the register of Stationers’ Hall; and in the course of the same year were published his *Four Hymns*, his *Prothalamion*, and his *Astrophenel*, a pastoral lament for Sir Philip Sidney, which he dedicated to the countess of Essex.

That Spenser wrote more of the *Faery Queen* during the last two years of his life, and that the MS. perished in the sack of Kilcolman castle by the rebels, may plausibly be conjectured, but cannot be ascertained. During those years he would seem to have been largely occupied with political and personal cares. He describes himself in the *Prothalamion* as a disappointed suitor at court. He drew up his *View of Ireland* in 1596 when he was in London, and from various circumstances it is evident that he had hopes of some kind from the favour of Essex. The *View*, with its urgent entreaty that Essex should be sent to Ireland, was entered at Stationers’ Hall in April 1598, but he did not obtain leave to publish it. Burghley, who had long stood in his way, died in August of that year, and next month Spenser was appointed sheriff of Cork. In October Tyrone’s rebellion broke out, and Spenser’s house was sacked and burned. The poet himself escaped, and in December was sent to London with despatches. Again he ventured to urge upon the queen his plan for the thorough “reformation” of Ireland. But his own end was near. On 16th January 1599 he died at Westminster, ruined in fortune, if not heart-broken, and was buried in Westminster Abbey, near his master Chaucer.

There have been many editions of Spenser’s works. The most available and complete is the Globe edition, with a carefully edited text by Dr R. Morris, and a memoir by Professor J. W. Hales. Mr Grosart’s edition, with its keenly argumentative biography and copious collection of variorum researches and critical opinions, is printed for private circulation. (W. M.)

SPERMACETI is a solid waxy body found in special cavities in the head of the sperm whale (*Physeter macrocephalus*), where it is held in solution by sperm oil while the creature is in life. At a temperature of about 6° C. the solid matter separates in a crystalline condition, and when purified by pressure and treatment with weak solution of caustic alkali it forms brilliant white crystalline scales or plates, hard but unctuous to the touch, and destitute of taste or smell. It is quite insoluble in water, very slightly affected by boiling alcohol, but easily dissolved in ether, chloroform, and carbon bisulphide. Spermaceti consists principally of cetin or cetyl palmitate, $C_{16}H_{31}O$, —an ether composed of cetyl alcohol combined with palmitic acid. Spermaceti candles of definite size are employed

as a standard for illuminants on account of the uniform steady light they afford. The substance is further used in the dressing of fabrics and in medicine and surgery, especially in cerates, bougies, ointments, and in cosmetic preparations. For sperm oil, see WHALE OILS.

SPEUSIPPUS, son of Eurymedon and Potone, is supposed to have been born about 407 B.C. He was bred in the school of Isocrates; but, when his maternal uncle, Plato, returned to Athens about 387, he yielded to his influence and became a member of the Academy. In 361, when Plato undertook his third and last journey to Sicily, Speusippus accompanied him. In 347 the dying philosopher nominated his nephew to succeed him as scholar, and the choice was ratified by the school. Speusippus held the office for eight years, and died in 339 after a paralytic seizure. According to some authorities he committed suicide. There is a story that his youth was riotous, until Plato's example led him to reform his ways. In later life he was conspicuously temperate and amiable. He was succeeded by Xenocrates.

Of Speusippus's many philosophical writings nothing survives except a fragment of a treatise *On Pythagorean Numbers*. Nor have secondary authorities preserved to us any general statement or conspectus of his system. Incidentally, however, we learn the following details. (A) In regard to his theory of being,—(1) whereas Plato postulated as the basis of his system a cause which should be at once Unity, Good, and Mind, Speusippus distinguished Unity, the origin of things, from Good, their end, and both Unity and Good from controlling Mind or Reason; (2) whereas Plato recognized three kinds of numbers—firstly, ideal numbers, the formal causes of the ideas; secondly, mathematical numbers, the abstractions of mathematics; and thirdly, sensible numbers, numbers embodied in things—Speusippus rejected the ideal numbers, and consequently the ideas; (3) Speusippus traced number, magnitude, and soul each to a distinct principle of its own. (B) In regard to his theory of knowledge,—(4) he held that a thing cannot be known apart from the knowledge of all things besides; for, that we may know what a thing is, we must know how it differs from other things, which other things must therefore be known; (5) accordingly, in the ten books of a work called *Ἐπιστήμη*, he attempted a classification of plants and animals; (6) the results thus obtained he distinguished at once from "knowledge" (*ἐπιστήμη*) and from "sensation" (*αἰσθησις*), holding that "scientific observation" (*ἐπιστημονικὴ αἰσθησις*), though it cannot attain to truth, may nevertheless, in virtue of a certain acquired tact, frame "definitions" (*λόγοι*). (C) In regard to his theory of ethics,—(7) he denied that pleasure was a good, but seemingly was not prepared to account it an evil.

In default of direct evidence, it remains for us to compare these scattered notices of Speusippus's teaching with what we know of its original, the teaching of Plato, in the hope of obtaining at least a general notion, firstly, of Speusippus's system, and, secondly, of its relations to the systems of Plato, of contemporary Platonists, such as Aristotle, and of the later Academy.

It has been suggested elsewhere (SOCRATES, p. 238 *supra*) that the crude and unqualified "realism" of Plato's early manhood gave place in his later years to a theory of natural kinds founded upon a "thoroughgoing idealism," and that in this way he was led to recognize and to value the classificatory sciences of zoology and botany. More exactly, it may be said that the Platonism of Plato's maturity included the following principal doctrines:—(i.) the supreme cause of all existence is the One, the Good, Mind, which evolves itself as the universe under certain eternal immutable forms called "ideas"; (ii.) the ideas are apprehended by

finite minds as particulars in space and time, and are then called "things"; (iii.) consequently the particulars which have in a given idea at once their origin, their being, and their perfection may be regarded, for the purposes of scientific study, as members of a natural kind; (iv.) the finite mind, though it cannot directly apprehend the idea, may, by the study of the particulars in which the idea is revealed, attain to an approximate notion of it.

Now when Speusippus (1) discriminated the One, the Good, and Mind, (2) denied the ideas, and (3) abandoned the attempt to unify the plurality of things, he explicitly rejected the theory of being expressed in (i.) and (ii.); and the rejection of the theory of being, *i.e.*, of the conception of the One evolving itself as a plurality of ideas, entailed consequential modifications in the theory of knowledge conveyed in (iii.) and (iv.). For, if the members of a natural kind had no common idea to unite them, scientific research, having nothing objective in view, could at best afford a *λόγος* or definition of the appropriate particulars; and, as the discrimination of the One and the Good implied the progression of particulars towards perfection, such a *λόγος* or definition could have only a temporary value. Hence, though, like Plato, Speusippus (4) studied the differences of natural products (5) with a view to classification, he did not agree with Plato in his conception of the significance of the results thus obtained; that is to say, while to Plato the definition derived from the study of the particulars included in a natural kind was an approximate definition of the idea in which the natural kind originated, to Speusippus the definition was a definition of the particulars studied, and, strictly speaking, of nothing else. Thus, while Plato hoped to ascend through classificatory science to the knowledge of eternal and immutable laws of thought and being, Speusippus, abandoning ontological speculation, was content to regard classificatory science not as a means but as an end, and (6) to rest in the results of scientific observation. In a word, Speusippus turned from philosophy to science.

It may seem strange that, differing thus widely from his master, Speusippus should have regarded himself and should have been regarded by others as a Platonist, and still more strange that Plato should have chosen him to be his successor. It is to be observed, however, firstly, that the scientific element occupied a larger place in Plato's later system than is generally supposed,¹ and, secondly, that the only Academics who came into competition with Speusippus agreed with him in his rejection of the theory of ideas. Hence Plato, finding in the school no capable representative of his ontological theory, might well choose to succeed him a favourite pupil whose scientific enthusiasm and attainment were beyond question; and Speusippus's rivals, having themselves abandoned the theory of ideas, would not be in a position to tax him with his philosophical apostasy.

In abandoning the theory of ideas—that is to say, the theory of figures and numbers, the possessions of universal mind, eternally existent out of space and time, which figures and numbers when they pass into space and time as the heritage of finite minds are regarded as things—Speusippus had the approval, as of the Platonists generally, so also of Aristotle. But, whereas the new scholar, confining himself to the detailed examination of natural kinds, attempted no comprehensive explanation of the universe, Aristotle held that a theory of its origin, its motions,

¹ That Plato did not neglect, but rather encouraged, classificatory science is shown, not only by a well-known fragment of the comic poet Epicrates, which describes a party of Academics engaged in investigating, under the eye of Plato, the affinities of the common pumpkin, but also by the *Timæus*, which, while it carefully discriminates science from ontology, plainly recognizes the importance of the study of natural kinds.

and its order was a necessary adjunct to the classificatory sciences; and in nearly all his references to Speusippus he insists upon this fundamental difference of procedure. Conceiving that the motions of the universe and its parts are due to the desire which it and they feel towards the supreme external mind, so that the cosmical order is initial in the divine mind, final in the phenomenal universe, Aristotle supposes himself thus to secure the requisite unification of the variety of things. Contrariwise, when Speusippus distinguishes One, Good, and Mind, so that Mind, not as yet endowed with an orderly scheme, adapts the initial One to a variety of particular Goods, his theory of nature appears to his rival "episodical," *i.e.*, to consist of a series of tableaux wanting in dramatic unity, so that it reminds him of Homer's line—*οὐκ ἀγαθὸν πολυκοιρανίῃ· εἰς κοίρανος ἔστω*. The theory propounded by Aristotle himself is not perhaps impeccable in this respect, but at any rate he does not, like Speusippus, despair of a solution of the traditional problem of the One and the Many.

Speusippus and his contemporaries in the school exercised an important and far-reaching influence upon Academic doctrine. When they, the immediate successors of Plato, rejected their master's ontology and proposed to themselves as ends mere classificatory sciences which with him had been means, they bartered their hope of philosophic certainty for the tentative and provisional results of scientific experience. Xenocrates indeed, identifying ideal and mathematical numbers, sought to shelter himself under the authority of Plato; but, as the Xenocratean numbers, though professedly ideal as well as mathematical, were in fact mathematical only, this return to the Platonic terminology was no more than an empty form. It would seem, then, that Academic scepticism began with those who had been reared by Plato himself, having its origin in their acceptance of the scientific element of his teaching apart from the ontology which had been its basis. In this way, and, so far as the present writer can see, in this way only, it is possible to understand the extraordinary revolution which converted Platonism, philosophical and dogmatic, into Academicism, scientific and sceptical. It is as the official representative of this scientific and sceptical departure that Speusippus is entitled to a place in the history of philosophy.

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SPEY, a river in the north of Scotland, rises in the south-east of Inverness-shire from a small tarn called Loch Spey, 5 miles east of the Caledonian Canal, and flows north-eastwards by Kingussie to Grantown in Elginshire, 10 miles below which it reaches Banffshire. After forming for about 15 miles the boundary between Elginshire and Banffshire, it again enters the former county, through which it flows for about 10 miles past Fochabers to the Moray Firth. In the earlier part of its course it is fed by a large number of mountain streams, its principal tributaries being, in Inverness-shire, the Tromie and the Feshie from the right and the Dulnain from the left, and on the boundaries of Banff and Elgin the Avon (Aven) and the Fiddich from the right. Its entire length is 96 miles, and it drains an area of about 1200 square miles. The flow of the river is very rapid, and, being fed largely by mountain streams, it is subject to sudden freshets, which sometimes occasion extensive floods, the greatest being that of 1829. The Spey is, next to the Tay and the Tweed, the most important salmon river in Scotland. The scenery in its upper courses is occasionally bare and bleak, but sometimes finely picturesque, especially where, as in Elginshire

and Banffshire, its bold and rocky banks are clothed by forests of birch and pine.

See L. Shaw, *History of the Province of Moray* (1st ed. 1775, 3d ed. 1882), and Sir Thomas Dick Lauder, *Account of the Moray Floods* (1st ed. 1830, 4th ed. 1873).

SPEZIA, a city of Italy, in the province of Genoa, 56 miles south-east of Genoa by the railway to Pisa, which has become since the unification of the kingdom one of the principal Italian ports and the seat of a great Government arsenal. It is situated at the north-west angle of the Gulf of Spezia, formerly known as Lunæ Portus, the western side of which is formed by a rocky promontory about 4 miles long, terminating in the picturesque little town of Portovenere and the islands of Palmaria and Tino. A great breakwater, constructed about 1860, stretches across the gulf from Santa Maria Point to Santa Teresa Point for a distance of 7220 feet; and the outer harbour to the south-west of the town, excavated in 1865 to a depth of 32 feet, has an area of 247 acres. The arsenal has a length of 3937 feet and an average breadth of 2460 feet. The first dock covers an area of 20 acres and the second 17 acres; and there are besides two careening basins, 433 and 354 feet long. Farther south lie the extensive military establishments of San Vito, with storehouses, reservoir, &c.; and almost right opposite, on the other side of the gulf, are the dock (1½ acres), shipbuilding yards, and repairing docks of San Bartolomeo. Some of the largest vessels of the Italian navy have been constructed at Spezia. As a commercial centre Spezia suffers from the lack of railway communication with the interior,—the range of the Apennines lying between it and the more productive regions of Northern Italy. The whole movement of the port in 1884 was represented by 38 vessels engaged in foreign trade (tonnage, 29,251) and 1333 engaged in the coasting trade (tonnage, 198,447). Though the town itself, with the barracks and military hospital as its principal buildings, presents little to attract the foreign visitor, the beauty of the gulf and of the neighbouring country has brought Spezia into some repute as a watering-place, and there are several excellent hotels in the Corso. The walls and gates of the old city are for the most part destroyed. In one of the public squares is a statue of Admiral Chioldo, the founder of the arsenal. The population of the city was 6105 in 1861 (commune 11,556) and 19,864 in 1881 (commune 30,732).

The origin of Spezia is doubtful; but it probably rose after the destruction of Luna. Sold by one of the Fieschi in 1276 to Genoa, the town was fortified by its new possessors and made the seat of a governor of some importance. It became a city in the 16th century. The idea of making the Gulf of Spezia a great naval centre was first broached by Napoleon I.

SPHEROMETER, an instrument for the precise measurement of the radius of a sphere or the thickness of a thin plate. The usual form consists of a fine screw moving in a nut carried on the centre of a small three-legged table. The lower end of the screw and those of the table legs are finely tapered and terminate in hemispheres, so that each rests on a point. If the screw has two turns of the thread to the millimètre, the head is usually divided into 500 equal parts, so that differences of 0.001 millimètre may be measured without using a vernier. A vertical scale fastened to the table indicates the number of whole turns of the screw and serves as a fixed point for reading the divisions on the head. In order to measure the thickness of a plate the instrument is placed on a level plane surface and the screw turned until the point just touches; the exact instant when it does so is defined by a sudden diminution of resistance succeeded by a considerable increase. The divided head and scale are read; the screw is raised; the thin plate slipped under it; and the process is repeated. The difference between the two readings gives

the required thickness. A contact-lever, delicate level, or electric contact arrangement may be attached to the spherometer in order to indicate the moment of touching more precisely than is possible by the sense of touch. To measure the radius of a sphere—e.g., the curvature of a lens—the spherometer is levelled and read, then placed on the sphere, adjusted until the four points exert equal pressure, and read again. The difference gives the thickness of that portion of the sphere cut off by a plane passing through the three feet; and, since the feet are equidistant, this distance (a) being known gives the value (R) of the radius from the formula $2R = \frac{a^2}{3h} + h$, where h is the thickness of

the lenticular segment. The well spherometer¹ is adapted for measuring small spherical lenses. The true plane on which the instrument stands is perforated by a cylindrical well of known diameter. A plate applied to the lower edge of the well by a spring is adjusted to be parallel to the large plane, and the spherometer screw, being centred over the well, is run down until it touches the plate, and then read. The plate is removed; the lens put in its place; the point—still accurately centred—is brought down; and the screw is read again. The difference between these readings gives the height of the section of the lens above the lower edge of the well. Calling this height h and the radius of the cylindrical well r , the radius R of

the sphere is got by the formula $2R = \frac{r^2}{h} + h$. The spherometer can be applied to test the sphericity of a globe, and may be used on either a convex or a concave surface.

SPHINX, a hybrid creature of Egyptian and Greek art and mythology. In Egypt the sphinxes are colossal images of granite or porphyry, with a human head and breast and the body of a lion (wingless) lying down. The largest and most famous is that of Gizeh, described in vol. vii. p. 772. The head of the sphinx is usually that of a man, but female heads are said to occur occasionally. From Egypt the figure of the sphinx passed to Assyria, where it appears with a bearded male head on cylinders; the female sphinx, lying down and furnished with wings, is first found in the palace of Esarhaddon (7th century B.C.). Sphinxes have been found in Phœnicia, one at least being winged and another bearded. In Asia Minor an ancient female sphinx, but wingless, stands on the sacred road near Miletus. Sphinxes of the usual Greek type (female heads with bodies of winged lions) are represented seated on each side of two doorways in an ancient frieze found by Sir Charles Fellows at Xanthus in Lycia, and now in the British Museum. The same type appears on the early sculptures of the temple at Assus. In the early art of Cyprus—that half-way house between Asia and Greece—sphinxes of this type are not uncommon. On the other hand, on a gem of Phœnician style found at Curium in Cyprus there appear two male (bearded) sphinxes, with the tree of life between them. With regard to Greece proper, in the third tomb on the acropolis of Mycenæ were found six small golden sphinxes; they are beardless, but the sex is doubtful. In the ancient tomb discovered in 1877 at Spata near Athens (which represents a kindred but somewhat later art than the tombs at Mycenæ) were found female winged sphinxes carved in ivory or bone. Sphinxes on glass plates have been found in graves at Camirus in Rhodes and on gold plates in Crimean graves. Sphinxes were represented on the throne of Apollo at Amyclæ; in the best period of Greek art a sphinx was sculptured on the helmet of the statue of Athene in the Parthenon at Athens; and sphinxes carrying off children were sculptured on the front feet of the throne of Zeus at Olympia.

¹ A. M. Meyer, in *American Journal of Science*, 1886, xxxii. p. 61.

In Greek mythology the most famous sphinx was that of Thebes in Bœotia. She is first mentioned by Hesiod (*Theog.*, 326), who calls her the daughter of Orthus and Chimæra. According to Apollonius (iii. 5, 8), she was the daughter of Typhon and Echidna, and had the face of a woman, the feet and tail of a lion, and the wings of a bird. She dwelt on a bald rocky mountain at the south-east corner of the Copaic lake; the name of the mountain was Phicium (now Fagas), which was derived from Phix, the Æolic form of sphinx. The Muses taught her a riddle and the Thebans had to guess it. Whenever they failed she carried one of them off and devoured him. The riddle was this: What is that which is four-footed, three-footed, and two-footed? At last Œdipus guessed correctly that it was man; for the child crawls on hands and feet, the adult walks upright, and the old man supports his steps with a stick. Then the sphinx threw herself down from the mountain.

The story of the sphinx's riddle first occurs in the Greek tragedians. Milchhofer believes that the story was a mere invention of Greek fancy, an attempt to interpret the mysterious figure which Greek art had borrowed from the East. On the other hand, he holds that the destroying nature of the sphinx was much older, and he refers to instances in both Egyptian and Greek art where a sphinx is seen seizing and standing upon a man. And, whereas the Theban legend is but sparingly illustrated in Greek art, the figure of the sphinx appears more commonly on tombs, sculptured either in the round or in relief. From this Milchhofer seems to infer that the sphinx was a symbol of death. The word "sphinx" is Greek, being derived from σφιγγειν, "to draw tight."

See Brugsch, *History of Egypt*, vol. i. pp. 79 sq., 414 sq.; Cesnola, *Cyprus*, pp. 110, 114 sq., 263 sq., and plate xxxvii. No. 15; Schliemann, *Mycenæ*, pp. xiv., 184; and especially Milchhofer, in *Mitth. d. deutsch. archæol. Instit. in Athen*, 1879, p. 46 sq.

SPHYGMOGRAPH. See VASCULAR SYSTEM.

SPICE ISLANDS. See MOLUCCAS.

SPIDER. See ARACHNIDA, vol. ii. p. 290 sq.

SPIKENARD, or **NARD** (Hebrew *nêrd*; Gr. *vâpδος*, from Sanskrit *naladwîtha*, the change from "r" to "l" seeming to indicate that the word came through Persia),² a celebrated perfume which seems to have formed one of the most durable aromatic ingredients in the costly unguents used by the Romans and Eastern nations. The ointment prepared from it ("ointment of pistie nard"³) is mentioned in the New Testament (Mark xiv. 3-5; John xii. 3-5) as being "very costly," a pound of it being valued at more than 300 denarii (over £10). This appears to represent the prices then current for the best quality of nard, since Pliny (*H.N.*, xii. 26) mentions that nard spikes reached as much as 100 denarii per lb, and, although he does not mention the price of nard ointment, he states (xiii. 2) that the "unguentum cinnamominum," a similar preparation, ranged from 25 to 300 denarii according to its quality. Nard ointment also varied considerably in price from its liability to sophistication (Id., xii. 26, 27; xiii. 2). The ingredients of the genuine ointment (*unguentum nardinum sive foliatum*), Pliny tells us (xiii. 2), were Indian nard, juncus (the leaves of *Andropogon Schoenanthus*, L.), costus (the root of *Aptotaxis auriculata*, DC.), amomum (the fruits of *Amomum Cardamomum*, L.), myrrh (the gum-resin of *Balsamodendron Myrrha*, Nees), balm (the oleo-resin of *Balsamodendron Opobalsamum*), omphacium or oleum omphacinum (the oil expressed from unripe olives), and balaninum (derived from *Balanites ægyptiaca*). Dioscorides (i. 75) also remarks that malabathrum (the leaf of *Cinnamomum Tamala*, Nees) was sometimes added. Of these ingredients costus and amomum were most relied upon for increasing the fragrance and the nard for the stimulating and other virtues of the unguent.⁴

² See Fick, in *Orient u. Occident*, iii. p. 364. The Syrians and Arabs simply call it "spike" (*shabâlta, sambul*) or "the Indian spike."

³ The meaning of the word "pistie" is uncertain, some rendering it "genuine," others "liquid," and others taking it for a local name.

⁴ The use of alabaster vessels for preserving these fragrant unguents

The exact botanical source of the true or Indian nard was long a matter of uncertainty, the descriptions given by ancient authors being somewhat vague. Theophrastus (*De Odor.*, 28) classes nard amongst roots, and states that it came from India (*Hist. Plant.*, ix. 7, 2), had a biting and hot taste, and resembled iris root in perfuming the air near it (*De Odor.*, 12, 56). He also remarks (*l.c.*, 42) that the ointment was one of the most durable of perfumes. Pliny (*H.N.*, xii. 26, 27) gives a somewhat confused account, from which it appears that both "spike" and leaf were in use, although it is not clear whether the spike (*spica*) consisted of the flower-head or the fibrous lower portion of the stem. The only definite statement he makes concerning it is that the "sincere" nard is known by its red colour, sweet smell, and especially taste, "for it drieth the tongue and leaveth a pleasant relish behind it." Dioscorides (i. 6) states that the true nard came from India and was collected on mountains beside which the river Ganges flowed. He describes it as blackish with short spikes, smelling something like cyperus. Linnæus, Blane, Hatchett, and other writers have supposed that spikenard was an Indian grass of the genus *Andropogon* (*A. Nardus*, L.); but Sir W. Jones (*As. Res.*, ii. 416, iv. 97) has given convincing reasons for identifying it with *Nardostachys Jatamansi*,¹ a plant of the Valerian order, the fibrous root-stocks or "spikes" of which are still collected in the mountains of Bhotan and Nepal. Further evidence is afforded by Lambert (*Illustr. of the Genus Cinchona*, App., p. 177), who found the root under the name of "spikenard" in one of the oldest chemist's shops in London, also by Dymock (*Mat. Med. W. India*, 2d ed., p. 347), who states that the principal use of the drug at the present time is for making hair washes and ointments, the popular opinion being that it promotes the growth and blackness of the hair. The name of "spike" applied to the Indian nard appears to be derived from its resemblance in shape to a spike or ear of bearded corn. The root is crowned by the bases of several stems, each about 2 inches or more in length and as thick as the finger. To these the fibrous tissue of former leaves adheres and gives them a peculiar bristly appearance. It is this portion that is chiefly collected.

Other and inferior varieties of nard are mentioned by Dioscorides and subsequent writers. Celtic nard, obtained from the Ligurian Alps and Istria, consisted of the roots of plants also belonging to the Valerian order (*Valeriana celtica* and *V. salicina*). This was exported to the East and thence to Egypt, and was used in the preparation of baths. Mountain nard was collected in Cilicia and Syria, and is supposed to have consisted of the root of *Valeriana tuberosa*. The false nard of Dauphiné, used in later times, and still employed as a charm in Switzerland, is the root-stock of *Allium Victoralis*. It presents a singular resemblance to the spikes of Indian nard, but is devoid of fragrance. It is remarkable that all the nards belong to the natural order *Valerianaceæ*, the odour of valerian being considered disagreeable at the present day; that of *Nardostachys Jatamansi* is intermediate between valerian and patchouli, although more agreeable than either.

The name "spikenard" has also been applied in later times to several plants. The spikenard of the United States is *Aralia racemosa*, and another species of the same genus, *A. nudicaulis*, is known as "false spikenard." In the West Indies *Hyptis suaveolens* is called "spikenard," and in Great Britain the name "ploughman's spikenard" is given to *Inula Conyza*. (E. M. H.)

SPINACH. See HORTICULTURE, vol. xii. pp. 285, 288.
SPINAL CORD. See PHYSIOLOGY, vol. xix. p. 34 sq. For the diseases affecting the spinal cord, see ATAXY

was customary at a very early period. Theophrastus (c. 314 B.C.) states that vessels of lead and alabaster were best for the purpose, on account of their density and coolness, and their power of resisting the penetration of the ointment into their substance. Pliny also recommends alabaster for ointment vases. For small quantities onyx vessels seem to have been used (Horace, *Carm. iv.*, 12, ll. 10, 17).

¹ The plant figured by Sir W. Jones is *Valeriana Hardwickii* (probably the inferior Gangetic nard of Dioscorides and the ozemitis of Pliny); the true plant is figured by Royle and Lambert.

(LOCOMOTOR), PARALYSIS, PATHOLOGY (vol. xviii. p. 392), and SURGERY.

SPINEL. See MINERALOGY, vol. xvi. p. 386, and RUBY.
SPINELLO ARETINO (c. 1330-c. 1410), painter, the son of a Florentine named Luca, who had taken refuge in Arezzo in 1310 when exiled with the rest of the Ghibelline party, was born at Arezzo about 1330. Spinello was a pupil of Jacopo di Casentino, a follower of Giotto, and his own style was a sort of link between the school of Giotto and that of Siena. In the early part of his life he worked in Florence as an assistant to his master Jacopo while painting frescos in the church of the Carmine and in Sta Maria Novella. Between 1360 and 1384 he was occupied in painting many frescos in and near Arezzo, almost all of which have now perished.² After the sack of Arezzo in 1384 Spinello returned to Florence, and in 1387-88 with some assistants covered the walls and vault of the sacristy of S. Miniato near Florence with a series of frescos, the chief of which represent scenes from the life of St Benedict. These still exist, though in a sadly restored condition; they are very Giotto-like in composition, but have some of the Siena decorative brilliance of colour. In 1391-92 Spinello was painting six frescos, which still remain on the south wall of the Pisan Campo Santo, representing miracles of St Potitus and St Ephesus. For these he received 270 gold florins. Among his later works the chief are the very fine series of frescos painted in 1407-8 on the walls and vault of a chapel in the municipal buildings of Siena; these also have suffered much from repainting, but still are the finest of Spinello's existing frescos. Sixteen of these represent the war of Frederick Barbarossa against the republic of Venice. Spinello died at Arezzo about 1410.

Spinello's frescos are all strong and highly decorative works, drawn with much spirit, and are very superior in style to his panel pictures, many of which appear to be mere *bottega* productions. The academy of Florence possesses a panel of the Madonna and Saints, which is chiefly interesting for its signature—"Hoc opus pinxit Spinellus Luce Artio D. I. A. 1391." The easel pictures which are to be found in the various galleries of Europe give little or no notion of Spinello's power as a painter.

SPINET. See PIANOFORTE, vol. xix. p. 67 sq.

SPINNING. See YARN.

SPINOLA, AMBROGIO SPINOLA, MARCHESE DI (c. 1571-1630), a celebrated general, belonged to a noble and wealthy Italian family, and was born at Genoa about 1571. After the siege of Ostend had languished for more than two years under the direction of the archduke Albert, Spinola, who, though not a soldier by profession, had seen something of campaigning during a season or two, came upon the scene as a condottiere and received charge of the works. He entered upon his task in October 1603, and his courage and vigour were rewarded by the surrender of the place on 20th September 1604. During the next five years, until the conclusion of the armistice of 1609, he frequently encountered Maurice of Orange, but on the whole with undecisive results. In 1620 he was sent by Spain into the Palatinate of the Rhine, and took many places; in the following year, on the renewal of the war with Holland, he returned to the scenes of his earlier campaigns, where his principal exploits were the capture of Jülich in February 1622 and of Breda after a ten months' siege in June 1625. His health now began to give way; and his spirits are said to have been further depressed by Philip's disregard of his pecuniary claims. He died at Castel-Nuovo di Scrvia on 25th September 1630.

SPINOZA, BARUCH (1632-1677), or, as he afterwards signed himself, Benedict de Spinoza, philosopher, was born at Amsterdam on 24th November 1632. His parents be-

² The fine fresco of an Apocalyptic scene which still exists in Sta Maria degli Angeli at Arezzo belongs to about 1400.