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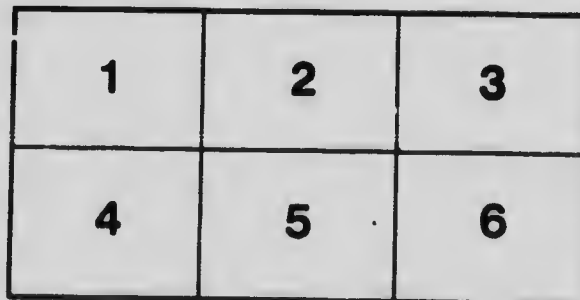
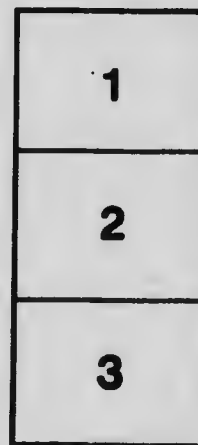
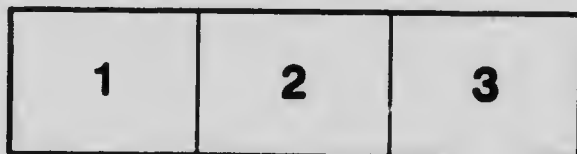
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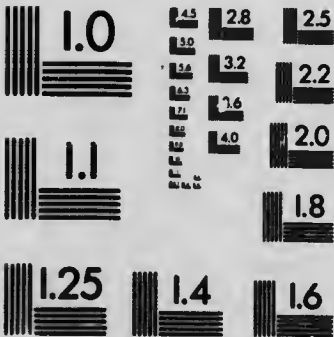
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## Pythagoras and his Philosophy

By ARTHUR HARVEY

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1904



VI.—*Pythagoras and his Philosophy.*

By ARTHUR HARVEY.

(Read June 24, 1904.)

The object of this paper is to trace Pythagorean philosophy to its source; a task which the ancients imperfectly performed and for which new *data* have but recently been made available. The difficulty which confronts the enquirer is that the master committed none of his views to writing, and, though the same thing may be said of Socrates, the latter did not, like the former, forbid his friends and followers to do so. The place due to Socrates is therefore fixed, his tenets are fairly understood, but Pythagoras has been a mystery, and it would be rash to try to clear it up were it not for the flood of light brought to us by the comparative methods now used. Recently enlarged acquaintance with Indian, Assyrian and Egyptian languages and monuments has immensely widened the field of comparative philology, comparative religion, and comparative philosophy. The attempt to use the latter for the solution of the Pythagorean enigma will lead us far in search of facts, and the investigation must cover an extended period and space, but some definite conclusion is necessary if we are to fix the place in the House of Fame to which Pythagoras is entitled. On the one hand so well-read a scholar as the Countess Martinengo Cesaresco declares that "Pythagoras was the Newton, the Galileo, perhaps the Edison and Marconi of his epoch." On the other we may note that Lucretius dismisses him with but a line, and Prof. Watson, of this Society, in a paper lately delivered to the Royal Astronomical Society of Canada, at Toronto, referred to him with equal brevity.

Eratosthenes, quoted by Diogenes Laertius (Lib. VIII, 47) says that in the forty-eighth Olympiad Pythagoras, having entered in the boys' class at boxing matches, was objected to as being too strong for the other lads, so he was transferred to the grown men and beat them all. It being contrary to rule to enter the adult class voluntarily under twenty, we may suppose him to have been then nineteen, which would place the date of his birth at 608 B.C. He was the son of Mnesarchus, an engraver of gems for rings, of the island of Samos. The time and place are both of importance to our story. Egypt, which, under some of its Pharaohs, had carried its victorious arms far into Syria, was

facing a consolidated Assyrian Empire, and a life and death struggle between the two was imminent. Spheres of influence were being contended for and alliances sought by both, especially with the Greek peoples and potentates, whose military and naval power, particularly the latter, was considerable. Cyrus and Cambyses in Persia and Amasis in Egypt were the monarchs of the respective nations at the Pythagorean period, and Polycrates was the ruler of Samos, between whom and Amasis there was a close and apparently a personal friendship. A map of the Levant, extended to include Italy, will show the important position of this island at a time when the mariner's compass was not in use and vessels crept along the shores, guided by such sailing directions as we find in the *Odyssey*.

Samos is one of the loveliest islands of the beautiful *Ægean*, only a mile from the Asiatic coast, some forty-five miles south from Smyrna. It is thirty miles in length by eight or ten in breadth, and as a mountain of nearly 5,000 feet slopes upwards from a fertile plain, it is well watered and highly productive. Its exports now reach a million dollars of annual value.<sup>1</sup>

This was not, let me incidentally mention, the Samos mentioned in the *Iliad* (Bk. II, v. 634) as sending to the Trojan war part of the small contingent of a dozen ships commanded by Ulysses. We hear of it, however, in historic times as one of the most powerful members of the Ionic Confederacy, and we know that its people were among the first to turn their attention to naval affairs. Colæus, the Samian, was the first Greek to sail out into the Atlantic, and the islanders founded numerous colonies in the comparatively barbarian lands of Thrace, Italy and Sicily. The little state reached its highest development under Polycrates. One may wonder if Mnesarchus engraved the gem for Polycrates about which Herodotus tells his well-known story. The tyrant (or perpetual president) had been so wonderfully fortunate that, as he told Amasis, he distrusted his luck, and was advised to throw his most highly prized possession into the sea. He cast his ring into the waves, which was returned to him in a fish

<sup>1</sup> Mr. Victor Bérard (*Revue des Religions*, vol. 39) gives an interesting account of the names of the *Ægean* Islands. Samos, once called Same, is thought to be named from the Phœnician Sama, a height. One of its early names was *Μελάμβυλος*, darkly shaded; another was *Δρίονσσα*, from its oak forests. By the Carians it was called *Παρθένια*, the Virgin Isle, and still another Phœnician name was *Ἰμβραίος*. Still another appellation was *Ἀσθεμοίς*, in allusion to the flower plain which faced the narrow strait between it and Asia Minor, which was the channel through which all vessels plying between Egypt and the Hellespont had to pass. Its position for strategic purposes was therefore unrivalled, and pirates found the situation suitable whenever the naval policing of the Levant was lax.



served up at a banquet by his cook.<sup>1</sup> This we may or may not credit, but we can readily believe and see the reason why the fleets of Amasis often visited Samos on their way to the various Ægean isles and to the settlements on the Asiatic coasts of Italy.

Such was the island where this vigorous young man, Pythagoras, first saw the light. He is said to have been studious from an early age, to have received instruction from several teachers, and among them is mentioned Pherecydes, a Syrian. Great as his opportunities were at home, he left his native isle while yet a youth, to add to local knowledge that which other peoples possessed. As men now go up to Oxford, or to some German university, so then they went to Egypt, the nearest great repository of learning. Solon, of Athens, poet and lawyer, had just been there, at Heliopolis, as had Thales, the founder of the Ionic Confederation and the first of the Greeks who speculated on cosmogony. Plato was afterwards to tread in their footsteps. But Pythagoras is said to have had unusual advantages; he was favoured with a letter of introduction from Polycrates to Amasis, sojourned in Egypt for some years, and became proficient in the language of the country, where he learned their secret views about religion. (*Τὰ περὶ θεῶν.*) On his way to Egypt he had tarried a while in Crete, and, with Epimenides, had visited the Idaean cave. It is only yesterday that archæological discoveries in Crete have made us aware how important a centre of art and industry the island had been before his time and perhaps still was. From Egypt, he went to Babylon. Cicero (*de fin. lib. v.*, 29) exclaims, "Why did Pythagoras survey Egypt and visit the Persian Magi (but in pursuit of knowledge): why did he cross afoot so many foreign lands?" How he was induced to go there is not difficult to understand, though the accounts seem tinged with romance. Apuleius Floridus says: "Some recount that when he was being carried about Egypt, among the captives of King Cambyses" (who had just swept down through that country with his victorious army and added it to his dominions), "he met learned Persian magi, and especially Zoroaster, "the expounder of divine mysteries. But a more trustworthy report "is as follows: Having of his own desire sought for Egyptian learning and acquired from the priests of that country a knowledge of "their religion, of the wonderful powers of numbers (which are hard "to believe) and of the best theorems in Geometry, he was not yet "satisfied, but of his own free will visited the Chaldæans and even

<sup>1</sup> Somewhat analogous is a statement by Mr. John Maughan, of Toronto, that when cleaning for his shooting party's lunch a duck killed on Shoal Lake, west of Portage, the cook found a nugget of gold in the bird's crop.

“the Brahmins, among whom he particularly attached himself to the sect of the Gymnosophists. Now, the Chaldæans have a knowledge of the constellations, of the regular revolutions (*status ambitus*) of the planets, and can tell the various influences of the heavenly bodies on the birth-fates of men. They have also collected, at great expense, from earth, air and sea, medicines for curing people's diseases. But the Brahmins contributed much to his views of philosophy, such as what could be taught about the mind and the training of the body, how many functions the mind has, how many changes we undergo in life (*quot artes animi, quot vices vitæ*) and what are the rewards and punishments dealt out to each, according to his merits, by the Gods of the nether-world.” Apuleius, himself a wealthy man, an extensive traveller and a student of philosophy, was as likely as any one living in his century, the second after Christ, to be well informed. Porphyry, a century later, says that Pythagoras visited the Arabians and Hebrews and the Chaldæans. Clement of Alexandria, who came between the two, tells us that he embraced many of the doctrines of the Indians, thinks (erroneously, as I hold) his abstinence from meat was connected with the Jewish system of avoiding blood, and adds, on the authority of Antiphon, that it was difficult to obtain access to the Egyptian priests, who kept their knowledge secret from other people. It is needless to repeat what has been said by others, confirmatory of these distant travels, by Lucian, Pliny (lib. 25, cap. 12), Strabo (lib. 14), Jamblichus (*de vitâ Pythagoræ*); we will revert to the phrase of Isocrates, early in the fourth century before Christ, who says that having returned from Egypt, where he had studied, he was the first to instruct the Greeks in foreign philosophy (*Τὴν τε ἄλλην φιλοσοφίαν*). It was the consensus of antiquity that Pythagoras had traversed Asia and studied among Magi and Brahmins, as well as among the Egyptian priests.

Porphyry tells us that when he returned to Samos, which he would naturally revisit first on again reaching lands where Greek was spoken, and found that the islanders were bound under the tyranny of Polycrates, he thought it unworthy of a philosopher to live there, and resolved to emigrate to Italy. In this he follows Diogenes Laertius (second century A.D.) who writes that “finding on his return to Samos that the State was ruled by Polycrates, he went to Crotona, in Italy.” There is some confusion here; it seems unlikely that he would forget the relations to a distinguished ruler of his father and himself. It is known that after the death of Polycrates, Syloson received the government of Samos from Darius, who had in the meantime become possessed of the little state, no longer protected by Egypt, which had itself

fallen under Persian domination, and Pythagoras probably did not wish to propound his views under a despotic viceroy. Aulus Gellius, discussing the comparative Chronology of Greece and Rome (Noctes Atticæ, lib. xvii., cap. 21), says Pythagoras came to Italy during the reign of Tarquin the Proud. Solinus (cap. 16) and Cicero (Tusc. Quæst. lib. 4) state that he was in Italy under the consulship of Brutus, who had rebelled against and dethroned the Tarquin. Those, therefore, who, like Ovid, contend that Numa Pompilius was a Pythagorean must be in error, unless the received dates are wrong and our philosopher was born before the forty-eighth Olympiad. Before settling at Crotona, he visited Sicily, and a prince or chief of the Phliasi named Leontion, wondering at his refusal to accept the fees or gifts of money usually paid to those who called themselves "wise men," asked him *Tis εἶμι*; what he did in the world? Said he, "I am a lover of wisdom"—a *φιλόσοφος*, thus originating the word—and being asked for a definition, answered, "All life looks to me like a national assembly, "at which some strive for merchandise, which to them seems the most "desirable possession, others hunt for glory and power, but philosophers "seek after truth." Those, he declared, were philosophers who enquired into the origin of the worlds, the paths of the celestial lights, their size and distance, the nature of animals, plants and rocks, and generally all who tried to understand the why and wherefore of everything in the *Cosmos*.<sup>1</sup> He did not stay in Sicily long, but went on to Crotona, a rising town, then about 150 years old, where we will leave him for a while, in order that before discussing his special tenets we may glance at the various philosophies he must have enquired into in his travels. Southern Italy. *Græcia magna*, was then as thoroughly Greek as North America is English now; every important position had been seized by some colonizing party.<sup>2</sup> Crotona was Aohæan, and its speciality appears to have been athletics, so that it was a congenial home for the muscular philosopher with whom we are dealing.

Philosophy and religion have ever been inseparable, and both have been everywhere closely allied with astronomy and physics. "Whence and whither" is not only a most important personal question, but it relates to everything that is not the ego. Cosmogony is, therefore, treated of in all sacred scriptures, the people being told by their leaders in science (usually honoured by being entrusted with the worship of Supreme Beings and the care of religious observances) how they thought the world was made and life began. This is so natural a development

<sup>1</sup> This corresponds to the main divisions of castes in India; see *postea*.

<sup>2</sup> The same was the case west of Italy, also on the Northern or Mediterranean shores of Africa, as far as the Straits or "Pillars of Hercules."

that it may continue to be the rule; the present feud between science and religion will probably be healed. In a couple of thousand years the world may be told about our period as one when people thought the Nebular hypothesis was an article of faith and radiation the principle which vitalized the universe; Darwin and Spencer may be considered the founders of our belief, which may then perhaps have lived its time and died.

I see no reason to question the general accuracy of what may be called the ethnological part of the Noachian myth.<sup>1</sup> The sons of Japhet or the Indo-European races, usually called Aryan, very likely did spread east and west from the hill country where the Tigris and the Euphrates rise, expelling the older Turanian races from the valleys of those rivers. In no other way is the similarity of the root words of Sanscrit with its Indian derivatives or congeners to Greek, Latin and German so easily explainable. Nor is the speech of the Keltic and Slavonic peoples altogether alien, while some venture to say that the African Berbers are of Aryan origin, pre-Keltic, and connected with the Iberian race, once occupying the Apennine as well as the Pyrenean valleys, but now surviving only as the Basques. But of the time or times of the great Aryan movement we know nothing. We have some seven thousand well authenticated years of Egyptian history; we already know there was a scarcely less remote high Assyrian civilization, but such periods, long though they be, are as nothing to the time required for a tribal, much less for a national belief to grow into even such shapes as we see dying out among our own aborigines of the neolithic epoch. For primitive views and customs to have developed into such finished forms as Pythagoras found in Egypt, India and Persia must have occupied æons. We are compelled at least to adopt the Egyptian view as indicated by Plato, where he narrates that the priest told Solon the Greeks were but children, for Egypt had a history of twenty-five thousand years, and we must largely extend the two thousand between Noah and Christ, deduced from the Mosaic chronology, however strongly insisted on as an article, forsooth, of faith, by St. Augustine and others, the succession being not yet quite extinct. The Aryan myths, distinct from Egyptian or Semitic, in the most ancient form available, are embodied in the Rig-Veda of India; and in reading the translations which have during the last century made it accessible to

<sup>1</sup> This opinion by no means relates to the Ark method of avoiding an imaginary deluge. Pythagoras possibly had the opportunity of comparing this part of the Hebrew myth with that of the Zoroastrians, who supposed, instead of a ship, a cave made in a mountain side, which was artificially lighted, and served as a refuge from deluge and from snow for several years. See the Zend Avesta, any translation; James Darmstadter's preferred.

western people, we must conclude that it is the liturgy of a very ancient race indeed, older it would seem as to its civilization than Egyptian or Assyrian, though in its present form it does not much antedate the third century B. C. The system it embodies and consecrates, though encrusted with sacerdotalism the most restrictive, and class legislation the most artificial and minutely worked out, seems to have had its origin in naturalism; the phenomena of nature having been closely studied and in due course personified and deified by an educated class for the readier comprehension and machine-made faith of a debased commonalty. Possibly the process was reversed; it matters little to us for the present discussion. The word Veda is from *vid*, to know; the German *wissen*, our *wit*=knowledge, science. The sun and the moon are the first objects of notice, then follow the dawn, the sky, the earth, the wind and other storm-powers, fire and water. We can trace the same order in the Greek system,<sup>1</sup> thus the Sanscrit *dahāna*, the dawn, in the sense of shining, from *dah* to give light (which, notwithstanding objectors, seems allied to the German *Tag* and the Latin *dies*=day) is thought to be the Greek half-goddess Daphne, the first love of Phœbus; she disappears as he touches her:

*Ipsis*

*Morsibus eripitur, tangentiaque ora reliquit.*

A more condensed account of the Indian Cosmogony and of the political and religious systems Pythagoras found under the Himalayas is given us in the laws of Manou; date, perhaps 300 years B.C., though there are some reasons for dating the code at the beginning of our era. A code like this indicates much earlier work, as our "Revised Statutes" point to preceding legislation. It is necessary for our purpose to examine it, but the following extracts must suffice here:—

Manou sat, absorbed in meditation, when the wisest among his followers, saluting him, approached, respectfully asking him to discourse of the Order established in the world. Then answered Manou: This world was darkness, with nothing distinguishable or distinctive; it was as in sleep. Then He who exists of Himself, having used His energy, appeared of His own accord to dissipate the darkness. He has

<sup>1</sup> The Greek forms of the myths are the most artistic, having been woven by the poets into richly embroidered imagery. Max Müller has led the way in their interpretation, which has been carried very far by others, almost beyond the bounds of probability. Thus Max Müller says Kephelos is an old name for the sun, Procris for the dew. Then "Kephelos loves Procris" means "the sun kisses the morning dew." Mr. Cox thinks Niobe personifies the mist, her children, pierced by the arrows of Apollo, being the clouds, dissipated by the rays of the sun. Her change into a stone refers these to the hardening of the moisture through frost into ice, and when she sits weeping on her rock her tears are the drip from the mountain mist.

no parts, He is eternal, incomprehensible, and contains within Himself all created things. By thought He first created water and placed seed therein, which became a golden egg, as brilliant as the sun, in which He Himself was born, in the shape of Brahmâ, the original father of all the world. In that egg He stayed for a year, and then, by the efforts of His will alone, He divided it into two. Of these parts He made Heaven and Earth, and between the two Air and the eight Cardinal points and the everlasting dwelling place of the waters. (The waters were called Nârâs, as they were his first resting place, and homoiophony suggests a connection between this word and the Greek sea-god Nereus.)

From Himself He took spirit, thence the sentiment of individuality; the ego which knows its own personality. Also the soul and the five organs of sense, which perceive material things. Taking subtle particles of these six, whose powers are unlimited, He created all things. Also the troops of Divine Beings, gifted with life. Also fire, the wind, the sun, the division of time, the places of the planets and of the moon, the river, mountains, plains and rough places. Also self-denial, speech, pleasure, desire, anger. He divided the just from the unjust and gave to His creatures conditions opposed to each other, such as pleasure and pain.<sup>1</sup>

For the multiplication of individuals He made the Brahmin, the Kchatriya, the Vaisya and the Soudra, who sprang respectively from H's mouth, arms, thighs and feet. Dividing His body into two, the Lord became male and female (and thus the creation proceeds; birds, insects, plants, etc., being brought into existence in turn.)

As to time, it is said that eighteen winks make a Kâchthâ, thirty of these a Kalâ; thirty Kalâs a Mahoûrka, of which again thirty make a day and a night. (Thus, a Kâchthâ equals 3.2 seconds). But, for the Gods, a human year is only one day and night — day while the sun is moving north, and night when it returns. (How close the connection with astronomy of this early religion)! For Brahmâ, four thousand years of the Gods make one epoch, the twilight preceding it is so many hundred years, also the twilight which follows it. (This epoch I make to be 1,460,000 years.) Again, the four human ages make 12,000 years, which is one year of the Gods; a thousand years of the Gods make one day for Brahmâ, and his night is the same. (That would make Brahmâ's day and night 24,000,000 years.)

As to physics, it is said that in the creation He (the spirit which is in Brahmâ) produced the ether, which was the quality of sound. This, by transformation, caused air, pure and powerful, vehicle of

<sup>1</sup> The monism of this creed should be carefully considered.

cdours, to which tangibility attaches. Air, in transformation, gave light, which dissipates darkness, and introduced the property of colour. Light, transforming, produced water, with the property of taste, and water earth, with that of smell.<sup>1</sup>

The lapse of time since the creation began is put in this way. The age of the Gods multiplied by 71 is a period of Manou (852,000 years?) and these periods are innumerable, the creations and destructions of the world. The Supreme Being repeats them *ad infinitum*, as a child at play.

Laws follow, in great number, respecting caste. In everything the Brahmin is supreme, the Soudra the meanest slave. Superiority is given among the Brahmins by knowledge, among the Kshatriyas by courage, among Vaisyas by riches, among Soudras by nothing but age. This book of Manou is prescribed as the chief subject for Brahminical study, and, among other matters, it treats of transmigration, which is of three kinds, resulting from works, good or bad, and the end of all is final deliverance, when the soul needs no further purifying and has not to suffer again the labours and pains of re-incarnation.

Rules of conduct are strictly prescribed. Of students, the code says one should not speak without being spoken to, or answer irrelevant or misplaced questions. Even when well knowing the subject a wise man will behave as one of a simple mind. It declares that those who are qualified should not disseminate knowledge where there are not the requisite virtues, riches or obedience — any more than one should sow grain in barren land — and it is better for one who can interpret the Veda to die with his knowledge than to scatter it on sterile soil.

We get nothing as to the end of the world until we take up a somewhat later book, the Visna Purâna, where we learn that the end is to come through fire, and this is acknowledged by all authorities to be one of the myths common to all the branches of the Aryan race. We find it, *e.g.*, in the Norse Eddas. In Snorre Sturleson's, 1178-1201, there is a winter of the world as well as its combustion. In the latter, Surtr throws fire on it, the sun is darkened, the stars fall, vapours and fire whirl and liek up the very skies, while the earth sinks below the sea. Heraclitus and the Stoics held the same doctrine, though they did not express it in such lurid words. The Aryan Gauls believed it—*teste Casare*. The second Epistle of St. Peter, in our scriptures, shows how deeply it filtered even into Jewish thought.

Incidentally we may glance at Buddhism. The extremely rigid rule of Brahminism natural brought forth rebellion, and a great ascetic, one Sakyamouni (the wise man among the Sakya family), a

<sup>1</sup> Cf. Thales, who said the earth was formed by a precipitate from water.



prince of a territory in northern India, named Siddartha, was led to take the lead therein. He was a Kshatrya by caste. Meditating on the system of classes he saw around him, he became a pessimist, and, while adopting the Vedic cosmogony, with its doctrine of re-incarnation, he seized on the central idea of the power of thought, and inculcated charity, patience, knowledge, courage, contemplation, as means of becoming indifferent to sensual pains and pleasures, and ultimately, after a variety of transmigrations, reaching a state of Nirvana, or absolute escape from existence — which, if existence be an evil, must be the *summum bonum*.

Siddartha died in the fifth century before Christ, so the rebellion he headed was only "in the air" when Pythagoras visited India, and, however fascinating the study of the Buddhist system may be, with its many parallels to Christianity, with a greater number of adherents than any other faith, it does not bear on the present thesis except as proving the firm belief of the Indian population in metempsychosis. Absolute and immediate extinction would otherwise have been the logical revolutionary doctrine. This Sakya, we may note, had a band of disciples who lamented his death, honoured him afterwards, and their successors deified him. Superstition affirmed that he had no physical body, no bones or blood; it was a spiritual body only. Buddhism spread with great rapidity, owing to its monastic system; it had become powerful before Alexander and his Macedonians crossed the Indus. It is of some interest to observe how admission to the society it created was regulated; it was a community as to goods, resembling in this the early Christian practice. It has been crushed in India proper by the persistence of the Brahmins and the proselytizing fervour of the Moslems.

The Assyrian cosmogony is a rather complicated matter to unravel. We have a tablet found in the library of King Assurbanipal, which gives the following account:—

"When as yet the heaven above and the earth beneath was not named, and the primeval ocean who begot them and Tiamat (chaos) who bore them mingled their waters: when no land was yet formed, no seed was visible, and the Gods had called nothing into being: when no name was named, no fate fixed, the Gods were created, Lukmu and Lakan were called into being. Ages passed and then Apshar and Kishar were created. Long were the days before other Gods came forth. Then did Apsu and Tiamat rebel against their rule, and Tiamat gave birth to a brood of monsters, to wage war upon them. The news was carried to the chief of the newly-born Gods, who ordered them to go forth against Tiamat and her brood, but they would not. At length Marduk came forward and was endowed with great strength and invincible weapons, who met and slew



"Tiamat, and of one-half of her skin he made the heavens, then he established the earth and the under-world. Next, he made the stars, the abodes of the Gods, and the signs of the Zodiac, and he marked out the year into twelve months<sup>1</sup> and set the moon in the sky to fix times and seasons." (The creation of beasts of the field and of creeping things followed.)

It seems that while several distinct nations occupied the great valleys of the Mesopotamian rivers, each had its protecting deity, and, naturally, when Hammurabi made Babylon pre-eminent, the Babylonian Marduk (Merodach) was advanced to the chief position. Under Sennacherib he was carried to Assyria, but under Assurbanipal their gods were restored to the Babylonians, to their great delight. Assurbanipal's date is given as 668-626 B.C., a period when mighty movements were in progress, revolutions in Empires and in the realms of thought. It was shortly before the Persians seized the reins of power and imposed upon the ruling classes, at least, their system of philosophy. Herodotus speaks of this, and says: "They have no images of the Gods, no temples or altars. . . . their work is to ascend the highest mountains and there to offer sacrifices to Zeus, which is the name they give to the whole circuit of the firmament. . . . At a later period they began the worship of Urania . . . whom they call Mitra . . . When all is ready, one of the Magi comes forward and chants a hymn, which they recount the origin of the Gods." These forms were perhaps those of Anatolian Mazdeism, then prevalent, or they may have been the ritual enjoined by the first Zarathushtra, and the same hymns as the Gâthas, still chanted by Parsee priests. Herodotus wrote in the fifth century before Christ. In the fourth century the second Zarathushtra, the restorer, (our Zoroaster) is supposed to have further systematized the religious laws and observances, and to have codified them. The Avesta, written in Zend, is thought to be a truthful version of this code, though revised under the later period of the Parthians, and says that Ahura Mazda in the beginning inhabited the sky intangible and invisible, except when He revealed Himself to Zoroaster. Then asked this favoured one: "What are the words which thou didst speak, before the Heavens were?" And Ahura, the spirit of light, replied—"The will of the Lord is the rule of righteousness; happiness hereafter is his who in this world serves the Lord; the Lord makes Kings to reign who succour the poor. . . . These words I spake . . . before the Creation of

<sup>1</sup> The Assyrian division of time, of the circle into degrees, of weights, measures and money was duodecimal, and made its way through the Phenicians into Europe, of which traces still remain—12 pence to the shilling, 12 inches to the foot, 12 hours from midnight to noon, etc.

"Heaven, of the waters, of the earth, of plants—before the creation "of four-footed kine, before the birth of the first man, before I had "formed the mass of the sun, after I had created my archangels." Zoroaster adds a cholium, that "the will of the Lord" teaches Him to be supreme: "the rule of righteousness" shews Him to be the moral teacher of all. "Happiness in the hereafter" proclaims the benefits that good thoughts bring. The word "Lord" shews Him the end of Creation, possibly inferring that all creatures return to Him. "He makes Kings reign" confers on Zarathushtra the kingdom of the conscience. It would be useless to dilate on the details, all of them given in the Zend Avesta, best translated by James Darmstadter. The first animal created by Ahura was the Bull, whose body was slain by Ahri-man the evil spirit, i.e., Death followed on the heels of life. One of the good creatures of God was Fire. The Gâtha runs thus (chanted in unison):—

To Fire the sun of the Lord most wise—holy and purifying.<sup>(1)</sup>

To Fire the useful.<sup>(2)</sup>

To Fire our most excellent friend.<sup>(3)</sup>

To Fire the universal.<sup>(4)</sup>

To Fire most swift.<sup>(5)</sup>

To Fire the benevolent.<sup>(6)</sup>

To Fire the glorious.<sup>(7)</sup>

Then we have Fire which both eats and drinks (animal life), which drinks, but eats not (vegetable life), which neither eats nor drinks (lightning), and Fire, the special impulse, (of the priest, warrior, husbandman, etc.).

It would seem as if in the conflict of races and religious views which was settled for a short time by the union of the nations of the whole of the great Euphrates and Tigris valleys, upper and lower, under the Persian kings, the philosophy of the old Sun-worshippers, who honoured Fire as the representative of that supreme natural force, prevailed over the grosser idolatrous practices of the people of the old Assyrian empire. Pythagoras, on his way to India, if he did not meet with Zoroaster himself, certainly had the opportunity of studying his philosophy. It was simple, which accounts for its long duration. The religion afterwards associated with it in the form of the worship of Mithra, permeated the Roman Empire and even gave to it for a ruler Heliogabalus, one of its priests. It was reformed and persisted in the

(These refer respectively (1) to the Fire of Sacrifice, (2) to household Fire, (3) to bodily heat, (4) to warmth in the air, (5) to lightning, (6) to the fire burning before Ahura Mazda, (7) to the Majesty residing in Kings.)

East until Islam came into conflict with it, when, on the field of Nahavand (631 A.D.), the Arabians under Omar gained a decisive victory over the Guébres (Giacurs, infidels, from the *Arabie Gaur*, unbeliever) killing 30,000 and driving 100,000 to death by drowning. A part fled to an island in the Persian gulf, thence to India, where, as Parsees, about 100,000 are to be found, still Aryan in type. Of the metaphysical tenets of Zoroaster only one needs mention here: "Immortality will come to the living at the last" (Yast xix, 389, 392, 397).<sup>1</sup> Gibbon's account of the Paulicians, chap. 44, may be read in this connection, and some will see in the Mithraic impulse the origin of the Knights Templars, of the Protestant Reformation, and of the devil worship which obscurely persists in Europe still.

In these sketches, those features only have been outlined which bear upon Pythagorean doctrine and practices, and it is now time to examine what they were.

The general account which seems most suitable for quotation is that of Ovid. Few passages in the whole range of Latin poetry are more beautiful than those describing the popularly received cosmogony of his day, with which he begins his *Metamorphoseon*. It is curiously different from modern views, for while we always speak (and far too boastingly) of human progress, Ovid divides the time since creation into golden, silver, brass and iron ages, and calls the oldest far the noblest. Then he recounts the myths of the Greeks, in such a way that they tell their due lessons in ethics, elegantly but forcibly, and at the end of the work he completes the song which began with Chaos and the origin of things with an account of their nature as explained by Pythagoras: —

"In Crotona," he says, "once lived a man, by birth a Samian, who left that island and its rulers because he disliked their despotic form of Government. High as the Heavens are, his mental powers held fellowship with the Gods who dwell therein, and by reflecting he perceived what to the natural eye is hidden. . . . He taught his silent and admiring listeners the origin of this mighty world, the reason why things are and what their nature. He explained his conception of the Deity, told whence come the storms of snow, what was the cause of lightning, whether Jupiter or the winds were thundering in the cloud-burst, what made the earthquake, what laws governed stellar motions; in fine, all the mysteries of the unknown. He was the first to forbid the use of flesh for food, in words like these . . . 'Cease, mortals, to defile your frame with food

<sup>1</sup> Akin to the Assyrian cosmogony, but without its subordinate divinities, was that of the early Hebrews, given in Genesis I and II, and in Job, XXXVIII and XXXIX. The Avestan Amshaspands seem related to the Jewish Archangels, but the Jewish celestial hierarchy appears only to have been properly staged after the Captivity.

"you ought to shudder at. There is corn, there again are fruits hanging on  
 "heavy-laden boughs, grapes and tasteful vegetables. . . . Milk is  
 "not denied you, or honey, scented by flowering thyme. The earth is lavish  
 "of her riches and provides you banquets without slaughter or bloodshed.  
 "Wild beasts resort to flesh to satisfy their hunger, yet not all of these . . .  
 "Amid so much abundance which the earth, that best of mothers offers, will  
 "nothing please you but to munch the gashed joints with ferocious  
 "teeth. . . . Can you not otherwise allay the cravings of a voracious  
 "and undisciplined maw than by destroying another life? The times of old  
 "we call the Golden Age were happy in the yield of fruit and of the crops  
 "the soil brings forth. . . . No snares were laid, no fraud was to  
 "be feared, but when some futile innovator envied us and gorged his hungry  
 "paunch with animal food, the way to cruelty was opened wide. . . .  
 "the evil spread. As the first sacrifice the boar was doomed because with  
 "his snout he roots up seeds. . . . Next the goat . . . in revenge  
 "for his destroying vines. Each suffered for its particular fault, but what  
 "did the sheep deserve, that inoffensive race . . . whose milk supplies  
 "us nourishment, whose fleece gives us soft, warm clothing, and who ayall  
 "us more living than dead? What again did the ox merit, a creature without  
 "fraud or guile, innocent, simple, born to be patient under toil? The man is,  
 "indeed, ungrateful and unworthy to reap a harvest who can bring himself  
 "to butcher this tiller of the soil so soon as relieved from dragging the heavy,  
 "curved plough. . . . And since a Divine spirit makes me speak, I  
 "will open as it were the skies. . . . It delights me to wander among  
 "the stars of the high Heavens, to be wafted to the clouds, and, leaving  
 "the surface of the earth and its dulness, to mount the heights and look  
 "down upon the incertitudes and stupidities of men. . . . Ye who are  
 "alarmed by the fear of chilly death, why do ye dread the Styx, the gloom,  
 "the empty names and dreams of poets? Do not think you can suffer the  
 "least harm by your remains being burned on the funeral pile, or by their  
 "mouldering away. Our souls do not die, but, leaving their former tenement,  
 "are received into new homes, and still live on. I, myself, was Euphorbus,  
 "the son of Panthous, who was slain by a spear-thrust in the chest by  
 "the younger son of Atreus. I lately saw and remembered the shield I used  
 "to wear, it is in Juno's temple at Argos. . . . Nothing becomes ex-  
 "tinct, everything changes, the soul wanders, and from one abode drifts  
 "hither and thither and occupies some other. The souls of wild animals  
 "may occupy human bodies and our spirits theirs without at any time  
 "ceasing to be. As pliant wax impressed with new figures does not pre-  
 "serve its old shape, but is none the less the same wax, so the soul is  
 "ever the same, but changes into different forms. . . . Nothing in the  
 "universe is stable, all things are flowing on and every form is fleeting.  
 "Time itself runs in an unceasing stream, like a river, for neither can the  
 "river nor the passing hour be still . . . for what was before is left  
 "behind, that which as yet was not, lo! it is . . . Mark how the year  
 "moves by, in four seasons like our lives. Tender and fed with milky  
 "juices, as the age of childhood, is the new-born spring . . . all Nature  
 "blossoms, the lovely fields delight in the colour of their flowers, but as  
 "yet there is no substance in the leafage. After spring, the year, acquiring  
 "force, passes into summer, like a vigorous youth. There is no more robust  
 "time than this, none more prolific, none more replete with action. Autumn

"follows, the fire of youth toned down, mature and mild, in temperament  
 "between youth and grey-haired age. And last comes winter, which we all  
 "shudder to behold, with palsied gait and bald, or, if any locks remain,  
 "quite white. . . . Thus is the vigour of the prior term undermined,  
 "and Milo, in years, laments to see those muscles flaccid and unwrung which,  
 "once firm and knotted, were like those of Hercules himself! Tyndaris, too,  
 "grown old, weeps when in her glass she sees a wrinkled face, and marvels  
 "why she was twice abducted by impetuous lovers! . . . . Even what  
 "we call elements do not perish. . . . Nothing keeps its special form.  
 "Nature, the Restorer, is always giving new shapes to every figure. . . .  
 "To begin to be a different something from what there was before is called  
 "birth, and to have done with that is death. Matter which at one time  
 "happens to be here is carried over there, but the general sum is the  
 "same. . . . I have seen solid earth transformed to sea and the ocean  
 "in its turn become solid land. Plains become valleys and mountains are  
 "levelled to a plain. . . . Nor will even Ætna always vomit flame."

In the above, there are necessarily many omissions, but the main points which refer to distinctively Pythagorean tenets are clearly and fully stated. But, it may be said, Ovid who wrote this at about the time of Christ, embellished tradition with poetry. We will therefore see what sober history relates.

Aulus Gellius (Noctes Atticæ, Book 1, cap. 9) tells us something about the organization Pythagoras established at Crotona. Those who were there received the Master as disciples put all their family rights and possessions into a common stock, so that an inseparable society was formed of the nature of the *consortium*. A family in the earliest Roman times was by law and custom *consors*, that is, everything belonged to the family and could not be left away from it by will. The Greek word is more expressive, *Koinobion*. But, later, a family might declare itself *dissors*, which in a way is like cutting off an entail, and a law was inserted on the Twelve tables under which persons might go even further and divide possessions among those not belonging to the family. The Pythagorean sodality was, therefore, merely an extension of a recognized usage, for it is probable that similar customs prevailed in most Italian cities, even those in Græcia magna. The Greek words are *σύνκληροί* and *διακληροθέντες*. Pythagoras was applying to a sect of his adherents the principles which prevailed among consanguineous families. His way of matriculating his students was as follows:— First he made a personal survey of the applicants, especially of their features—*ἐφυσιογνωμόνει*—and was thus the first recorded physiognomist. He inquired into their inherited constitution (*totius corporis filo atque habitu*) and, if he thought the candidate suitable for admission, he ordered him placed under discipline for a certain time, as he might judge it requisite in each case. It was never less than two

years; Apuleius says the general rule was five. Those who were under this discipline of silence were called *'ακουστικοί* or listeners; they being allowed to hear what was being said by others, but not to ask questions or to take notes in writing. When they had thus learned that most difficult of all things, to listen and hold their tongue (*ἔχεμυθία*), they were permitted to speak, to inquire, to write what they had heard and to state what their opinions were, and they were called *μαθηματικοί*; that is, they were studying geometry, gnomonology (or the sciences connected with dialling), music and other branches of higher knowledge which the Greeks called mathematics. Having mastered these subjects they were allowed to investigate the working of the world and the principles of nature and were called *φυσικοί*. Gellius tells us in his chatty way that one Taurus, a philosophic writer and personal friend of his—they lived in the times of Antoninus Pius—lamented the difference between the followers of learning in the days of Pythagoras and his own, in these words: “And surely it is not satisfactory that those who rush with unwashed feet (denoting hurry) to the teachers of philosophy should be devoid of the faculty of reflection, of the love of ordered rhythm (music), or ignorant of geometry. Yet they actually do, now-a-days, themselves lay down the law how they shall be taught! One says, ‘teach me this first.’ Another cries, ‘I want to learn such a thing, and I do not care for such another.’ A third wants to begin with Plato’s symposium, on account of Alcibiades’ discourse, and a fourth with his Phædrus, on account of that of Lysias. There are, by Jove, some men who ask to be taken into Plato, not to order their lives by his doctrine, but to be able to deliver a better speech, not to become more self-respecting (*modestior*), but more attractive to their associates (*lepidior*)!”

The master said that all things should not be expounded to every one, and he passed over in silence all discussion attempted by outsiders. His followers disliked associating with others; they had many signs and symbols unintelligible to all except fellow initiates. Are the secret societies of the present day, with their three usual degrees, influenced yet by the Eastern methods of Pythagoras? The master wrote no book, the three treatises some say he composed are wrongly ascribed to him, as we must believe. He taught his family daily, by speeches and argument. He recalled the people from luxury to frugality, praising virtue and enumerating the evils of self-indulgence and the misfortunes of cities attributable to that plague. He addressed matrons apart from their husbands, and boys apart from adults, on the principles leading to a happy and reputable life. To the former he inculcated charity and a due respect to their husbands; to the latter modesty

and a desire to study literature and the liberal arts. He told all classes that thrift beget virtue, so assiduously and successfully that ladies would take their gold-embroidered robes and other ornaments of their station and means of luxury and lay them as offerings in the temple of Juno; for, said he, the true ornament of a woman was purity, not dress. He was evidently the Savonarola of his epoch.

The number of his catholic disciples is not clearly known. Some give it at 300, others at twice that tale. According to Polybius their vows of comradeship involved living apart from other citizens, abstaining from all killing (*φόνου*), rioting (*στάσεως*) and disturbing political questions (*ταραχῆς*). They, however, rapidly gained great political influence, and we are told that Pythagoras and his friends administered the affairs of the republic so prudently that it soon seemed to be a state composed entirely of the well-to-do. (*Prope optimatum civitas videretur*). But what were sneered at as his "aristocratic methods" antagonized many interests and prejudices, the Crotonienses being very much like ourselves. They would not submit to a sort of Brahmin caste, a family compact, Eastern teaching under a thin local veneering; so, after about twenty years' experience and enthusiasm, during which societies were formed in other cities of the peninsula, similar in principle and perhaps affiliated in some loose way, a conspiracy was hatched to burn up the adherents of this ancient Puritan in one of their meeting houses. Sixty perished, the rest scattered. The Pythagorean lodges in other parts of Magna Græcia were harried. Whether the master was himself killed is uncertain; one account states that he was found in the house of Milo, one of his set, and murdered; another that he fled to Metapontum and there died, at the age of nearly a hundred. He had married Theano of Crotona, by whom he had two sons and three daughters—all companions of his studies, lights and ornaments of his philosophy.

As a matter of fact, Pythagoras committed nothing to writing, nor do we obtain the least scrap of esoteric information from his immediate followers. Only from Philolaus do we get an inside inkling of the facts; as I gather, about 150 years later. It seems that this philosopher had some notes respecting the tenets of the brotherhood, and, when old and stricken with poverty, probably unable to supply even his modest wants, he happened to meet Plato, who was visiting the court of King Hiero, at Syracuse (Sicily), and sold them to him. It is well known that Pythagoras had a powerful influence with Plato, and we may well imagine his joy at securing the precious manuscript. Very little, however, of its contents has reached us. The only fragments we have are what others have copied from him—three or four pages



in all. They occur for the most part in the anthology prepared by Stobæus, in about 500 A.D.

The world, says Philolaus, is one; it began to be at the centre and developed from that upward, for which reason things opposite to that middle are alike, whether below it or above it, since everything began from this nucleus. He places fire at the centre, which is the focus of all things and the house of Jove, and the mother and altar and meeting place and measure of φύσις, Nature or being. First then there is this middle of Nature, and around it ten divine bodies dance in harmony (χορεύειν). The heavens, the planets, after them the sun, above that the moon, above that the earth, above that the antichthon, after all these fire, like that which is at the centre. All that is above he calls Olympus, but all below, viz.: the space in which the five planets with the sun and the moon are arranged, is the Cosmos. The sun, he says, in a mystical and obscure passage, is of a glassy nature, receiving and reflecting the rays of mundane light and heat. The nature of God, he tells us, is one; stable, formed like Himself and unlike aught else. There is one beginning for all, and the world cannot come to an end, so that suicide is not a lawful act. The beginning was Τό εν, that which was first brought together (ἀρμωσθέν) this one thing being the basis, at the centre of the sphere, and is to be called the focus. There are five things, fire, water, earth, air and ether, which is what surrounds all else (ὀλκός) and carries the sphere. [There were other men who, later, professed themselves Pythagoreans, and all antiquity attributed to him great skill in geometry and the theory of numbers. "Number," he is said to have believed, "is the soul of the world." The proposition known to us as the 47th of the first book of Euclid, is attributed to him.]

It does not seem that by other quotations, from Cicero, Vergil<sup>1</sup> and other Roman sources, or from the later Pythagoreans we can get into closer touch with this great master. Enough has been given, however, to support the view that the character and the chief details of the Pythagorean philosophy were Asiatic, and that they had their principal source in India. The plan of this paper is not argumentative, it is a simple statement of facts in, as it were, parallel columns of narration. It seems plain that after long travels and studies the philosopher established himself in the region where the great Greek colonies were growing, freedom from control being probably his main object in making the selection. The "aristocratic institutions" against which

<sup>1</sup> Vergil as a young man, inclined to the Epicurean philosophy (Ecl. VI, Silenus), but in mature age was distinctly Pythagorean. Æneid VI., 713 et seq.)



the people of Crotona eventually rose in tumult were not, as say some modern writers, of the Doric type, by which I understand varied monarchical rule, as at Lacedæmon, but of Brahmin type, and the attempt to found a superior caste failed of success. Meditation, abstinence, silence — all characteristics of the Indian sages — do not appeal to the active Western mind. The method of holding possessions in common, a primitive custom, still prevailing among our American Indians, was lying out in Europe, and though re-introduced under other auspices, has given rise to other tumults and will yet do so. The prohibition of killing anything endowed with life is so clearly Indian that we need only think of some of its Eastern forms to-day, where certain holy men carry peacocks' feathers to brush the place they wish to sit upon, lest haply they should crush some insect. Metempsychosis, which Pythagoras taught, is held as firmly as ever, both by Brahmin and Buddhist. We may also see clearly that Pythagoras was an adherent of monism, not dualism. There is no trace in his philosophy of the chief elements of Semitic faiths and of the later Zoroastrianism, viz., the presence throughout Creation and the created universe of a principle or spirit of evil, which is not an Aryan belief, not Indian or early Persian, but was ingrafted on Mazdeism by the political needs of the Empire of Cambyses and Darius Hystaspes, characterized the Mithraic system, and was fastened on Europe by the adoption of the Jewish scriptures. The Indian solution of the difficulty this question raises was the denial of the existence of matter or taking matter and spirit to be fundamentally one. The evil spirit is the Sanscrit Bhaga, master; an epithet of God, the name of a Vedic divinity. It seems to have been transferred to the Slavonic bogû (and is, perhaps, the bogey of our nurseries) by the influence of the Turanian races with whom they mingled. Zoroaster II represents it as the devil.

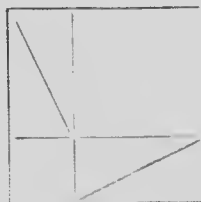
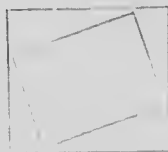
To prove in like manner that Pythagoras adopted his astronomy from the East, it would be needful to show what Eastern science taught, but of this we know very little. The Egyptians knew that the earth was round, and there can be very little doubt that a people who oriented their monuments to particular stars knew of the regular change in their position due to the precession of the equinoxes, though Maspero says that up to this time no old text has been found to prove such knowledge. So of the rotation and revolution of the earth, "Some said the earth was stationary, but Philolaus, the Pythagorean, said it was carried round in a circle about the central fire, like the sun and the moon." How could Pythagoras have obtained even such a glimpse except from a people who built observatories? These existed,

we know, in Assyria, towers being built for the purpose, and it does not require telescopes to teach the true motions of the earth and planets; Copernicus wrote on the heliocentric theory before Galileo. We may very well believe that the Chaldees were acquainted with the facts, as they were observant of eclipses and all stellar motions; also that Pythagoras obtained reasonably correct views from them. In the teaching of them, unaided by established means of observation, he would not be closely followed by his students; and in the hurly-burly of the violent attack upon the sect, their tenets would soon be obscured, false interpretations given to his words, and the astronomical part of his lore come down to what Stobæus gives us—"Philolaus said that the governing power of the universe was in its central fire (fire, the element, being not the literal fire we speak of now-a-days, but rather the source and also the manifestation of energy) which Almighty God occupies and which is the turning point of the whole (sphere)." (Ecl., lib. 1, cap. xxii., 6: ed. Heer.)<sup>1</sup> And again, "Others say the earth is stationary, but Philolaus, the Pythagorean, said it is carried around in a circle about the central fire, just like the sun and the moon." It must be admitted that the phrases are not precisely Heliocentric, but the view that the sun is central, if expressed and actually proved by the master, was likely to die out in a generation among the Italian Greeks, who had no such observatories as there were in Egypt and in Asia. Pythagoras doubtless improved his mathematics in the East, for we now know that even the famous theorem that the square on the hypotenuse of a right-angled triangle equals the sum of the squares on the two other sides, which bears his illustrious name, was familiar to the geometers of Hindostan centuries before his time.<sup>2</sup>

It is instructive to compare the preceding hypotheses of the Genesis with the theory of the present day.

<sup>1</sup> See, for the fullest exposition of Pythagorean philosophy available, *Fragmenta Philosophorum Græcorum, Collegit Fr. Gull, Aug. Mullachus, Paris, 1881, Firmin Didot & Cie.*

<sup>2</sup> *Ed. Lucas, Récréations Mathématiques.* The Indian method of proof, one of many, gives the figures merely, and underneath them is the one word "Look"



We believe our universe was once a nebula.<sup>1</sup> There is even now what may be called "an invisible veil of nebula over the whole sky." (Prof. Turner, Modern astronomy). In parts thereof the photographic plate reveals to us enormous aggregations of feebly luminous gas. The stars of the Pleiades are enwrapped in mists which extend in wisps from one to another; the great Dumb-bell nebula has a broad ring of nebulosity surrounding its globular mass; Orion has in his sword a nebula which to the eye is huge, but the sensitised plate, by long exposure, shows the whole giant constellation to be wreathed in filmy ribbons and scarfs. We think the stars were formed by the concentration of nebulous matter into spherical forms by the attraction of gravitation, but of the nature and cause of this force we know nothing yet, though we have learned that it acts in the same way throughout the universe. This so-called universe may be limited, and is possibly globular, but we suppose it would require at least 10,000 years for light, which travels nearly 200,000 miles a second, to traverse the assemblage of stars it contains. While stars are being formed, some of the coalescing matter is either left behind or thrown off by the rotation of the principal body and forms planets.

We believe the stars are all in movement, possibly around their common centre of gravity, and that our sun, which is one of them, is rushing towards a point in the heavens where the others seem to be opening out before him, while behind him they are closing in. We see with our telescopes, within many nebulae, luminous patches which we think are stars in process of formation, and we have observed many stars kindle where previously there were none to be seen. We have ascertained that they are composed of similar materials to those we have under our feet, and we have sorted them out into classes according to their different luminosities, which are thought to indicate their various stages of development. We think that as one star differs from another in glory, some emitting more light than others, so there are probably multitudes of dark stars, and that all stars have a regulated life-history of birth, growth, decay and death. Outside our universe of stars, in which the sun is not central, there may be others, also globular, and so on, throughout space, *ad infinitum*. The universe, we think, is bathed in ether, of the nature of which we as yet know very little. Ether, matter, electricity, seem to merge, and to be the Ur-stoff or protyle from which atoms grow.

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<sup>1</sup> Herschell used to call it Fire-Mist; it was then thought to be attenuated hydrogen. It is material, for it gives to the spectroscope a peculiar green line (nebulium) and it is now thought by Sir Wm. Crookes to be matter in a fourth state, that of radiance.

As the stars are being formed, the particles coming together clash, and their arrested motion is transformed into light and heat. The earth we live on, a small satellite of the sun, has lost by radiation much of the heat thus originally caused by its concentration. As it cooled, its constituents took on forms which did not exist at its pristine temperature, such as rock, which we call solid, water, which we call fluid, and there were gases left which we call air. Life, then, as now, the result of a chemical process, took different shapes, crystalline or mineral, vegetable and animal, gradually changing as the surface heat diminished and as their environment required. The slow creation ultimately reached man. While there may be other forms of humanity hereafter evolved, it seems that the cooling of the world is not favourable to rapid change, and the "progress of the race" may be an illusory term. We have not formed any estimate of the age of the sun or the planets. It has been calculated that some fifty million years have elapsed since the earth's surface became solid, but most geologists and students of nature multiply that period by ten.

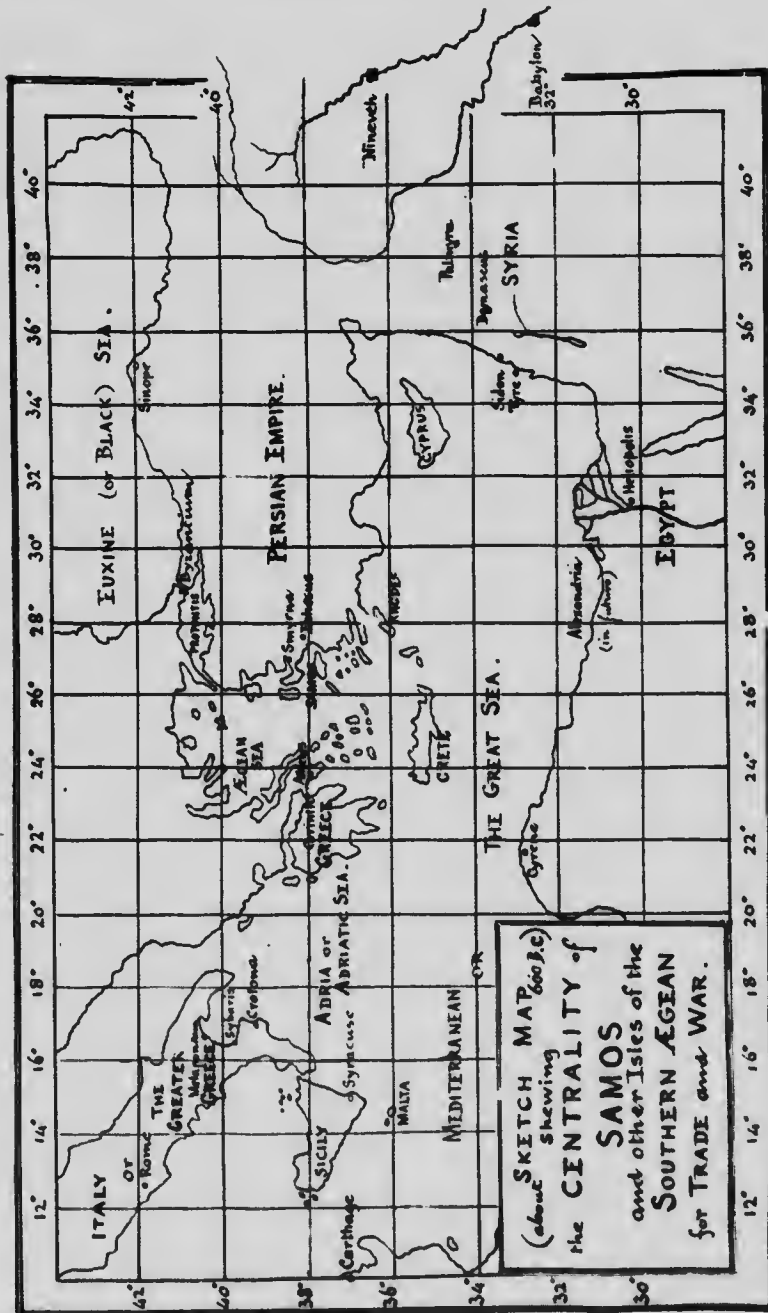
The sun, and doubtless the other stars, rotate, as do the planets, some of which have near them smaller planets or moons, also rotating, which circle around them according to the laws of gravity, as they themselves do around the sun, whose heat, still being radiated, is the main-spring of all the life-movements on their surfaces. The forms of the stellar systems are numerous and, to our understanding, complicated, stars of both equal and unequal sizes and light-giving powers whirling about each other in periods varying from a few days to hundreds of years.

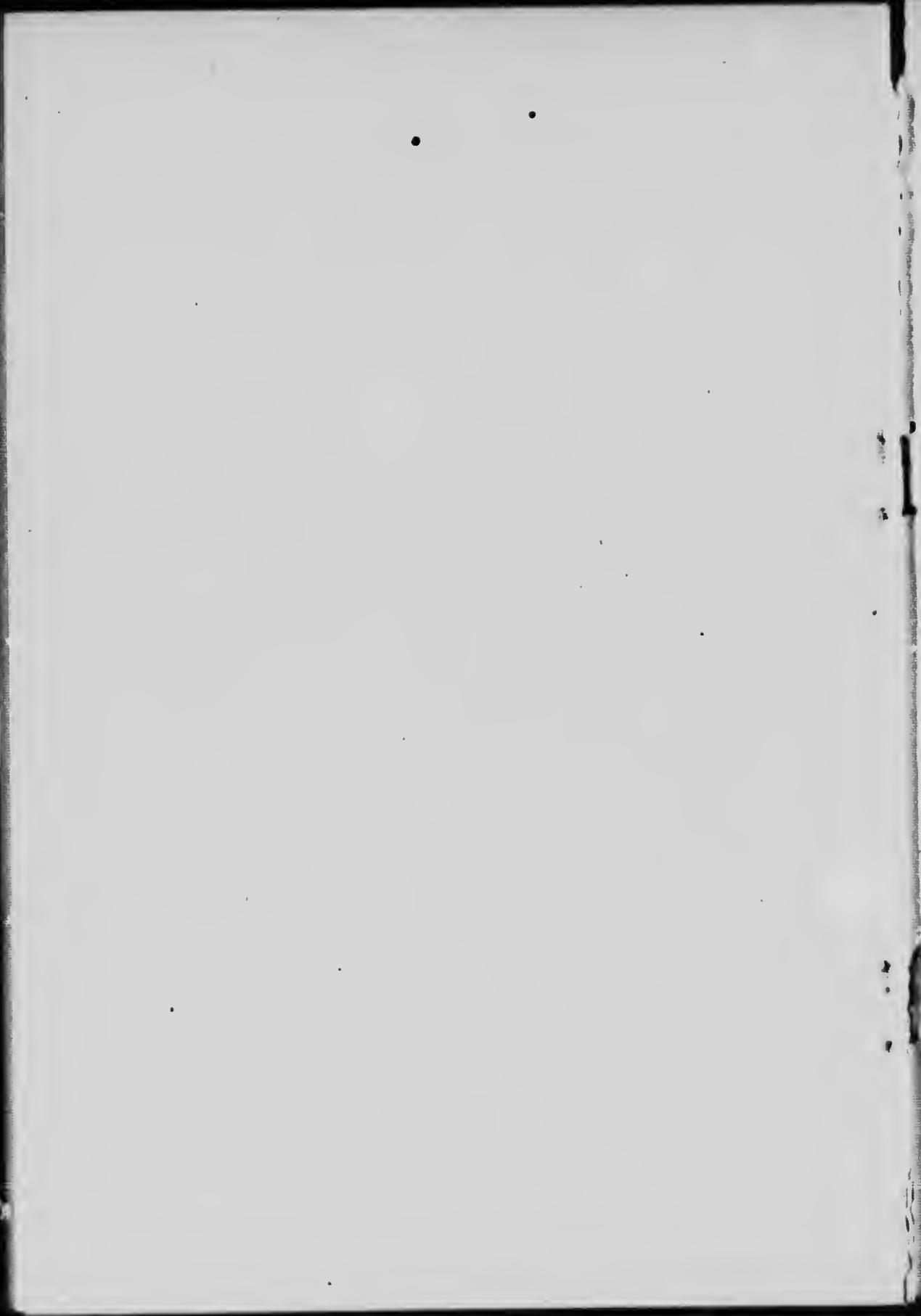
Thus the views of mankind as to the formation of the universe have themselves been subject to evolution.

The tenets of many religious beliefs, among them Christianity and Mahomedanism, are dualist, but science is monist; it convinces one of a single Great First cause, one law pervading all space and all time, matter being indestructible though mutable, the law of its existence and of its change enduring from everlasting to everlasting — and this we hold, whatever be the nature of matter.<sup>1</sup> Science hesitates when the question of soul or spirit is approached. "We cannot give ourselves souls without giving them to our dogs, perhaps to plants. It is still clearer that a belief in posthumous existence naturally implies "a belief in pre-existence," writes Sir Lesslie Stephen,<sup>2</sup> and "why,"

<sup>1</sup> Radio-activity, the great discovery of Becquerel, is possibly only the effect of the decay of atoms. Of the construction of atoms from the universal and fundamental diffused material we are still profoundly ignorant.

<sup>2</sup> An agnostic's apology.





he continues, "should we not accept the theories which suppose a continuous emanation from and absorption into the world soul?" Such considerations are too mystical for present day science, and the students of physics may be said to be inclined to think that mind is a function of matter, so that death is a change which ends individuality. But there is an unworthy timidity about even discussing such questions, born of the fear of such results as came to Pythagoras, and, later, to Socrates who borrowed from him, also to ten thousand others in all subsequent ages and in all lands. Opinion is not yet free.

The cosmogonies we have been glancing at are after all more notable for their points of agreement than for their differences. We have increased our knowledge of physical facts but do not seem to have advanced in metaphysics. Pythagoras brought from the East much knowledge and much thought, and to the Greek school of philosophy, which he largely influenced, we owe all our own. Our repayment to the East of this weighty obligation has not always been so altruistic as gratitude requires.

