

Atomism, Ancient and Modern

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1889

Submitted to the Department of Philosophy of
the University of Kansas in partial fulfillment of
the requirements for the Degree of Master of Arts

Master thesis

Williams, Harriet T. 1889

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Degree of Master of Arts. 1889

Accepted:

Arthur Richmond Marsh,
Chairman of the Committee on Graduate Students,
University of Kansas.



Atomism - Ancient and Modern

Many systems of philosophy have come down to us from the Greeks. It truth we may almost say the philosophy of Antiquity and the philosophy of the Hellenes are identical.

The so called Oriental philosophy is so interwoven and blended with religious notions that it is scarcely possible to separate them. We speak of the doctrines of Confucius of the Hindus who out of their rich fancy and from their pantheistic conceptions of the world generated a multiplicity of divinities of the Vedas which have been invaluable as a means of ascertaining the beliefs and doctrines of this shadowy and far away people. Later on our attention is taken with "non-caste" Buddhism. Zoroaster as founder of the Persian religion is another element in this oriental world of philosophy. Of them all however the Egyptians are the first and only ones who are said to have exercised any influence on the Greek thinkers. Herodotus claims that the doctrine of transmigration of souls originating with the Egyptians was conveyed to the Pythagoric School. It is probable however that the Greeks were influenced much more by directly scientific knowledge, particularly of Astronomy than by the doctrine of Metempsychosis.

But how much in this oriental world will answer to the name of philosophy? At the present day so far removed from them as we are, even though diligent investigation has been made in modern times, it is incomplete and uncertain is our knowledge than an authentic presentation can be made.

The term philosophy - *philosophia* - love of wisdom - has been so variously applied that it would be impossible to define it in such a way as to embrace the usage of different authors and different ages. Perhaps the most usual and commonly accepted definition is - "Philosophy is the science of principles." This though vague may be made clear by a little investigation. Philosophy is a science included under the general division of sciences; has the same subject matter to deal with, the same world of nature spread out before it, within which its functions must and does lie. In this however it differs from the ordinary sciences. It has no specific or limited province with which to be occupied; the special sciences have covered the whole ground. Now philosophy claims to be the science of the whole, but having gained from the different sciences the knowledge of the parts, what is there left for philosophy? To this we again have to answer that philosophy is not occupied

with ~~the whole~~ all the sciences as the sum of all their parts; but with the "nature and laws of everything that actually exist." The dependence then of science and philosophy is a mutual one. As science in its restricted realm is apt to lose sight of the whole in its special study of one of the parts, philosophy comes in, shows the relations existing between these parts one to another and to the whole. On the one hand then we may say science furnishes philosophy with the matter and philosophy constitutes itself as the critic of the sciences. It is in this connection that we can readily understand the definition as stated above - "Philosophy is the science of principles."

Among the Greeks Plato is the first who uses the word philosophy, *philosophia*, with any thing of its restricted meaning. The word does not occur in Homer and Hesiod at all. Later writers use *σοφία-μυσμαν* and *σοφία-τηδον*. The compound is first found in Herodotus, implying however the "pursuit of knowledge." The difference between the "wise man" and "lover of wisdom" appears first in Plato's writings. Socrates, who calls himself a laborer in philosophy, ascribes all wisdom as belonging to God while to man it belongs to be a lover of wisdom. According to Plato wisdom is true knowledge and to philosophy belongs the task of acquiring this knowledge. Hence he says, a true philosopher sets

his affections on that, which in each case really exists and is able to apprehend the eternal and immutable."

We find in Aristotle a double sense in which philosophy is used, a trace of which occurred in Socrates and Plato. The broader signification is science in general, and includes mathematics, physics and ethics. But the other meaning, which he dwells on as pre-eminent, the science of the philosopher and, even called *ἡ πρώτη φιλοσοφία* - is the science which considers the principles of everything that exists: as matter, form, cause and end of everything, the science of being as such, which we now term Metaphysics. For Aristotle's great work in the field of science and philosophy he has gained the appellation of "First Philosopher."

Later as the mass of knowledge increased the sciences as such were abandoned by degrees to the scientific specialist and philosophy became restricted to inquiries grouped under Metaphysics or "First Philosophy."

Before coming to the founders of the Atomistic school of philosophers there are several systems of an earlier date to which we may here only give passing attention. The characteristic of the whole period from Plato to the Atomists (inclusive) is the direction of philosophical inquiry toward the Universe of Nature. We are indebted to Mr. Ueberweg for the disci-

of the period which we are about to make use of in this brief sketch." The first division of this period includes the "earlier Ionic Natural Philosophers who directed their attention to the sphere of sensible phenomena and enquiring after the material principle of things and the manner of their generation and decay; for them, matter was itself living and psychically endowed." The second division includes the Pythagoreans, who "sought for a principle of things which should account at once for their form and substance and found it in number and figure". The third division, the Eleatics believed in the unity and immutability of being. The fourth division or later Natural Philosophers partook in part of the doctrine of the Eleatic philosophers and in part of the earlier Natural philosophers - these two systems which were so antithetical to each other. They admitted the Eleatic doctrine of the immutability of being but affirmed with the earlier school, its plurality and explained its apparent changes as due to the "combination or severance of immutable, primitive elements."

Thales who bears the title of originator of Greek philosophy belongs to the first school mentioned above together with Anaximander, Anaximenes and Heraclitus. These earlier Ionians started with a single form of matter and explained the present order of things as resulting from progressive changes. Thales supposed this

primitive substance was water; Anaximenes, air; Anaximander, the "ἀπειρον" or "infinite" - a simple but indefinite substance; while Heraclitus assumes as the substantial principle of things ethereal fire, which he also identifies with the divine Spirit.

The central thought of the Pythagorean philosophy is the idea of number. According to Aristotle, the Pythagoreans considered the principles of numbers themselves the substance of things, that number is the essence of everything. That as number definitely separates one thing from another, so without this limitation which number brings the world would be reduced to chaos. Therefore number is the principle of order.

From this idea comes the famous theory of the "harmony of the spheres." Their conception of the Universe and theory of the "counter-earth" as curious as they seem, need but slight modifications to bring them up to the modern theory. The doctrine of the transmigration of souls has been already alluded to in connection with the Egyptians. Altho' Herodotus so confidently alleges Pythagoras to have imbibed this doctrine from the Egyptians in his travels, still there is little more than mere conjecture to fill out that portion of the Philosopher's life in which lies the supposed travels.

Of the Eleatic group of philosophers; etc.

Xenophanes, Parmenides, Zeno and Melissus- Par-
 menides of Elea (from which the school took its
 name) according to Aristotle is the ablest
 thinker. At the foundation of their philosophy
 lay the doctrine of complete separation and
 opposition of thought and sense. True knowl-
 edge is attainable by thought alone. Our senses
 are continually deceiving us by appearances
 of things which seem true, old and changing.
 Now thought shows us these appearances as
 contradictory and false. "Only being exists,
 non-being is not." Hence there is no creation
 for being can not arise out of non-being. Neither
 can there be change except in appearance for
 a thing can not arise from what is different
 from it. This brings us out the thought of unity
 and immutability of being, the great truth
 as established by their philosophy - "the all
 is one," eternal, unchangeable. Zeno, a disciple
 and defender of the doctrine of Parmenides is
 famous for his arguments against the veracity
 of sensuous perception. He sought to show by
 various demonstrations that sense was con-
 tinually contradicting itself. Against sound
 he directs the following argument. If a single
 grain of corn in falling can not be heard, you
 can not hear a whole measure of it when it
 falls; for the sound of the whole measure is
 only made up of the sound of each grain.

The later Natural Philosophers believed

in the immutability of being, but unlike the Eleatics assumed a plurality of substances. They explained all development and change all apparent creation and destruction from a change in the relations of these substances to one another. For instance Empedocles bases this change of relations on two ideal principles - love and hate; love acting as a uniting and hate as a separating force. Hence at one period all heterogeneous elements are separated from each other by hate; at another they are every where united by love. According to him generation and decay is never absolute. Nothing that has never previously existed can exist now, neither can anything existing now be annihilated. This origination and destruction is only apparent and results from the commingling and separation of elements. The four primitive elements or "roots" of things; - fire, air, water and earth alone remain unchanged in all mixtures and separations.

During the process of the development of the earth plants first sprang up, then came the animals. In the formation of the latter their different parts first formed themselves independently and then were joined by love. As a result of their combination arose many monstrosities, which perished. Those combinations which possessed the requisites for existence; viz: means of nourishment, propagation and self defence continued to exist.

Anaxagoras a second representation of

this school instead of the four elements of Empedocles assumes the existence of an infinite number of elementary and original substances, which originally existed in a mixture devoid of all order. The divine mind afterwards brought them into a state of order and from chaos formed the world. Everything that has parts which are in kind homogeneous with the whole owes its existence, according to Anaxagoras, to the coming together of these parts which had existed from the beginning. The combination of homogeneous parts is, according to him, that which brings about what is called becoming or generation and the separation of these parts is what is called destruction. Again Anaxagoras differs from Empedocles in believing the shaping force of the world not to be the power of loving hate but of a world ordering mind.

Midway between Empedocles and Anaxagoras came the Atomists who made an advance upon Empedocles in assuming a single ultimate matter, made up of indivisible particles, which possessed such a variety of shapes that every sort of combination could be made with them. On the other hand however they fell far behind Anaxagoras in a philosophic conception of moving cause; appealing to the law of necessity while the latter depended upon the all-powerful mind or reason.

The founders of Atomism were two Leucippians

and Democritus. Of the former little is known. It is even uncertain that he wrote anything himself. Although Aristotle speaks concerning his opinions, he commonly names him in conjunction with Democritus and it is possible his information was derived from the writings of his pupil Democritus.

Democritus of Abdera was born about 460 B.C. and is said to have died at the great age of ninety yrs. (according to others one hundred yrs. or even more). During his life he travelled extensively, Egypt & the Orient being among the places visited by him. According to a story of the Ancients so intensely did he think, that he put out his eyes in order that he might not be diverted from his meditations. Plato treated his materialistic doctrines with contempt and desired that his writings should be burned. Aristotle speaks of him with respect and Cicero greatly praised his style of writing.

The first principle concerning this philosophy was the "full" and the "void" or matter and the spaces devoid of matter. The "full" was identified with being or something, while the "void" signified non-being or nothing. The latter must be considered to have an existence equally with the former. Now being exists as well as being, which is in direct contradiction to the Eleatics, who asserted - "only being exists, non-being is not." Matter is made up

of indivisible, unfeverishable particles which are alike in substance and can only be distinguished from one another by their form, position and arrangement. These primitive particles they call "Atoms". They are continually in motion, altho invisible, and as they possess weight this motion is naturally downward in straight lines. The atoms themselves are changeless but there are infinite combinations in which they enter, every one of which contains also the void; for the atoms are the only solid and in order to have this motion, there must be spaces "void" for the atoms to move about in.

Of all the materialistic explanations of the Universe, the theory of Democritus has held the most permanent place in philosophical thought. In consequence of this never-ceasing motion the things of today are continually passing away to give place to the things of tomorrow. New worlds are coming into existence and old ones dissolving back into the atoms from which they came.

As the atoms move downward through infinite space, the heavier ones gain^{ing} upon the lighter soon overtake them and push them to one side. This lateral motion necessitates new combinations from which entanglements follow; this variety of motion gives the whirling movement. The Sides at first small receive constant additions from the falling particles and eventually

a world is produced. Our world came about in first such a way. As the atoms became settled, the heavier drew closer together and formed the earth; of the lighter ones which were thrown off from the earth, the very lightest formed an enveloping circumference; while those having more weight formed the heavenly bodies which took fire as they passed through the air. The earth which at first was moving about is now stationary having crowded out some small round particles which filled the hollows, thus making the sea. The shape of the earth is that of a flat cylinder.

In all this process the formation of the different elements of our world resulted from the law of necessity. There was no room left for the Gods to play a part in the system of Democritus. Going even farther than this, the plants and the animals, as the philosopher states, arose from the earth while it was yet fresh and moist. We get a better idea from his general statement that by the motion of the atoms the world was produced with all that it contains.

Democritus viewed man as the highest work of nature. His body is sustained by food and drink, but the soul lives by inhaling and exhaling soul atoms from the air. These atoms that make the soul are small, smooth and round, and are distributed through

out the body as its animating force. In certain parts of the body there seems to be a "concentration of soul"; the brain is the seat of thought, the heart of anger, the liver of desire.

The Atomic theory of perception was as follows. Thin films are continually passing off from the surface of things, whereby images are produced which enter our organs of sense and give rise to sensation. Thought is immediately produced which is due merely to a change among the soul atoms when coming in contact with something outside the body. The source of all knowledge he asserts is sensation. Still the senses do not reveal truly the outside world. Hence follows this skeptical utterance. "There is nothing true, and if there is we do not know it." and "To know nothing, not even if there be anything to know." Democritus himself recognized it is atomic the reality of things, a fact which is directly in violation to this theory and he never took the trouble to reconcile the theory with the fact by any particular explanation.

The soul is the noblest part of man, the body which is the tent of the soul should be made subject to it. The highest good lies in happiness and strikingly like the moral system of Epicurus, Democritus places this "Summum bonum" in a negative happiness, the tranquillity of mind, the absence of

sorrow and suffering. A passive rather than an active state.

We found it necessary in order to understand the part played in the world of philosophy by the Atomists and their relations to previous systems to touch somewhat upon the principal phases of early Greek speculation. We again find something of the same necessity in dealing with Epicureanism, that system which derived so much from Atomism. Truly we may say that this necessity is a more urgent one than in the case of the Early Atomists. While the latter were great originators in philosophy, the doctrines to which Epicurus left his name were chiefly borrowed ones.

In leaving the Atomists we come to a new division of Greek philosophy. The tendency heretofore has been toward the Universe of Nature. The attention of philosophers is now to be directed to the problem of man.

Socrates marks the epoch of this departure. During the prevalence of the sophists the imaginary theories of the Eleatic and Ionic schools concerning the Cosmos had been discovered to be unreal and fantastic. The subject was left by them in utter confusion and Socrates forsook it as a hopeless problem to direct his attention to human relations and the duties consequent to them. Socrates can hardly be called a philosopher, but rather a teacher

or better still an educator. His theory was formed from the study of previous philosophies, and though not a philosopher himself his practice became the basis of several subsequent schools of philosophy. Cicero says of him "that he called philosophy down from the heavens to earth and introduced it into the cities and houses of men, compelling men to inquire concerning life and morals and things good and evil". The main problem for discussion for Socrates or rather the problem which he introduced into his peculiarly Socratic conversations was the nature of virtue. The only knowledge attainable and therefore to be sought after is virtue. As he could not conceive of a man knowing good and doing evil, he asserts that evil is ignorance and virtue is knowledge. Knowledge, virtue and happiness he held to be inseparable. Accordingly each precept that Socrates recommended, should be obeyed because it will ensure the happiness and comfort of the individual. He believed in the laws of morals as revealed only in the works of a deity who regulated and harmonized the world, and in a divine and immortal soul.

While Socrates rejected the pursuit of knowledge and therefore has no claim to be regarded as the founder of a philosophic school, his followers had imputed that from his teachings which became the originative

impulses towards systems of philosophy. But the generation of Socrates was incapable of fully comprehending him. Accordingly those of his associates whose minds possessed a turn for speculation took severally from his teachings that which was comprehensible to them and which best suited their tastes. Hence instead of one, several schools of philosophy look back to Socrates as forming the basis of their systems.

Aristippus of Cyrene, Antisthenes, the Cynic, and Euclides, the Megarian, as followers of Socrates, each grasped but a single phase of his doctrine and became founders of schools of a distinctive character. They are often spoken of as the "incomplete Socratics" to distinguish them from Plato who accepted the whole of the Socratic teaching and proceeded to construct a system which he conceived as harmonizing with the doctrines of his teacher.

The Cynics and the Cyrenaics in particular, from the same doctrine as a starting point developed theories not only distinctive but even diametrically opposed to each other. The Cynics dwelt on the "Virtue" of Socrates and, in accordance with the rugged nature of Antisthenes who hated pleasure, laid down a harsh rule of actions and imitated all the asceticism of their master.

The Cyrenaics on the other hand emphasized the doctrine of "happiness". Aristippus had his own theories concerning the pleas-

uses of life and interpolated the ethical doctrine of Socrates in accordance with it. He makes Happiness the sole aim of life, and man's duty to secure the pleasure of the moment. He however holds that in this search for happiness reason must always be employed.

From these three "incomplete Socratic" Schools later sprang three other Schools. The Cynic giving rise to the Stoics, the Cyrenaic to the Epicurean and the Megarian to the Sceptics.

Society during this later period had degenerated greatly, Greece had seen her glory and was now sinking in decline. Still the great questions of Socrates were discussed more than ever. Happiness fell to the lot of none, a fact which all agreed must be a consequence of the unfortunate condition of man. Philosophy aimed at bringing about harmony between man and his surroundings. The Stoics believed that this was accomplished by making mind superior to matter and observed an attitude of absolute indifference to all external things. Virtue is sufficient for happiness. By virtue was meant life conformed to nature or perfect agreement of the human with the divine will.

The Epicureans going in exactly the opposite direction founded their system of ethics on that of the Cyrenaics. Happiness is synonymous with pleasure. In order to decide whether

the performance of an action to be pleasurable or not, the results that must necessarily follow it must be carefully considered and the question decided according to the preponderance of pleasure or pain^{as} resulting from it.

True pleasure is the object to be coveted and many a pain would be rejoiced in as leading to a greater happiness, while on the other hand many a pleasure would be rejected as resulting in pain. The virtuous man is the one who is able to proceed in the right way in his search for pleasure.

The third view that philosophy took during this period is that of the Sceptics, who believed that all the vexations and troubles of mortals come from accepting these groundless theories. Many of these asserted the unknowability of anything, while others withheld their judgments in all cases of dispute, seeking by so doing to secure peace of mind.

But this later grouping of philosophers the Cyrenaics are of particular interest to us, just as among the pre-Socratic philosophers the Atomists were. For we have said that Epicurus was no great originator in the field of philosophy and to these, two schools is traced much of the so called Epicurean Philosophy.

Philosophy according to Epicurus is an "activity which by means of conceptions and arguments procures the happiness of life".

With this practical end in view, we are not surprised that while he accepted the usual three fold division of philosophy into Logic, Physics and Ethics, the first two should be made entirely subordinate factors. He was interested in Logic only as an element introducing Physics, and Physics he considered as existing entirely for Ethics, and being necessary in order to free men from superstitious fears.

Epicurus' one aim in considering Natural Science was to obtain such a view of nature as would dispense with the aid of supernatural intervention. Hence he ties himself down to no one theory but accepts or rather supposes as possible any views which will do away with the assistance of the gods. This fact may be best presented to our minds by the following quotation of Gellius: "Possibly the world may move and possibly it may be at rest: Possibly it may be round or else it may be triangular or have any other shape. Possibly the sun and the stars may be extinguished at setting and be lighted afresh at the rising: it is however equally possible that they may only disappear under the earth and reappear again, or that their rising and setting may be due to yet other causes." From this he appears to have been moved far more by hatred of religion than love of natural law.

From Epicurus' dislike and position

ignorance of science it is quite natural that he should have relied on some older system, adapted to carry out his views of Ethics. The Atomic theory of Democritus especially commended itself to him. The old Physics and Ethics both however underwent expansion and were considerably modified.

Democritus assumes that the atoms are of an infinite number of shapes also that they are so small as not to be comprehended by the mind. These two statements Epicurus at once perceived to be inconsistent with each other. His modification supposes therefore a limited number of shapes but an infinite number of atoms of each shape. He also sees the impossibility of the heavy atoms, as Democritus asserted, overtaking the lighter ones in their downward motion; for in a vacuum all bodies must fall equally fast. He attributes their contact to a swerving aside of the atoms from their straight downward path and that this swerving motion is caused by a force inherent in the atoms.

It would be impossible here to enter into the origin and arrangement of the universe as proposed by Epicurus from the very conflicting theories which he accepted and his apparent carelessness as to their truth. His assertion that the heavenly bodies are no larger than they appear to us and may indeed be smaller is a startling declaration of his

own ignorance. He also makes the statement that the earth is supported by the air and remains at rest in the middle of the world, which is impossible since he accepts the weight of bodies as another element in his theory. Contrary to the Atomists Epicurus believed in the existence of gods, but denied them any connection with the affairs of mortals.

The Ethics of Epicurus also present certain differences from the Cyrenaics. Like them he believed that happiness was the thing to be sought for; but differed from them regarding the nature of it. While Aristippus regarded the greatest pleasure of the moment as the ideal of happiness, Epicurus strives for a system of morals which shall teach men how to obtain happiness for the whole life time. The pessimism which the Cyrenaics fell into, due to the fact of the preponderance of evil ^{and} pain in the world over good ^{and} pleasure, was also provided against by E. who again revived the principle of Socrates that "Virtue is inseparable from true pleasure. It would teach that to be rational and miserable would be preferred to being happy and irrational. Hence though in torture, the wise man might be happy. He seems to have carried out this principle in his own life; for just before his death in a letter written to a friend he asserts that the agonies of disease have been overcome by the

pleasure derived from thoughts of his philosophical researches, which has caused ~~his~~ last days to be the happiest ones of his life.

Lucretius was a Roman. The work of the Romans was not in the field of Philosophy. We have already stated at the outset that among the ancients the world of philosophy and that of the Greeks very nearly coincided. It may properly be asked at this point then why the science ^{and} philosophy so much stress has been laid on the philosophy of Lucretius and the influence on modern thought has been so largely attributed to him.

The national Roman characteristic was an essentially practical one; while the tendency of the Greeks was equally artistic. The contributions to humanity of the former lay in the domain of politics ^{and} law; while those of the latter consisted in art, literature ^{and} philosophy. When the Romans first felt the need of developing this other side of their nature, the Greeks furnished them their models. In philosophy the Greek systems had already been developed. These the Romans adopted, examining and accepting them partly for training ^{and} cultivating the mind, but for the most part surely as furnishing an explanation of the universe and a rule for correct living. So far as the Romans

dipped into philosophy at all, the practical end and aim was ever their foremost motive. Whereas the Greeks loved speculation for its own sake.

In Lucretius' time all the principal schools of Greek philosophy were represented at Rome. Of them all perhaps the Epicureans in Italy were in the poorest condition. The founders of this system had been men of little strength and the peculiarities of it had made them the subject of much ridicule. In this state of affairs Lucretius rises as an advocate of Epicureanism and throws the whole strength of his Roman character into his work.

The "De Rerum Natura" is in the subject matter strictly Greek, Lucretius himself claims no originality in the work, but it bears the distinctive Roman stamp - the spirit was all Roman. He does not mean to say that Epicurus had no practical aim in his philosophy; for from the time of Socrates the tendency had been to become more & more practical; but that the Romans from the bias of their national character intensified this tendency. As the Epicurean philosophy is far above the Pyrrhonic and Atomic theories from which it was so largely derived, so the doctrines of Lucretius, as devoid of originality as one may claim them to be, far exceed in power and influence on the world of science and

philosophy the Greek philosopher's work.

The Atomists sought knowledge for its own sake understanding their mission to lie in originating a system and writ about doing it. Epicurus had a motive and his system was practical, his aim being to establish a scheme of ethical principles, which may be made use of at any time or by any people. It seems to be immaterial to him just who shall benefit by his speculation. Lucretius looked at his scheme in quite another way. His countrymen were being degraded by the influences of superstition, by the shame and degeneracy of society. They were carried away by the mad and reckless ambition of political life. Lucretius saw in the Atomic Materialism a system adapted to meet the crying needs of his people and with ardent faith in the doctrines he accepted coupled with a strong conviction of a mission to perform and a firm belief in his own power, the conditions paramount, we believe, to all the great achievements the world has yet seen, Lucretius presents the system as a correct view of life leading his fellows away from the luxuriousness of the times and all the other evil influences to seek happiness in higher things.

In the "De Rerum Natura" Lucretius does not discuss the whole of the Epicurean

philosophers. He only treats of what he considers necessary to the attainment of his definite aim. He deals with the theory of knowledge to free men from the superstitious fears they have from strange visions and horrid dreams. He sees in the only true source of knowledge, yet the thin films that all forms of matter are continually giving off may be modified on their way to our senses. Thus a square tower appears round, if some distance off, which is due to the sharp corners of the idols being rubbed smooth by contact with the air. Any irregularities in other sense perceptions may be as easily explained. In smell and taste the contact of our senses with smooth atoms produces pleasure, but discomfort results from contact with rough, jagged ones. As these atoms are continually travelling through the air, the forms of the dead may visit men in slumber. The appearance of centaurs and monsters of all kinds were explained as due to the mingling and commingling confusion of idols in the air.

We have already said that Epicurus provided for the existence of gods, but "do-nothing" gods as they were called by the enemies of the doctrine. Religion, according to Lucretius, has been the cause of the greatest evil and he thinks that he who is able to assign natural causes for everything is the greatest benefactor of mankind.

In his theory of the Universe therefore all the terrific natural phenomena, as earthquakes, water-spirits, thunder and lightning, violent wind storms, things which from the earliest times have engendered in men's minds fear of higher powers, have been explained in detail; for fear, says Lucretius, forms the basis of religion and were it not for these groundless fears that burden the souls of men, a study of the workings of nature would for us remain to be needed.

The gods of Lucretius had human forms and dwelt in the spaces of the universe between the worlds, devoid of all pain and sorrow, living a perfectly happy existence. In the words of Lucretius they were:-

"The gods, who haunt
The lucid interspaces of world and world,
Whom never creeps a cloud or moves a wind,
Nor ever falls the least white star, of snow,
Nor ever lowly roll of thunder moans,
Nor sound of human sorrow mounts to man
Their sacred, everlasting calm."

Lucretius dwells particularly on their not mixing in human affairs. For if they did so, how could they lead their tranquil happy lives? He embodies his ideal of happiness in the form of the gods and it may be in part for this purpose that they were accepted as a part of his belief. As great stress as Lucretius

puts on the absence of all divine assistance in the origin ^{and} management of the universe he by no means believes in a world governed by chance. Law and order he thoroughly believes in, but strange enough the necessity of a law-giver does not seem to occur to him.

To drive away the fear of death, which Lucretius says is the bane of life, was a task considered by him of great importance. The basis of the whole argument was the principle that nothing exists but matter. The mind, which is the directing part and is situated in the region of the forehead and the soul which is the "animating principle" of man, but is diffused throughout the body are in their nature material beings composed of the finest atoms. Then the mind ^{and} soul do exist in connection with the body that neither can be taken away and leave the other two. The mortality of the soul is argued from the relation of soul & body and the analogy between them. Thus: The body is often racked with disease; the mind is likewise harassed with grief ^{and} fears. When the body is sick the mind also is frequently diseased and many others. Now the body dies, and the soul which in this life is affected in a similar way must also be mortal. If death thus means annihilation, why should it be feared by men? "For when we are, death

is not; and when death is, we are not." There-
fore it should not be a matter to concern us
in the least.

Spontaneous generation is Lucretius' theory
of organic life, the vegetable life preceding the
Animal. In the early times many industries
were created which at once disappeared not
possessing ^{all} the requisites for the continuance
of their species. And of the well formed beings
many also perished; for only the fittest (this
may have included those possessing either the
most cunning, or courage, or speed, or some qual-
ity rendering them particularly useful to man)
survived.

After having provided an explanation
for the beginnings of life on our earth, Lucretius
then proceeds to trace the development of man,
beginning with primitive men who were
mere savages living like beasts without
shelter of any kind and feeding on the nuts
and roots of trees. During the whole course of
their progress from savagery to civilization the
poet shows a natural cause at every step and
so does away with the popular belief of his times
concerning the gods - viz: that Ceres taught
the raising of grain, Bacchus the making of
wine and that Prometheus brought down fire
from heaven.

Man himself although little better
than the animals, possessing a material

nature; body, soul ^{and mind} differing little from them, was still raised above the sphere of performing the office of a machine. From the doctrines of the swerving aside of the atoms, free will was granted him and he at once became master of his own destiny.

It is difficult to trace the influence of the great work of Lucretius in the light of history. Even in his own time it was borrowed from freely but very seldom does he receive credit for the very ideas which were handled so freely by the Latin writers. Cicero was one of the few great literary men who was neither ashamed nor afraid to own his admiration for the man. Seneca too makes mention of him but more often with disapproval. Later with the rise and spread of the Christianism the two conflicting doctrines met and after the victory of the Church Lucretius and his system alike were lost sight of and remained in obscurity till the revival of learning in Europe when it was taken up once more. Broun is said to have derived much from the *De Rerum Naturæ* in constructing his own didactic poem. While Gassendi at a later date revived Epicureanism.

From the seventeenth century the influence of Lucretius has been ever decreasing. The triumph of Lucretius perhaps will never be greater than during the reign of scepticism

in France the latter part of the last century. The spirit of wild innovation, which had grown up among the French people received its distinctive character from Lucretius. In him such men as Voltaire and Rousseau found a congenial spirit; and the works that then appeared are in many respects but servile imitations of his "De Rerum Natura".

The name of Lucretius has in the present day acquired new interest due to the fact that Modern philosophers recognize the relation existing between his subject and many of the questions to which speculative science is being now directed. The problems of Lucretius, many of them, are the problems of today.

Two theories of the constitution of bodies have from early times interested the speculative mind. One, the Atomic theory, asserts that bodies are made up of atoms, an atom being a body that cannot be divided into parts. The advocates of this theory - viz: Democritus, Epicurus and Lucretius believe in the "full" and the "void". The other, the theory of infinite divisibility of bodies, asserts that the division of bodies may be repeated over and over again, times without end. We can not imagine anything so small but that it may be again divided. Its advocates believe in the continuity of bodies and the "Universal plenum". There is no such thing as empty space. They believe that the quantity

of matter in a body can only be measured by the volume of space occupied by the body; while the atomists estimate the quantity of matter by counting the atoms in it.

These two systems the discontinuous or Atomic and the continuous or doctrine of homomeria as it was called by Anaxagoras its ancient founder, correspond respectively to the two doctrines of quantity, arithmetical and geometrical. The doctrine of space indeed and of time later on preceded and led up to the doctrines of matter.

Descartes and Spinoza in more modern times have held to the Doctrine of Anaxagoras. Descartes however admits that human powers may be incapable of dividing certain particles of matter and in this sense they may be said to be indivisible, but that the Deity that made them must retain his power of dividing them. The advocates of the theory of continuity and infinite divisibility of matter have made a hard struggle to maintain their position; but from its very nature the theory seems incapable of development. More than a century was spent in devising means for investigating some of the intricacies of Descartes system. And his own incapacities coupled with that of his followers, in explaining many of its details shows it as yet to be impracticable.

Today the Atomic theory of matter is the dominant one both in science ^{and} philosophy.

Bacon introduced it into Modern Science ^{and} Dr. Dalton in his application of its principles to Chemistry has rendered an invaluable service to the world of science. Although as yet an unverified hypothesis it is often accepted as unquestionable truth by materialists, evolutionists ^{and} divines.

The tendency of the followers of Lucretius seems to have for some time toward the acceptance of the divine cause in distinction from the "law" of their author. Thus we have Gassendi ^{and} Leibnitz both accepting the Christian conception of God, in connection with the atomic theory of Lucretius. Although they seem unable many times to reconcile these two beliefs. Bacon ^{and} Boyle, the chemist, however find no difficulty in looking toward the power of God as a final cause in bringing together the atoms and building up things out of them.

With the discovery of gravitation a change took place. The "repelling" motion of the atoms which had been such a drawback to Lucretius' doctrine and from its inconsistency had led men away from it to accept a God, could now be done away with and gradually the repelling and attracting force as acting directly upon the atoms one with another being developed, was introduced as a mod-

ification to his theory. The doctrine now with its modification became the prevailing one and the explanation was so simple yet so powerful that a guiding and directing spirit seemed hardly necessary either to explain the creation or maintain the existence of the world. A mechanical explanation of the Universe was deemed sufficient. Locke formulates his doctrine in accordance with this belief, and the French skepticism of the last century, of which we have already spoken was the outcome of the same principle.

That modern science does not accept with Lucretius the swarming power of the atoms has been already spoken of. ~~It~~ Carrying the difference still farther it substitutes the vibratory for the downward tendency of atoms but agrees with him that their movement is inconceivably swift. And with him again recognizes that all the phenomena of nature is in accordance with certain universal, invariable law. The theistic physicist ascribes these laws to an omnipotent, omnipresent Lawgiver and Law-maker, God, who carries on all the processes of nature in accordance with his own law and divine plan.

On the contrary the Atheistic thinkers of the present time start with the doctrine of the atoms and assume the existence of law

controlling them and assert that with force, time and space it is possible to account for all existing facts and phenomena. Lucretius deified nature as able, "without the power of the gods, to do all things." Some modern materialists adopt the same theory, while others put evolution in the place of nature and deify a process of her law.

Ancient atomism claimed that life is spontaneously produced in matter by certain combinations of atoms. Materialists agree with this theory. The theistic believe that it has its origin only in a higher power and cannot proceed from any combination of matter without the intervention of that life giving power.

Modern thinkers make protoplasm the basis of organic life. The doctrine of evolution regards the higher forms of life as gradually arising step by step from the lower, the highest and most complex forms of existence as following and depending upon the lower and simpler forms. Its advocates hold that the physical world is a gradual progress from the simple to the complex and the development of organic life is conditioned upon the inorganic world.

To the theistic evolutionist God is the source of protoplasm, to the atheistic it is a spontaneous product and only matter, force

and time are required to bring about the result.

Modern Materialism is not unlike the doctrine of Lucretius in its contempt for religion and like him it makes vigorous but abortive efforts to construct a world without a God, a universe with no intelligent, controlling Power.

The problems of the present correspond essentially with those of the past and are no nearer a satisfactory solution. The tendency in the human mind to deify some thing is as strong that as has been said by Laing "it seems almost a matter of taste whether we worship the masculine God, the feminine Nature, or the neuter All."

Hattie S. Williams -

May 17. 89.

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