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INTRODUCTION.

MY object in writing this book has been to put into the hands of those of my pupils, who are studying the History of Philosophy, a simple account of the contents of Aristotle's *Metaphysics*. To know the History of Philosophy is to have thought the thoughts of philosophers after them. The student who is ignorant of the language in which a particular philosopher has written, must, as a rule, study him in a translation. But in the case at least of some of the treatises of Aristotle, where the expression is condensed and the language technical, a mere translation is not sufficient. Something in the way of explanation and commentary seems essential. A mere translation of the *Metaphysics* would be unsatisfactory for the additional reason that the book is entirely wanting in continuity and arrangement. It is a set of papers which the editors of Aristotle's works collected together under the name of "What comes after" or "goes beyond the physics." In this case the student would seem to want something which, though not a literal translation, shall yet be something more than the mere canker of an epitome. I have tried to give in substance everything of importance that Aristotle has written, but to state it in such a form that the meaning and the bearing of it may be easily comprehended. Chapters 1 and 2 contain the substance of Book 1, and of a part of Book 1 minor. The first book defines the problem of philosophy, and states and criticises the solutions of it which had been attempted by Aristotle's predecessors. Book 1 minor, even if Aristotle wrote it, was certainly not intended to stand in its present place. There is no necessary or natural connection between its parts: it is not strictly relevant; and it interrupts the natural succession of Book 2 upon Book 1. I have included a part of it, but have altered the position of it, so as to secure a continuity of statement. In the third Chapter, I have grouped together Books 2, 3, 9, and Book 10 up to Chap. 8. In a regular treatise these books would never have been allowed to stand side by side. They largely repeat one another, being devoted to a statement and partial solution of difficulties, and particularly to a defence of the law of contradiction, and to a refutation of the scepticism which is associated with the teaching of Heraclitus and Protagoras. The latter half of Book 10 I have omitted, as being irrelevant. The subject matter of these books would seem to us to belong rather to Logic than to Metaphysics; but Aristotle distinctly says that in his view it is proper to Metaphysics. Book 4 is a mere string of definitions. I have drawn upon it only occasionally, when it serves to illustrate the properly metaphysical portions of the book. Chapters 4 and 5 are devoted to Books 5 and 6, and Chapter 6 to Book 7. The seventh book to a large extent repeats the sixth; and both in the 5th and the 6th book there is a great deal of purely logical discussion arising out of the connection between form and definition. Chapter 7 comprises the 8th book. A part of it is actually stated to be irrelevant. I have, however, included the whole of it, because students may be glad to

have a fuller discussion of the conception of *potentiability* than is absolutely necessary. I have omitted the first five Chapters of Book II. Besides being badly arranged, they are either irrelevant, or a mere repetition of what has been stated elsewhere. The rest of the book is set forth in the last chapter. I have omitted altogether Books 12 and 13, which contain a criticism of certain Platonic and Pythagorean theories, because they practically add nothing to the criticism of the same theories which is contained in the earlier portions of the book. The criticism is not in itself very interesting or instructive, being directed mainly against certain Pythagoreanizing forms of Platonism about which we really know very little.

The marginal references are to the Oxford Edition of Bekker's text printed in 1837. I have derived much assistance from Schwegler's Commentary.

Philosophy is an attempt to comprehend the world as a rational system. Men's first view of the world is reflected in mythology. It is regarded as a scene for the capricious action of deities, who are independent, if not opposed. We say that philosophy begins with Thales because he, so far as we know, first conceived of the world as the manifestation of a single principle. He thought that the variety of the physical universe was derived from water or moisture. Anaximander said that in the beginning there was indeterminate matter. According to Anaximenes the primal element was air. Empedocles traced the world as we know it to the action of attractive and repulsive forces upon the four elements. Anaxagoras explained it by the action of reason upon a mass containing within itself the elements of all varieties of matter. Democritus and his followers taught that all bodies are but combinations of atoms in space, and that their different qualities are due to differences in the shape and arrangement of these atoms.

In its first stage philosophy had a value only as it manifested a new consciousness of the world. In respect of its content it was worthless. It was simply a crude physical dogma. Nothing more could be expected from an attempt to grasp the secret of the universe by anticipation. Gradually new aspects of the problem revealed themselves. Empedocles reflected on the problem of perception. Democritus distinguished between the apparent perceptions of sense and the real deliverances of thought.

Pythagoras marks a new era by the introduction of a formal as opposed to a material principle for the explanation of the world. He made numbers the essence of things. He wished to emphasize the prevalence of harmony or law in the apparent diversity of things, so he said that all things were numbers, or were copies of numbers, because number is typical of identity in difference. It is natural enough that at first men should have exaggerated the power of mathematics. It was yet to be learnt that mathematical laws are true of all things, because they are so little of the truth about anything.

The Eleatics reduced all reality to the mere abstraction of *Being*. Whatever possesses the attributes of manifoldness, or change, they asserted to be unreal. Its apparent reality is a delusion of sense. They did not see that *Being* and *Not-Being* are relative conceptions, nor did they explain the illusion under which we labour that there is a real world of change and movement.

and that law is reason, and that the universe is knowable because it is rational, and that it is known just so far as it is comprehended as rational. Unfortunately, however, Plato did not, or, at least, sometimes, so express himself as to appear that he did not—hold fast to the truth that the world is simply a manifestation of law, and that knowledge is a fusion of the elements of sense and thought. He seems sometimes to separate law from phenomena, thought from sense, the ideal from the particular, and thus to create and set over against one another two worlds, one ideal and the other phenomenal, one real and the other apparent. This hypostatization of the ideal seems to us to belong rather to the mythologic and poetical parts of Platonism. So far as it was anything more than this, Plato was quite well aware of its unscientificity. Aristotle, however, has made it the central doctrine of Platonism, and has directed all his criticism against it. He is an Idealist like Plato. The difference, according to him, between himself and Plato is that he regards the universal as existing only in the particular, and not apart from it. *Form* is that which constitutes the individuality of a thing: and, as a property of the thing, it is real, but not otherwise. Matter, thought of apart from form, is a mere negation. It is nothing. It has yet to become something. Thus Aristotle explained the world by the conception of development. Through movement and change possibilities are always becoming realised, matter is always assuming form. Thus aggregates of men become states. The raw material of human feeling becomes character. But it must be remembered that though in the order of time the particular precedes the universal, yet in the order of thought the universal is prior. In those days, when the conception of evolution is in the air, and when it is the fashion to see in the highest nothing but the lowest, from which it started, Aristotle may well remind us that we ought to change our point of view, and to see in the highest the explanation of the lowest. Just as in the sphere of production the artist can only shape his material in so far as the notion of what he wants to make pre-exists in his mind, so, in the sphere of nature, the very notion of development presupposes its end. A development means a development to something: and the end is implied in every stage of the process. In this sense it is true that the world is moved by God as an object of desire. Everywhere we see the effort to realise perfection. God is not in Aristotle's view the Creator of the Universe, which is eternal. He is the eternal cause of its eternal movement. It has been said truly that, in the higher spheres of Being, Aristotle and Plato blend, without any consciousness of incongruity, the notions of Personal and Impersonal. It is equally true to say that Aristotle speaks of God as a Personal Being transcending the world, and as reason immanent in the world. We cannot make the conception more definite than it was in the author's own mind. When it arrives at God, his system presents a certain dualism which is not transcended. If we start from the side of the world, we may allow the need of God to explain it. But if we start from the side of God, it does not appear that the world is, in any way, necessary to Him. Indeed, so far as He is defined as pure self-consciousness, He would appear to be entirely independent of the world.

The direct opposite of this theory is that of Heraclitus, according to whom nothing is real but change. Being is for ever passing into new forms. The restless movement of the world, like a consuming fire, is for ever carrying off into new shapes whatever is, before it can be even said to be.

Besides inheriting certain elementary suggestions in psychology and morals, the sophists found themselves confronted with the opposition of thought to sense, of being to not-being, of the real to the unreal, of the permanent to the changeable, of convention or usage to nature. The object of the Sophists was to impart that kind of culture which the life of a free Greek community required. Each citizen had to pronounce for himself upon practical problems of public and private conduct. But Sophistic was essentially sceptical. Its decisions were based upon accidental and individual considerations. It was like much of the Parliamentary oratory of to-day, and its sceptical tendency lay just in this, that what it defended and justified on one particular ground might be attacked on another. Thus nothing was safe.

It was the object of Socrates to get beyond the mere accidental and conventional, and to discover universal and rational conceptions in morals. By his art of intellectual midwifery he endeavoured to recommend his results to his hearers by making them appear as the deliverances of their own reason. There was in his view a higher rule of life than the mere likes and dislikes of the individual, or than mere local opinions and customs. He thought that, if men would only "know themselves," or, in other words, understand the real needs and capacities of their own nature, morality would be seen to be alone capable of affording them satisfaction. Hence the many-sidedness of his teaching. His object was not to frame a system, but to meet practical difficulties. Hence he justified morality to one man as pleasant, to another as a form of self-respect. That is why his teaching gave rise to so many schools. It had so many aspects, any one of which it was possible to isolate. Aristippus gave prominence to the prudential basis of duty, and declared that nothing is of value except the pleasure of the moment. Diogenes exalted virtue as the source of independence to the individual. He made superiority to wants the aim of life. Pushed to extreme limits, Cynicism resulted in a repulsive indifference to the graces and proprieties of life. At the same time speculative difficulties were making themselves felt. Aristippus, like most hedonists, was a sensationist, for whom there was no absolute standard of truth. Antisthenes said that only identical predication was possible, on the ground that to apply different predicates to one subject was to make the one many. Euclid of Megara, seeing that Socrates found the truth not in the particulars but in the single concept which explains them, revived the Eleatic difficulties about the reality of the manifold.

Plato soon discovered the weakness of sensationism. If the sole content of human consciousness were perishable sensations, that consciousness would be less than a dream. Objects are known by us, and therefore exist for us, only in virtue of an intellectual synthesis. And further, the world is knowable by reason, only because it is itself ideal. When Plato says that knowledge is recollection, he means to say simply that reason sees itself in its object. The essence then of Plato's metaphysic is just this, that the universe is law,

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ARISTOTLE'S METAPHYSIC.

CHAPTER I.

THE PROBLEM OF METAPHYSIC.

Aristotle does not use the word Metaphysic to denote the inquiry into the first principles of reality and of knowledge. What we call Metaphysic he calls wisdom, first general usage justifies his choice of terms and the meaning which he gives to them.

The possible states of conscious beings, arranged in an ascending scale, are sense, memory, experience, art, science, and wisdom. Man's natural love of knowledge is proved by the disinterested pleasure which he derives from the use of his senses, especially the sense of sight, which does more than any other to extend and vary his knowledge. The range of intelligence and acquisitive capacity, then, depends in the first instance upon the range of sense. It is wider in those creatures who have the sense of hearing than in those who want it. It is still further extended by memory. Previous impressions recur in the memory, or are revived in the imagination, of animals. But what first distinguishes man from the other animals is his capacity of acquiring experience by generalising from what he remembers. The brutes never get beyond isolated impressions and recollections. Experience renders the arts possible. Until intelligence is sufficiently developed to become conscious of laws connecting specific causes with specific effects, we are in the realm of what Aristotle calls chance, i.e., we are on the level of the mere Empiric. An art, however, may be practised by one who does not understand the theory of what he does, i.e., to be but a slight difference between the unconscious action of inanimate objects and the purely mechanical action of a common workman. We place the science of engineering above the trade of the blacksmith, because the engineer can explain results which the blacksmith can only produce. It appears then that knowledge ranks high in proportion as it has for its object the causes of things. It is to sense perceptions that we are indebted for our knowledge of particular facts, but we do not give to them the name of science, because they only reveal without explaining facts. As provision has usually been made for the supply of human wants, increasing leisure has created possible the growth of speculative sciences, and it is to them that the name of wisdom is specially applied. We may say, then, that wisdom is its object first principles and causes.

Wisdom.
philosophy, or theology, and, as is usual with him, he begins by arguing that general usage justifies his choice of terms and the meaning which he gives to them.

Grades of intelligence.
Eκ. I. Ch. I.

The philosopher is by common consent a man whose knowledge is general, founded upon *data* remote from sense, and exact. He is a man who can give an account of what he knows. He is a man engaged in studies that are

pursued for their own sake and not for their practical results. Lastly, it is agreed that all other kinds of knowledge are subordinate to philosophy. If we take these as the accepted tests of what philosophy is, we shall come round to the same conclusion as before, namely, that wisdom or philosophy has for its object first principles and causes. For general knowledge is knowledge of universals, of first principles; since he who knows a principle, knows also what that principle explains. His knowledge has a wider range than that of the man who knows only isolated facts. Such knowledge again is the most difficult to attain. We learn soon and without effort whatever sense can reveal, but it is as hard for our reason to apprehend what is universal as it is for a bat to see in day-light. Even when we have grasped the universal it is a hard task to show how it explains the manifold phenomena of the world.

When, however, it is attained, such knowledge possesses the required characteristic of exactness. For the more abstract a science is, the more exact it is. The complexity of phenomena requires us to make the statements of their laws subject to many conditions; but in proportion as we can leave out of sight the concrete differences of particulars, we attain to simplicity and exactness. The science of Space, for instance, is abstract, and therefore exact. It takes account of one relation only, and that, too, a relation by which all objects are and must be bound. Again, only the man who has risen to the knowledge of causes can explain what he knows, or justify what he believes. Again, if the philosopher pursues knowledge for its own sake, he must pursue the highest knowledge. But the highest knowledge is the knowledge of first principles and causes, for all other truths rest ultimately upon the truth of these, and all existence must ultimately be explained by reference to these. Lastly, we must assign to philosophy a rank above the sciences. For philosophy takes the results of science as its starting point for determining the final cause or purpose of the world. We may, indeed, say that philosophy is in a double sense divine. It has God for its object, and that complete understanding of the world at which it aims is possessed by God alone. Philosophy is not concerned, like the arts, with the supply of our material wants. It did not begin until these wants were supplied. It had its origin in wonder. It was a disinterested effort to solve the difficulties and answer the questions suggested by nature. But when completed, it is perfect understanding. If it begins in wonder as to how things can be as they are, it ends in wonder as to how they could be other than they are.

If then knowledge is incomplete so far as it stops short of first causes, we naturally ask what, and how many, those causes are. According to Aristotle they are four, the form, the matter, the efficient, and the end. He

tests the correctness of this classification by a review of the speculation previous philosophers, or seekers after causes. But first it may be as well show that it is possible to accomplish what philosophy attempts. If the first causes of things were infinite, of course the attempt to determine them would be foredoomed to failure. But it is evident that there can

Classification of causes.

Possibility of philosophy.

Bk. 1. Min. Ch. 2.

an infinity of causes. If we imagine a series of material causes stretching backwards to infinity, we deny the reality of causation altogether. For every substance in the series will be as much an effect as a cause. Nor can the series of material causation stretch onwards from a fixed point to infinity. The series must end in one of two ways: either as the completion of a process in time, as when a boy becomes a man, or as the transformation of one substance into another, as when air passes into water which is retransformable into air. An infinite series of ends which are also means is equally impossible. To deny the existence of an absolute end or final cause is to render life and existence irrational, and to deprive them of all meaning. Nor can the series of formal causes stretch back to infinity. In a receding series of definitions each becomes a less accurate expression of the essence of the object. If, therefore, the form or essence is not expressed by the immediate definition of the object, we can never attain to the expression of it at all. Further, the assumption of such an infinite regress is fatal to the possibility of knowledge. For knowledge implies an unquestioned starting point, and learning cannot be carried through an infinite series of objects. The same argument which shows that the series of any one kind of causes is not infinite, shows too that the kinds of causes are not infinite. We cannot be said to know until we have apprehended causes, and we never could apprehend an infinite number of causes. Having thus justified the attempt of philosophy, we may return to the consideration of Aristotle's predecessors in philosophic inquiry. Every one of them has contributed some little to the knowledge of the truth about nature, so that from all of them together we may hope to derive some not inconsiderable information. At any rate, their imperfect attempts have rendered our more successful efforts possible. Those speculators of whom

Previous philosophers.
Bk. 1. Ch. 3.

we have just mentioned were the *Early Materialists*. Thales was the first, and of whom he is the type, had in view material causation only. They explained the world simply by positing one or more material substances, from which everything originally arose and into which everything passes. They held that there is no such thing as creation or destruction, but merely a change in the qualities of the material substrate. According to Thales all things have by successive changes been generated out of water. Aristotle suggests that he was led to this opinion by observing the connection between moisture and the phenomena of nourishment, warmth, and life. Some have thought that the same meaning underlies the old myth according to which the marine Deities, Oceanus and Tethys, were the authors of creation. Others find it in the tradition that the gods swear by the river Styx. They would swear, it is said, by what they honour most, that is, by what existed first in the order of things. Anaximenes and Diogenes said that air was the original or first principle. According to Hippasus and Heraclitus it was fire. Empedocles assumed four elements, earth, air, fire, and water. These, he said, are always combining in various proportions into unities which again dissolve. According to Anaxagoras of Clazomenae there existed originally an infinite number of elemental substances, which, in time, dissolve again.

What we call creation is simply the coalescence of homogeneous elements, which, in time, dissolve again. It was impossible that men could long remain satisfied with such explanations of nature as these. The necessity of an efficient cause to account for the transformation of primordial matter in time forced itself upon their minds.

This is a difficulty which had not suggested itself to the earliest thinkers of all. It was a difficulty which the Eleatics could not solve. Accordingly they denied the reality of change and movement in nature altogether. A detailed discussion of

The Eleatics.

Eleaticism would be foreign to our purpose, which is to elucidate ideas of causation. They agreed in representing existence as one, though they differed in their conceptions of the one. Their doctrines are of unequal merit, but as they all agree that the one has in it no principle of movement or change, there is not with any of them any question of tracing the development of the manifold of existence from a primal unity. Parmenides, it is true, assigned a sort of existence to the phenomenal world, and assumed a causal principle corresponding to it. To that extent we find him recognizing efficient causation. He is the clearest and most profound of the Eleatics. The unity which he posited, and which he identified with being, was a formal or intelligible unity. Melissus seems to have posited a material unity. It was Xenophanes who first identified the all and the one, but he has not made his meaning clear. He and Melissus were men of imperfect culture, and he probably did not apprehend the distinction between formal and material. Fixing his regard on the whole universe, he merely says that God is the one. Those who, unlike the Eleatics, assumed a multiplicity of material principles to account for the world could with more reason talk of efficient causation. For they could represent fire as an agent, and earth and water as patients. But failure to recognise the necessity of an efficient cause is not the only fault of these early materialists. They themselves can hardly have believed that such material principles as water, air and fire are adequate to account for the perfection and the order of nature. Nor are they adequately accounted for by spontaneity or chance. Anaxagoras appears to us like a sober man amongst drunkards when he asserts that reason must be immanent in nature to account for its regularity and harmony. This recognition of purpose as guiding the efficient cause is a great step in advance.

Anaxagoras.

Empedocles, seeing that there is evil as well as good in the world, posited two principles, love and hatred, the first the cause of good, the second of evil. Indeed we may say that he was the first to assume good and evil as first principles. One may say then that Anaxagoras and Empedocles recognized material and efficient causation, but with no clear insight. Anaxagoras does not trace reason through nature and show how it explains it; but merely brings it in as an occasional *Deus ex machina*. Empedocles is not consistent in the application of his principles. Love sometimes appears as diremptive, and hate as constitutive. Leucippus and Democritus were not any more than the early materialists troubled by the difficulty of efficient causation. They explained the world by two elementary material principles, the full or existent, and the void or non-existent. The varied forms of existence represent simply differences in the form, position, and arrangement of the full in the void or, in other words, of atoms in space.

Empedocles.
Bk. 1. Ch. 4.

When we pass to those who go by the name of the Pythagoreans we find a recognition, however inadequate, of a new principle, namely, form. By their successful prosecution of the study of Mathematics they were led to

The Pythagoreans.
Bk. 1. Ch. 5.

regard the first principles of that science as the first principles of all existence. Numbers appeared to them to be more closely allied than matter to reality. Aristotle's account of the Pythagorean doctrine is very confused. At times he talks of things as being copies of numbers, which would suggest that number was used merely as a formal expression of law and harmony in the universe. At other times he says that number, in the opinion of the Pythagoreans, was the material cause of existence. At any rate the Pythagoreans identified particular numbers with particular qualities, and attempted, by the aid of arbitrary assumptions, to establish a thorough-going parallelism between numbers and harmonies and the phenomena of the universe. Others of this school explained the world by reference to ten pairs of relatives, finite and infinite, odd and even, one and many, right and left, male and female, rest and motion, straight and crooked, light and dark, good and evil, square and with sides of uneven length. If we ask to which of the four Aristotelian causes these relatives belong, the answer is that they were apparently regarded as material.

Next in the order of time follows the speculation of Plato. It accords in many respects with Pythagoreanism, though possessing in addition special characteristics of its own. Plato began by accepting the doctrine of Heraclitus that the objects of perception are in a state of perpetual flux and, therefore, unknowable. But when he saw Socrates finding his way to definitions in the sphere of Ethics, he saw that the object of these definitions could not possibly be fleeting particulars. There can be no general and permanent definition of what is constantly changing. He asserted therefore that the definitions were definitions of ideas, which exist independently of the particulars. The manifold which is called by the name of a given idea exists by participation in that idea. Except that the word participation is substituted for resemblance, there is no difference between this doctrine and that of the Pythagoreans who said that whatever exists, exists by resemblance to numbers. The nature and mode of the participation or resemblance are not made clear. Plato gave to the objects of mathematics an independent existence between ideas and objects of sense, on the ground that they possess qualities common to both. For example if we contrast a duad with the idea of an animal, we find that there are many duads, though there is only one idea. But on the other hand, all duads are the same in the sense that they are not doubles of different things. As the ideas are the cause of all that exists besides themselves, the elements of the ideas must be the elements of all that exists. These elements are the one and the many. For the ideas, in so far as they are all forms of being, are one; but in so far as they are different forms of being, they are many. So in the world, the one or the principle of identity is represented by the ideas, the many, or the principle of difference, by the groups of particulars in which they are manifested. When the ideas are externalised in matter, Plato identifies them with numbers, and he describes matter in the abstract as the Great and small, because these two predicates serve to express its infinite capacity of increase and diminution. The ideas or formal principles of unity constitute the reality of things. In making the form the reality, and in identifying the form with number, Plato is at one with the Pythagoreans. But whereas the Pythagoreans derived the

Plato.
Bk. 1. Ch. 6.

Plato
and
Pythagorean
ideas
of
resemblance

Platonism and Pythagoreanism.

manifold of matter from the single principle of indefiniteness or difference, Plato derived it from the two principles of the great and small.

Another difference between them is that, whereas the Pythagoreans said that numbers are the objects themselves, Plato was led by the new process of dialectic to make unity and number separate from things, and to introduce the ideas.* Plato probably assumed two principles for matter because concrete numbers differ from one another in quantity, not, as ideal numbers do, in quality, and also because the formation of the number two by the addition of units is a type of the formation of all subsequent numbers. In deriving a manifold from matter Plato contradicts experience. It is the form which in reality possesses an infinite power of productivity. From a given piece of wood only one table can be produced, while he who possesses the conception of a table can produce an infinite number.

The result of this inquiry is to justify Aristotle's classification of causes.

Summary.
Ik. 1. Ch 7.

In these imperfect utterances of the childhood of philosophy we find no cause assumed which he has not included, while on the other hand all his four causes are, however imperfectly, recognised. Formal and final causes are least adequately recognised. The clearest recognition of formal causation is to be found in the Platonic theory of ideas: with regard to final causation we may say that it is, and that it is not, recognised. The *reason* of Anaxagoras and the *love* of Empedocles are, it is true, identified with the principle of good; at the same time they are employed rather as efficient causes than as the ends which explain whatever is or happens.

* See p. 8.

existence of ideas of relation, which Plato denies. It would follow, for example, from Plato's premises that there must be an idea of equality to explain the predication of resemblances. Things can only be equal, because they participate in the idea of equality.* And if phenomena can only resemble one another by participation in an idea, another idea is required to explain the resemblance of the idea and the phenomena, and so on *ad infinitum*. The doctrine of ideas is also incompatible with the doctrine that unity and a duad are the first principles of existence. The duad cannot be a first principle: for the conception of a duad involves a previous idea of number. The conception of number, moreover, being a conception of relation, it follows that relation is prior to substance, which Plato would not allow. But the fatal objection to the doctrine is that the ideas do not in any sense explain phenomenal existence, origin, or decay. They originate neither movement nor change. They do not explain our knowledge of things, because, not being in things, they do not constitute their essence. Nor do they explain the existence of things, for they are separate from things. Plato has not shown how the phenomenal world is generated from the ideas according to any known mode of generation. There is no meaning in his assertion that the ideas are patterns in which phenomena partake. Such language is merely figurative and expresses nothing. Who is it that models phenomenal objects on the pattern of the ideas? Nor is a thing which is like another necessarily made after the pattern of it. It would follow too that there must be many patterns or ideas for one and the same thing: e. g., for man alone are required the ideas of animal, biped, and man. In the case of a genus and its species the idea will be both pattern and image, for the ideas of the different species are related to the idea of the genus, as the individuals of a species are to the idea of that species. The truth is that the separate existence of the ideas is an absurdity. The essence cannot be separated from that of which it is the essence. Besides, if some things, such for instance as the products of the arts, can exist without any idea corresponding to them, why may not all existence be possible without ideas? Plato's theory does not in any way solve the problem of the physical universe. It establishes no real causal connection between the essences of things and the ideas which it posits to account for them. This charge cannot be evaded by saying that the ideas are final causes. They do not in any way explain the action and meaning of nature. It is, in fact, impossible to consider the ideas as causes, because they are identified with numbers. Suppose that objects of sense are separate numbers, how can the ideal numbers be the causes of them? The difficulty is not got rid of by making the ideal numbers eternal. Eternal and perishable numbers are equally numbers, and cannot be cause and effect one of the other. If it be argued that numbers are the causes of objects, because objects are numerical proportions, the answer is that the word proportion has no meaning except in reference to elements combined in proportion. Number in this sense is not the cause or essence of things, but simply expresses the proportion in which their material

* In the *Phædo* Plato not only allows this, but he actually selects the idea of equality as an instance to prove his doctrine that knowledge is a reminiscence of the experience of a previous existence. But in later dialogues, e. g. the *Sophist*, ideas of relation are transformed into mere categories.

constituents are blended. Another objection to the identification of ideas with numbers is that numbers by addition generate one number, whereas many ideas do not make one idea. If it be answered that five is not added to five any more than idea is addible to idea, but that the units of each are added in each case, then we naturally ask how the ideal units, which are now said to be addible, are related to one another. Equal difficulties arise whether we suppose qualitative distinctions to exist, or not to exist, either between the units of one idea or between the units of different ideas. On the one hand, it is difficult to conceive in what respect they can differ from one another; on the other hand, if they do not differ, it seems impossible to account for the qualitative distinctions between things. Another objection to the Platonic theory is that it necessitates the assumption of a new kind of number, intermediate between ideas and phenomena, for the object matter of arithmetic. Yet we are not told what the origin of this new kind of number is, nor why there should be numbers intermediate between ideas and phenomena. The units of the original duad, too, from which numbers are generated, remain unaccounted for. Again each idea, as a number, is composed of units: but we are not told how, though composed of parts, it is yet one. The nature of the ideal unit should have been clearly explained. The materialists did not explain phenomena simply by reference to body. They knew that there were different kinds of body, and they said distinctly to what body or bodies they traced back all forms of existence. The Platonists should have been equally explicit with regard to units. The attempt which they make to explain reality is unsuccessful. They represent the line as generated from long and short, *i. e.*, a definite great and small. A surface, they say, is generated from broad and narrow, and a solid from high and low. It is evident, however, that things, whose first principles differ in kind, cannot coalesce. The line, therefore, cannot be contained in the surface, nor can the line and the surface be contained in the solid. For broad and narrow differ in kind from high and low. For the same reason number cannot be contained either in surface or solid, since great and small, which are the elements of number, differ in kind both from broad and narrow, and from high and low. There is, therefore, no generation of the surface from the line, or of the solid from the line and the surface. The mere prolongation of a line, in other words, would never yield a surface. The mere contraction or expansion of a surface would never yield a solid. Nor is the generation of the point explained. Plato denied the real existence of the point. Lines, he said, are indivisible, and a point is a mere assumption of the mathematician. It is evident, however, that there must be a limit even to an indivisible line. There is, therefore, the same necessity for the point, as the limit to a line, which there is for the line as a limit to the surface. The fact is that philosophy has been identified with mathematics. The conceptions of great and small are properly applicable to magnitudes, but they are not adequate to the explanation of the physical universe. Great and small are not so much matter as predicates of matter, like density and rarity, which the earliest speculators described as the first differentiations of the original substance. If the great and small possess power of movement, the ideas must also be in movement, since great and small are elements of them as well as of things.* The ideas are, however, said to be eternally at rest.

* See p. 5.

The origin of movement, therefore, is unexplained, and consequently the whole problem of the universe remains unsolved. Another defect in Platonism is that it does not really prove the existence of a universal. At the most it establishes an independent unity corresponding to a group of particulars to which a common predicate is applicable. It does not even prove so much when there is no class corresponding to the conception. It is difficult also to understand the position in the Platonic system of the lines, surfaces, and solids, to which reference has been made. They are not ideas, for they are not numbers. They are not intermediate between ideas and phenomena, for that position has already been assigned to the objects of mathematics. Lastly they are not the perishable objects of sense. They seem to constitute a fourth species of existence, for which no place is provided in the system. Again, if Plato had only reflected that there are different kinds of existences, he would have recognized the absurdity of looking for the elements of all existences in his sense of the term elements. It may be possible to discover the matter and the form of substances: but to talk of the matter and the form of acts, states, or qualities, is to use words without meaning. A search for the elements of all things is meaningless for another reason, *viz.*, that it implies that he who begins such a search knows absolutely nothing. Yet without some previous knowledge it is impossible to learn anything. It cannot be maintained that such knowledge is innate, for the highest knowledge of all could not be innate without our being conscious of it. It is evident indeed that we have no knowledge which could enable us to construct the world *a priori*.

CHAPTER III.

DIFFICULTIES ANTICIPATED AND SOLVED.

The foregoing criticism of philosophies will have done something to prepare the way for a correct conception of philosophy. But* before proceeding to positive exposition we may still further assist the reader by anticipating possible doubts and difficulties. These are to the mind what fetters are to the body. They are an absolute bar to progress. It is of the utmost importance to get a clear conception of a problem before attempting a solution of it. *A faculty of wise interrogating is half a knowledge.*

Method.
Bk. 2. Ch. 1.

Is the treatment of principles, it may be asked, the subject matter of a single inquiry, and, when we talk of principles, do we mean the first principles of reality only, or do we include the first principles of demonstration, such as the law of contradiction? If reality only is meant, do all forms of reality fall under one inquiry, or are there different sciences, and, if so, are they all allied, or do some of them only deserve the name of metaphysic, the rest going by different names?

It would seem that the four causes cannot form the subject of a single inquiry. They are not opposites which, while excluding, yet imply one another, in the sense that the definition of the one is implicitly the definition of the other. Yet it is such opposites as these, *e. g.*, health and sickness, which fall under one inquiry. Moreover all four causes are not applicable to all things. The efficient cause has no meaning with reference to what is immutable. Nor has the final cause. For the final cause is the motive to action, and without movement or change there is no action. The mathematician demonstrates what the properties of a figure are, but he does not ask why they are what they are, nor does he show that they are the best possible. On the other hand, if each cause is the subject of a single inquiry, to which of the four are we to give the name of metaphysic? Each would seem to have a claim. All four causes are applicable to a house. The efficient is the builder and his art: the material is the stone and mortar: the formal and final cause is the idea of a house as a receptacle for men and things. Now, if we revert to the acknowledged characteristics of philosophy,† it would seem that the highest knowledge is the knowledge of the final cause. For everything is subordinated to the purpose which the object is meant to serve. From another point of view it would seem that philosophy is the knowledge of the efficient cause. For if we are ignorant of that, we cannot understand any process or any act. With regard to the first principles of demonstration, it would seem that they must be included in the same inquiry with the first principles of reality. If not, which of the two inquiries is metaphysic? On the other hand, as the first principles of demonstration are assumed equally in all sciences, it is difficult to see why metaphysic in particular should concern itself with them. Indeed it is not easy to see

* Before stating his own view upon any subject Aristotle very often begins by stating the difficulties which may be raised with regard to it. The next step is to enumerate certain plausible solutions of them. Finally his own view is given.

† See p. 2.

what is meant by an inquiry into the first principles of demonstration. They are perfectly well known already, and are everywhere taken for granted. Demonstration cannot go back *ad infinitum*, and these principles are its fixed starting point. We cannot take as the object of a special science something which must be taken for granted by every science. There are no possible premisses from which we could deduce the original foundation of all deduction. If they form the subject of any inquiry at all, it would appear that the consideration of them is most appropriate to metaphysic. If they are the subject of a distinct science, that science apparently must be higher than and prior to Metaphysic; for nothing can be more universal than, or prior to, the first principles of all reasoning.

Metaphysic attempts to determine the essential qualities of existence as such. In this it is distinguished from the special sciences, each of which selects some special form of existence, and attempts to determine what is peculiar to it. The science of existence as such must include the consideration of whatever can

True solution of the first difficulty.

Bk. 3. Ch. 1-2.
Bk. 10. Ch. 1-4.

be said to exist; and, as the term existence is predicable of whatever it is predicable of in virtue of its being real, the science of existence, *i. e.*, Metaphysic, will comprehend the principles of reality. There are as many branches of science as there are different forms of existence. But these various branches of science imply a first philosophy or metaphysic, just as the various branches of applied mathematics imply a prior science of pure mathematics. The determination of the necessary properties of all existence must precede the determination of the peculiar nature of special forms of existence. Metaphysic makes abstraction of all properties of being except such as attach to it *qua* being. Similarly mathematics deals with bodies considered simply as magnitudes, and physics deals with them as possessing within themselves a principle of movement or change. These three, Metaphysic, Mathematics, and Physics make up speculative or theoretic philosophy as distinguished from practical philosophy on the one hand, and poetic philosophy on the other hand.* Of the three forms of speculative inquiry, metaphysic is the highest, because it runs up into the consideration of the divine nature.

Metaphysic also comprehends the first principles of demonstration, for they are true of all existence, and all the special sciences assume them in the treatment of their own departments of existence. Whatever is true of all forms of reality must be true of them in virtue of their all being forms of reality: for the one thing which we can assert of all forms of reality is that they are real—it must therefore form part of the inquiries of one who deals with reality as such. Accordingly we find that the special sciences do not attempt to prove them, but assume them. It is true that certain physical inquirers have considered them, but that is because they considered nature to be co-extensive with reality. We, however, know that there is a science above physics, and that nature is only one department of existence. We, therefore, can see that the treatment of first principles belongs to the highest of all inquiries *viz.*: metaphysic, which deals with what is real in the most general sense

* Practical philosophy includes Ethics, Economics, and Politics. Poetic (creative) philosophy includes Poetry and Rhetoric.

of the term. A knowledge of any subject is incomplete which does not ascend to the highest principles applicable to that subject. The knowledge, therefore, of reality as such implies a knowledge of the highest, *i. e.*, the most infallible, of all principles. Such principles, though presupposed in all special reasonings, do not themselves rest on any presuppositions. A previous

The law of contradiction.

study of Logic should have prepared the student of metaphysic to recognize this. The highest principle of certainty is the law of contradiction. This is the foundation of all reasonings and beliefs.

There are indeed some who say that the opposite of the law of contradiction is both possible and conceivable. Aristotle denies this. According to him the law of contradiction is the most indubitable of all principles. The

Bk. 3. Ch. 4.
Bk. 10. Ch. 5-8.

attempts which have been made to prove it formally shew an ignorance of where proof ought to be demanded. If everything required demonstration, it would be impossible to demonstrate anything. We should be driven backwards *ad infinitum* from proof to proof. But if some principle must be taken without proof, there is none that can stand less in need of proof than the law of contradiction. Though, however, it cannot be formally demonstrated, it being impossible to deduce the first of all principles from any prior principle, it may yet be proved indirectly by an *argumentum ad hominem*. A man cannot without self-contradiction deny it. In the very act of speech he uses words with a definite meaning. In the very act of making an assertion he asserts something. Unless words had a definite meaning, speech would be impossible. Thus, in the very act of speaking, a man allows the truth of the law, and that too without formal proof. If the word man has a definite meaning, as it must have if there is to be such a thing as speech at all, it cannot have indifferently that meaning and the opposite. Man and not-man must exclude one another. Perhaps men have been misled into thinking that all attributes may be predicated indifferently, by observing that we can predicate of any subject a number of accidental attributes other than those contained in the definition of it. When I say that a man is white it is true that the direct import of my assertion is not that he is a man. But at the same time it is not an assertion that he is not a man. Moreover to deny the law of contradiction is to make all predication accidental. If man can be not-man, or something other than man, it is clear that he has no attributes which constitute him a distinct individuality, and that no definition of him is possible. But the idea of all predication being accidental is an absurdity. One accident can only be an accident of another in the sense that both are accidents of a single subject. If contradictories, again, may be asserted of a single subject, all differences between things disappear. If, as Protagoras taught, what a man thinks to be true is true; then a man is a ship, if any one thinks so. Yet, at the same time, if contradictories are true, he is not a ship. If, to use the language of Anaxagoras, each thing contains everything, then nothing, as a matter of fact, exists at all. For a reality is a definite something. But if the law of contradiction is not true, anything may be asserted or denied of anything. If I can say of man that he is not man, *a fortiori* I can say of him that he is not a ship. On the other hand, the assertion that he is a ship must be equally legitimate, if one thing can at the same time, both be, and not be, the same thing. And if we can deny

both that a man is man, and that he is not man, it follows that he is neither one nor the other, while yet we may assert that he is either, and is not the other. Again, we may urge that it must be possible to affirm or deny all opposites or only some. If it is possible with reference to some only, then the law of contradiction is saved with regard to the rest. If it is possible with reference to all, it may be in one of two ways. It may be possible either to assert or deny the affirmative, or the negative indifferently, or it may be possible to deny the affirmative only, but not the negative. In the latter case the law of contradiction is saved in part. If on the other hand I cannot, without exposing myself to contradiction, affirm either of two alternatives—if there is nothing of which I can say that it is, or is not, this or that—then nothing exists. But if nothing exists, how do we account for thinking and speaking men? Besides, as already remarked, to make anything predicable of anything, is to deny the independent existence of anything. For if one thing is different from another thing, then it is impossible to deny that it is not that other thing. It is evident, too, that if we deny the law of contradiction, everyone must speak both truth and falsehood, and every one must allow the falsity of his own statements. There can be no argument with a man who denies the law of contradiction, for he asserts neither one thing nor its opposite. But when nothing is asserted, there can be no argument. When a man denies the law, we must ask him to explain whether he means that whoever thinks that a thing is so and so, or so and so, is mistaken, and that whoever thinks it to be both, is right. If this is his meaning, we may fairly confront him with the common saying that the nature of things is so and so, and not the opposite. We may point out to him also that if a man has no decided conviction upon any point, he cannot be called an intelligent being. We need not, however, trouble ourselves further about a speculative defence of the law. Men's actions are a practical refutation of their pretended rejection of it. If it is as true that a man is travelling as that he is not travelling, why does a man travel? Why does he not sit at home under the impression that he is travelling? Why does a man take pains to avoid falling into a well, if he thinks that to fall into it is as desirable as to keep out of it? At any rate, so far as what is desirable or the reverse is concerned, men think that the law of contradiction is true. If it be objected that men have not knowledge but only opinion, we reply that for that very reason they should be more in earnest about the truth. A sick man must take more care of his health than a sound man, and opinion is to knowledge, what sickness is to health. Even if we allow that things are both so, and not so, yet they are not both in the same degree. Four is nearer to five than a thousand is, and he who mistakes four for five, is nearer the truth than he who mistakes a thousand for five. But the very possibility of error implies a standard of truth. Even if we deny the attainability of absolute truth, yet there is a relative truth. We are freed, therefore, from that simple denial of the law of contradiction which would render any definite thought impossible.

The doctrine of Protagoras, that seeming is reality, and the denial of the law of contradiction, go together. If what appears to one man is not the same as what appears to another, while yet all appearances are equally true, it follows that the same thing both is and is not. Conversely,

Protagorean scepticism.
Bk. 3. Ch. 5.

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Protagorean scepticism.
Bk. 3. Ch. 5.

if contradictories are true, seeming is truth, for different persons hold contradictory opinions. All propositions in this view are equally true.

Before discussing this sceptical view we must distinguish two classes of sceptics, those whose scepticism is the expression of real intellectual doubt, and those who profess scepticism merely for the sake of arguing. The first class cannot be met by mere verbal confutation. We must try to bring conviction home to them. They were probably led to the view that opposites coexist by observing that in the physical universe opposites are generated from one and the same thing. The same thing, *e. g.*, may be made either hot or cold. As nothing can come out of nothing, they argued that the thing must previously have been the opposites which are generated from it. Thus Anaxagoras argued that all things must exist in each thing, and Democritus taught that the full and the void are equally in every part, though the full is the existent and the void the non-existent. The mistake of the sceptic lies in his overlooking the double meaning of the words existent and non-existent. It is true that out of pure nothing, nothing can come. But though a seed, for instance, is not *actually* a tree, yet it is *potentially*, and therefore a tree can come from it. A seed, therefore, both is, and is not a tree, but not in the same sense. *Potentially* it is a tree, but *actually* it is not. The sceptics, too, should remember that there is a kind of reality to which the conceptions of change, generation, and decay, are not applicable. Another argument by which scepticism justifies itself is, that the sense impressions of different persons, and even of the same person at different times, are different, and that there is no standard by reference to which we can say that one impression is truer than another. If, therefore, knowledge is limited to sense perceptions, and if sense-perceptions vary with varying physical conditions, it follows that, even if there is such a thing as truth, it is undiscernible by us. The mistake of those who argue in this way arose from their thinking that the objects of sense alone are real. It is true that in the world of sense there is much indefiniteness, and much existence that is only potential. In this way we can account for the scepticism, though we think it mistaken. Further, seeing that the universe is in a state of constant change, men have been led to the conviction that a knowledge of nature is unattainable because no predicate can be truly affirmed of what is changing.* If nothing can be said even to be, speech is impossible. With regard to this argument Aristotle remarks that even if we grant that, in a sense, nothing can be predicated of what is changing, yet at the same time it is true that an object does not change its character all at once. It is true too, that nothing is absolutely destroyed. It is true that, when anything is produced, there must be a material out of which, and an efficient, by which it is produced, and that this cannot go on to infinity. Truth, then, is not altogether unattainable, even if the world is in a state of constant change. We must distinguish farther between change in quantity, and change in form. Things are known in virtue of their essence, which remains unaffected by quantitative changes, however constant, in the object. We may also fairly censure the sceptics for asserting of the universe as a whole, what is only true of that small part of it which immediately surrounds ourselves. The heavenly bodies know

* Aristotle, like Plato in the *Theaetetus* connects the scepticism of Protagoras with the Heraclitean doctrine that all things are in constant flux. Aristotle's arguments recall those of the *Theaetetus* in many points.

neither generation nor decay. It will also be our business to prove the existence and immutability of God. We may point out here that the very identification of being and not-being is inconsistent with the doctrine of continual change. Those who admit no differences between things cannot talk of things becoming different from what they were.

The sceptics exaggerate the untrustworthiness of the senses by confusing sense and imagination. Each sense may be trusted in reference to its appropriate object. To raise difficulties about the differences between the impressions of the healthy and the sick, or about the apparent variations in the size of an object looked at from different distances, is mere trifling. Plato also was quite right in pointing out to the sceptics, that some calculations are more correct than others. The physician will forecast the course of a disease more correctly than a layman can. Even sense does not really give contradictory judgments about its own objects. It may very well happen, owing to a change either in the thing or in ourselves, that what at one time tastes sweet, will at another time taste bitter. But taste never tells us that sweet and bitter are the same. It pronounces definitely and correctly on the quality of the thing at the time. It is not fair to overlook this and to deny all permanence and uniformity. Lastly, if reality is rightly identified with sensation, then, if there were no sensitive beings, nothing would exist. But this is absurd, for sensation itself must be sensation of something. The existence of a world to be perceived is the condition of the possibility of sensation itself. If it be asked seriously whether

Bk. 3. Ch. 6.

we are to judge of the correctness of perception by the impressions of the sick or the sound, Aristotle replies, that this is very much like raising a difficulty as to whether we are asleep or awake. Those who raise such questions seem to think that a demonstration can be given of everything, yet, at the same time, they show by their actions that they do not think a demonstration necessary for everything. They regulate their conduct by principles, such as the reasonableness of prudence, of which they do not require any proof. Sceptics who demand a formal confutation of their scepticism are asking for what is impossible. A man who begins by denying the law of contradiction, cannot be confuted by an appeal to it. But if it be, once granted that all things have a character of their own independent of individual impressions about them, then of course it follows that things are not what they seem to anyone to be. Impressions are only real in the sense of being real to the individual percipient. We cannot justify scepticism on the ground that different senses report differently with reference to one and the same object. It is true that an object may appear one thing to the eye and another to the taste, but no one sense conveys contradictory impressions at the same moment and in respect of its own proper object. Finally, the absurdity of reducing reality to the sensations of the individual may be shown in this way. A relation must be a relation of something to something. Now, if relatively to the percipient impression and object are the same, the percipient to whom the object is relative cannot be identical with the object that is relative to him. Moreover, if nothing exists except as an impression of an individual percipient, each percipient will be not one, but an infinite manifold. On all these grounds Aristotle stands by the law of contradiction. He concludes by warning his readers not to be deceived by such assertions as that tepid water is both hot

and cold, or that a negro is both black and white. In the first instance the terms hot and cold are relative: in the second black and white are predicated of different objects—black of the body, white of the teeth.

The law of excluded middle follows as a consequence of the law of contradiction. A given predicate must be applicable or not applicable to any subject. This is a direct deduction from the idea of truth and

falsehood. A true proposition must affirm the existent, or deny the non-existent. A false proposition must deny the existent, or affirm the non-existent. There is no other alternative. Here possibly it may be objected that instead of asserting of the subject, that it is or is not one of two opposites, we may say that it is neither of them, or that it is something between the two. Aristotle says that we cannot say that a thing is neither white nor not-white, because if it is not either, it cannot become the other. To become white a thing must previously have been not-white, and *vice versa*. Similarly if it be said that a thing is neither white, nor black, but grey, Aristotle replies that a grey thing, if it becomes black, must have been not black before. The same conclusion follows from the very nature of a judgment, whether intuitive or not, which is true or false according as it does or does not combine its elements in one of two ways. In fact we may prove the law of excluded middle by a *reductio ad absurdum*. If there is always a mean between two opposite extremes, no assertion is either true or false. Further, if there is a mean between the affirmation and denial of reality, there must be something which is neither real nor unreal, and there must be a process of change, which yet is neither the creation nor the destruction of anything real, and in arithmetic there must be numbers which are neither odd nor even. If we once admit a mean, there can be no end to the process. If we assert that a thing is neither A nor not-A but a mean between them, we might with equal reason again make that mean itself the subject of an affirmation and a denial, and so on *ad infinitum*. Lastly we may prove the law of excluded middle by the very nature of negation. In denying that a thing is white I am asserting that it is not white, and can be asserting nothing else. Men have denied the law of excluded middle either because they have been unable to meet some sophistical objections to it, or because, for want of a discipline in logic, they will not accept any proposition which cannot be demonstrated. If Heraclitus is right in saying that all things are and are not, then any proposition is true. If, on the other hand, as Anaxagoras says, *anything is everything*, then every proposition is false.

The above discussion makes it plain that such general statements as that nothing is true or that everything is true are absurd. It is evident that there are contrary propositions which cannot both be true and false at the same time. If words have any meaning, all assertions cannot be equally false. For falsehood being the denial, as truth is the assertion of reality, one of two mutually exclusive alternatives must be true, and if everything admits either of being asserted or denied, it is plain that only one of such alternatives can be false. The fact is that such scepticism as we have been considering is suicidal. A man cannot assert that all propositions are true without at the same time allowing the truth of the opposite doctrine. He denies the truth of his own statement in the act of making it. He on the other hand who says that

The law of excluded middle.
Bk. 3. Ch. 7.

Bk. 3. Ch. 8.

all propositions are false, makes himself out to be a liar in whatever he says. For we cannot reasonably admit that he who asserts the truth of all propositions, should specially except the assertions of his opponent in argument, or that he who asserts the falsity of all propositions, should make a special exception in favour of his own. We may notice here that the assertion that all things are at rest, and the assertion that all things are in movement, are both false. If all things are at rest, the same things must always be true and false. But this is not the case. We can say of a man that he exists, but there was a time at which he did not exist, and there will be a time when he will have ceased to exist. If, on the other hand, all things are in motion, all assertions will be false, which has been shown to be an absurdity. What exists passes from one state to another, but at the same time there is a first mover which, unmoved itself, imparts movement to whatever is moved.

Lastly, with regard to the point raised on p. 12 it will appear that metaphysic does not exclude any of the four causes from the scope of its inquiries, though it is particularly concerned with the formal and the final.

Do sensible objects alone exist or are there other forms of existence? Is

Second difficulty stated,
Bk. 2. Ch. 2. § 20.

the Platonic doctrine true that there are three different kinds of existence, ideal, sensible, and a form intermediate between these two? After the thorough-going criticism of Plato contained in the preceding chapter, this question need not detain us long. Besides the difficulties already noted in connection with the

And solved.

Platonic doctrine, it is evident that the ideas which are supposed to explain the objects of sense do not, in any way, differ from those objects, except in being eternal. The theory is as crude as the Anthropomorphism which represents the gods as merely eternal men. Moreover, the assumption of objects intermediate between ideas and the objects of sense leads to many difficulties. The existence of lines other than the lines in themselves and the lines of sense is incredible. Astronomy is a mathematical science, but the idea of a mathematical sun is an absurdity. The objects of mathematics too are not moving objects. Yet movement is a property of the heavenly bodies. Nor is there any reason for confining the assumption of objects intermediate between ideas and objects of sense to the science of mathematics alone. A similar necessity must exist for something intermediate between every class of ideas and objects. For in every case the science of the eternal ideas may be set over against the science of the perishable objects of sense. The truth is that this opposition is itself a mistaken one. The object matter of science is not what is sensible and perishable. If it were, the science would disappear with the object. Nor are the definitions of mathematics definitions of sensible objects. Nor can it be maintained that an intermediate object does exist, but that it exists in the sensible object. The ideas might themselves as well be in the sensible object. It would follow too from this assumption that two solids, the sensible and the intermediate, could be in the same place, and that what is itself without power of movement could be in the moving objects of sense. Indeed if we accept the Platonic theory, we shall not only have to assume that there exists a universe other than that which we see, but that the two are in the same space.

Third difficulty stated and solved.

Bk. 2. Ch. 1. § 8.

The answer to this question

Bk. 2. Ch. 2 to 18.

the special sciences determines the peculiar qualities of the particular form of reality with which it deals. One proof of this is, that the dialecticians and sophists, who wish to pass for philosophers, both busy themselves about existence or reality. The mistake which they make is to talk about reality before determining what reality is. The Dialectician is content to argue from popular beliefs, and the sophist aims at no more than an appearance of knowledge.

To what science belongs the treatment of such qualities as identity and difference, likeness and unlikeness, &c., which Logic considers only from the point of view of common sense? It is necessary to determine the peculiar characteristics of these, and also whether each of them has one opposite only or more.

Fourth difficulty stated,
Bk. 2. Ch. 1. § 10.

There is no distinction in fact between being and unity. 'One man' and 'a real man' mean the same thing. Nothing new is added by the introduction of the word one.

And solved
Bk. 3. Ch. 2.

If then unity and the kinds of unity are identical with existence and the forms of existence, the same science will treat of both. The forms of unity are sameness, likeness, &c. The opposition of sameness to difference, and of likeness to unlikeness, may be traced up to the opposition of one to many. As, therefore, the same science deals with contraries, metaphysic must deal with likeness and unlikeness, sameness and difference, and expound the different senses in which they are predicated. For the different senses are not absolutely different, but have a common centre of relation. Universality is characteristic of philosophy, and it is difficult to see to what inquiry, if not to philosophy, we should assign such questions as whether Socrates and Socrates sitting are the same: whether each of such predicates has one opposite only, and, if so, what it is. That is called a unity (α) which is continuous,

Bk. 4. Ch. 6.
Bk. 9. Ch. 1.

especially if the continuity be natural, and not, like the continuity of a piece of furniture, artificial: (β) which is a whole possessed of a definite form, especially if it be a natural whole, and not an artificially constructed one. These two kinds of unity have a movement which is indivisible in place and time. Accordingly that is in a peculiar sense a single body, which contains within itself the primal source of motion: (γ) of which the idea is indivisible. This indivisibility may occur in two ways. A single individual is a *numerical* unity. The conception of man, as distinct from other generic conceptions, is a *formal* unity. Formal unities are unities in a higher sense than numerical unities. Of course things possessing the above characteristics, though they are unities, are not unity. The definition of unity is something different from that of an object which can be called a unity, just as the definition of an element is something different from that of a particular element. Perhaps the most proper definition of a unity is, that it is the first

measure, specially of quantity. It is by reference to a unity, or unvarying standard, that we measure the quantity or size of anything. For instance, a pound is taken as the measure of weight. It is true that numbers enter into descriptions of weight, but this does not affect the truth of what we have said, for the unit is the basis of number. Men generally seek as a measure of anything something which is one and indivisible. The most satisfactory measure is something which cannot undergo change, without our being aware of it through the senses. A foot, for example, is a more accurate measure than a mile. Similarly, in astronomy, men take as the measure of motion the motion of the heavenly bodies, partly because it is uniform and unvarying, partly because it is most rapid, or in other words, because it occupies the least time. Similarly in music, the measure of sound is the quarter tone. The most perfect measure, in any case, is the smallest unit perceptible to sense. As it is by measure that we come to know quantity, men have, by a mistaken analogy, called knowledge or perception the measure of things. Protagoras even called man the measure of all things. Unity then, *qua* unity, is indivisible, and the proper definition of a unity is that it is a measure, primarily of quantity, secondly of quality.

The one and the many, which are opposed to one another as contraries, denote, from one point of view, the indivisible and the divided or divisible. Forms of the one are sameness, likeness, and equality. Forms of the many are otherness, unlikeness, and inequality. Sameness is predicated in different senses. Different attributes, for example, are predicated of the same person. Here the word same means numerically one. In another sense I may be said to be the same person, *i. e.*, the same in respect both of matter and form. We also apply the term same or identical to all things which are comprehended under a single definition. We apply the term like to things which are identical in respect of their form. A big square, for example, is like a small square. We also say that two things are like each other, if they agree in respect of a quality which one might have possessed in a different degree from the other. Two equally black things are said to be like one another. On the other hand we should also say that two black things were like one another, even though one of them might be blacker than the other. We call things like, again, if they resemble one another, more than they differ from one another, either in essential properties, or in properties which strike the eye. Tin is said to be like silver, in that both are metals. Gold is said to be like fire in respect of its colour. Similarly otherness, and unlikeness, are predicated in different senses. Otherness is opposed to identity, in the sense that everything is either like, or different from, any other thing. Two men, again, are other in respect of the matter of which they are composed, though they are the same in respect of their definition. We must be careful to note the distinction between *otherness* and *difference*. That a thing is other than another thing, simply means that it is not that other. Difference on the other hand denotes a definite difference in respect of genus or species. As an example of things differing in respect of genus we may take substance and quality. These fall under different categories. Members of different species, *e. g.*, men and horses, fall under the same genus, *viz.*: animal, because the essence of both

is the same. The contrast between the two lies in their specific differentia.

Bk. 2. Ch. 4.

genus which are farthest removed from one another. In the sphere of colour, for instance, black and white are contraries. From this it is plain that a thing can only have one contrary. There can be nothing further removed from black than that which is farthest removed from it. There cannot be more than two extreme points to a given distance. Here however

Bk. 2. Ch. 5.

we must anticipate a possible objection. If a thing has only one opposite, so that the only question which can be asked of anything is whether it has this, or that, one of two opposites, how are we to account for the fact that equal is opposed both to greater and less? Aristotle replies that equal is a mean between greater and less, and is the negation of both. It is not therefore the contrary of either, for contraries have been defined as extremes, not as means between extremes. It may also appear that there are difficulties in making the one and the many absolute opposites. The one must mean little or few. For the many is the opposite of the few, and two can only signify many or much, in opposition to one as little. Moreover one must also be many, if it signifies few as opposed to many. For though few be less than many, yet by few we mean more than one. The solution of the difficulty is to be found in distinguishing between many and much. Much is opposed to little with respect to mass. One is opposed to many with respect to numbers.

Are the first principles of reality classes, or are they the material elements into which things can be resolved? If they are classes, is the first principle in any case the *genus* or the *ultima species*? For example, in the case of men, is it animal or man?

Probable solutions.

Bk. 2. Ch. 2.

as being not classes but material elements. And, speaking generally, we mean by a knowledge of a thing, a knowledge of its constituent elements. On the other hand, in so far as knowledge implies definition, and definition implies classes, classes would appear to be the first principles of the objects defined. Moreover, as to know a thing is to bring it under a species, and as a species implies a genus, it follows that the ultimate explanation of things is by reference to classes. Those also who explain the existence of things by reference to unity or being, or the great and the small, appear to conceive of the first principles of reality as classes. Any attempt to combine the two views must fail. Formal definition of an object is not the same thing as an explanation of it by reference to the material of which it consists. Assuming the first principles of things to be classes, it would appear that the highest classes must be meant. For universality is the characteristic of a first principle, and under the highest classes all things may be subsumed. From this point of view *being* and *the one* appear to be the first principles of existence, since they are predicable of whatever exists. On the other hand it seems impossible to consider being, and the one, as generic conceptions. A generic name cannot be predicated of the differentia of a species, yet every

differentia is and is *one*, i. e., being, and one, are predicable of it. Either then a differentia is impossible, or one and being are not generic conceptions. Another difficulty is this, that if we give the rank of principles to the highest classes, it seems somewhat unreasonable to deny the name to the classes which intervene between them and the infima species. It seems also more reasonable to regard the differentia as the first principle than the genus. But if we start with the highest genus, the number of possible differentia is unlimited, so that there will be no limit to the number of first principles. Even if we grant that *the one* comes nearest to our idea of a first principle, yet we shall be led to the conclusion that the infima species is in each case the first principle. For if the one is that which is indivisible, it is the infima species, and not the genus, which is primarily one, for it is not further divisible into classes as the genus is. Another reason for regarding the species as more truly the first principle than the genus, is that the genus has in no case an existence independent of the species. Every animal must be an animal of some sort. But it seems absurd to give the name of a principle or cause to that which has no existence apart from that of which it is said to be the cause. The only ground for assuming existence apart from particulars, is to explain the possibility of making an assertion with reference to all or any particulars; and if this ground is taken, then the highest classes must be regarded as the first principles of existence.

No express solution of this difficulty is given by Aristotle. His view on the matter, as expressed generally in his writings, is as follows. Though the notion of matter must enter into a complete explanation of anything, yet it is the business not of metaphysic but of the special sciences to determine the characteristics of the matter of particular objects. With reference to classes, he maintains, in opposition to Plato, that the universal has no existence apart from the particulars. It will appear more fully hereafter that, though particulars are unknowable except by reference to a universal, yet the universal is realized in the particulars and has no existence independent of them.

Does there exist besides matter an absolute cause or not? If so, is it separate from matter or not, and is there only one such cause, or are there several?

If only particulars, which are infinite, exist, knowledge is impossible.

Probable solution.

For to know is to generalize, or to find a principle of unity in particulars. Yet what exists besides particulars can only be a class, and the separate existence of a class is in Aristotle's view impossible. Yet if nothing exists besides particulars, there remains no object for thought, but only for sense. We must, therefore, confess that knowledge is impossible, unless we are willing to identify knowledge with sensation. Moreover, the objects of sense are perishable, and if nothing but them exists, there is no eternal reality. Yet without an eternal and unbegotten reality we cannot explain generation. For, as has already been pointed out, an infinite regress of causation is inconceivable. Change too implies an end not less than a beginning. There must therefore be a limit to the infinity of particulars in both directions. The existence of *form* is an equally necessary postulate. But for it, we could not account for the transformation of matter into the different objects which exist. At

the same time it is hard to say in what cases we are to assume form independent of objects. It is equally difficult to say whether, when form does exist, there are as many forms as there are individuals, or one form for all the individuals. The first alternative sounds improbable, but the second seems impossible. How with one form can there be a multiplicity of things? There is also the difficulty of accounting for matter becoming an object, and of explaining the union of form and matter in an object.

The solution of this difficulty is partly contained in that of the preceding.

Solution of the sixth difficulty.
The point raised is a very important one, but at this stage we cannot say more than that the form is realized in the particulars, and that matter, apart from its development into, or realization in, a particular form, represents a mere potentiality. But though the universal has no existence apart from the individuals, yet the existence of God, the first source of movement, will be proved in the pages which follow.

Are universals, though generically identical, numerically distinct or not?

Seventh difficulty stated,
Bk. 2 Ch. 4. § 8.

It seems irrational to deny the existence of a single first principle. Such denial, too, would seem to render knowledge impossible. For knowledge implies a unity in particulars. On the other hand, it would appear that they must be numerically distinct, though identical in kind. For if they could not be repeated in individual objects, there could be no multiplicity of objects, any more than there could be a variety of syllables if the letters of the alphabet could not be repeated.

Bk. 2. Ch. 6. § 6.

Aristotle raises what is practically the same question in another form, viz.: Are the first principles universals or particulars?

The difficulty is this:—Particulars alone really exist, yet if only particulars exist, knowledge is impossible, for particulars are infinite, and as such, unknowable.

And solved.

Aristotle's solution of the difficulty is that an individual is the combination of the universal and the particular. In it, form and matter are combined.

Bk. 12 Ch. 10.

Thus, though knowledge is actually of the particular, yet potentially, it is of the universal. A fact is demonstrated in a particular case, but what is actually proved of one case, is virtually proved of all like cases.

Eighth difficulty stated.

Bk. 2. Ch. 4. § 11.

Are the principles of the perishable and the imperishable the same or different? It is clear that they cannot have the same principles and causes. This is a point upon which neither theologians nor philosophers have been clear. Mythologists tell us that 'what has not tasted of ambrosia and nectar is mortal.' It is evident, however, that what cannot sustain itself without food and drink is mortal, while, if eating and drinking are not the cause of immortality but only a pastime to immortal beings, the immortality remains unexplained. As regards philosophers, we have noticed already that Empedocles makes love and hate alike causes of life and death. He does not explain why *the one* should be dissolved and broken up by hate. The necessity is taken for granted. Empedocles is so

And solved.

are consistent that he makes everything perishable except the elements. Our present difficulty is to explain the perishable and the imperishable by reference to the same principles. We cannot assume perishable principles, because they themselves would require first principles, since whatever perishes passes into its elements. The idea of a principle which has also itself a principle is a contradiction. Moreover, if the causes of perishable things are perishable, the perishable things must disappear with their causes. Men have been content to assume the same principles for all things, without explaining how some imperishable principles give rise to perishable objects, and others to imperishable objects. This difficulty will be more completely disposed of, when we come to treat of the nature of God.

Ninth difficulty stated.

Bk. 2. Ch. 4. § 24.

Are Plato and the Pythagoreans right in regarding unity and being as only predicates?

If unity and being are not realities, no other universal is, for these two are the highest of all universals. Moreover, if the one is not a real substance, it is plain that

Probable solutions.

number cannot exist apart from things, for number is made up of units, and the units and the one are identical. There is just as great a difficulty in the opposite hypothesis. How can another unity exist besides the one which is reality? Existing apart from the one, it cannot be one. Yet all things must be one or many, and of the many, each is one. If there exists a unity-in-itself, and being-in-itself, then unity and being are the substance or reality of them. For with regard to them no predication is possible except that the one is, or that being is one. If, however, there exists an absolute unity and absolute being, how can anything exist besides them? What is other than what is, is nothing, so that we are driven to the conclusion of Parmenides, that all that is, is one, and that this one is reality. Again, if the absolute unity is without parts, nothing can exist. For reality is extended, and extended substances cannot be derived from a unity which is without parts and magnitude. It does not help us to say, as the Platonists do, that substances, like numbers, are generated from unity and duality, for it remains unexplained how the same principles should produce things so disparate as numbers and extended bodies.

Unity and being cannot be really existing substances, for they are the most universal of all predicates, and no universal predicate denotes a single substance. Unity as such has no existence. There exist only concrete unities, determinate quantities and qualities. Unity is not the reality or essence of things. That the meaning of unity is the same with that of being, is plain from the fact that both are predicable under all the categories, and that no change is made by the addition of the word *one* to the name of anything that exists.

Do the principles exist potentially or actually? Either hypothesis leads to difficulties. If we take the second alternative, they must have existed potentially before they existed actually. But the potential is not necessarily realized. If, on the other hand, their existence is potential, then conceivably nothing might exist.

Tenth difficulty stated,

This difficulty will be solved when we come to treat of God's taxisence.

And solved. It will be shown that He exists actually and necessarily.

Are numbers and figures realities, and if so, do they exist apart from or in phenomena? If they are not realities, what is reality? What is it, of which qualities and relations are predicated?

Eleventh difficulty stated,
Bk. 2. Ch. 5.
And solved.

Qualities and relations are not themselves realities, but predicates of reality. Even bodies which, relatively to their qualities, seem to be realities, are less real than superficies, the superficies is less real than the line, and the line than the point. These limit bodies, and though bodies cannot exist without them, yet their existence is independent of that of bodies. But if they are more real than bodies, and yet we cannot say to what bodies they belong (for they are not in the bodies which we perceive) it appears that nothing real exists at all. It cannot be maintained that they are in bodies. They are but measurements of bodies. One might as well argue that the statue is in the marble, as that these are in bodies. Yet if bodies are real, and these are more real than bodies and yet are not real existences, then real existence disappears altogether. Further, substances come into, and pass out of, existence. This is not the case with lines, therefore they are not substances. Lines and superficies may be added and divided, and in this sense there may be lines which were not before. But this is something quite different from the origin and decay of substances. We may make plain their nature by comparing them to a moment of time to which they are analogous. Moments are different from one another, but they are not generated or destroyed. Limits of time like limits of space are not bodies.

CHAPTER IV.

BEING.

It has been pointed out already that the sciences take each one department of existence and determine its regulating principles, but that they do not concern themselves with the nature of existence as such. They start with the object as given, whether it be taken from sense, as in the case of astronomy, or created by a definition, as in the case of geometry, and then with more or less of accuracy, proceed to demonstrate its properties. Some study therefore is required higher than the sciences, which shall review their presuppositions, and explain the possibility and the meaning of that existence which they take as their starting-point.

Metaphysic and the Sciences.
A recapitulation.
Bk. 5. Ch. 1.

Physics is a speculative science dealing with what contains within itself a principle of motion and of rest. It is not concerned with form or essence in the abstract, but only as manifested in matter. This will explain why physics is to some extent concerned with the consideration of the soul, for, in respect of some of its functions, the soul is dependent on matter.

Mathematics also is a speculative science. Its object is not, like that of physics, in motion, but it is not separable from matter except in thought. What we want is a speculative science, higher than either Physics or Mathematics, to deal with what is at the same time immaterial and without movement—the eternal cause of the heavenly motions. This science we may call theology. We assign to it the highest place, as it considers God, Who is eternal, without movement and spiritual.

Metaphysics is not a special science to be coordinated with the other sciences. It stands above them all, embracing and dominating them, just as the general science of mathematics stands above the various branches of applied mathematics. It is because God is the necessary *prius* of sensible existence that we call metaphysic prior to physics, and place it above it. Its object is to determine the nature of being as such, and its necessary attributes.

Existence is predicated in different senses. We talk of contingent existence. The word *is* is used to express the truth of a proposition as opposed to *is not*, which is a formula of negation. Existence is also predicated under the different categories, and there is, besides, the distinction between real and potential existence.

There is no science of what is contingent. Architecture has nothing to do with the accidental qualities that may attach to a house, such as its pleasantness or unpleasantness, its convenience or the reverse, to different individuals. The Geometer does not consider the relation between the triangle, as it is according to the definition, and the triangle viewed as possessing the property of having its angles equal to two right

Different meanings of being.
Bk. 5. Ch. 2.
Bk. 4. Ch. 39.

No science of what is contingent.

angles,* a property which is contingent in the sense that it does not enter into the definition of a triangle. And in this the geometer is quite right. For, apart from words, contingency has no existence. In other words, we cannot say absolutely with regard to accidents that they exist. Hence Plato was justified in saying that the object of the Sophists' art was the non-existent. For the discussions of the Sophists never got beyond what is accidental.† They asked whether Socrates, and Socrates learned, were two persons, or the same person, and whether that which is, but has not always been, has come into existence; whether, for instance, a musician who acquires a knowledge of grammar has become a grammarian. Another consideration which justifies us in saying that the contingent is very near to the non-existent is this, that its existence is not necessarily predetermined.

Bk. 5. Ch. 3.

The occurrence of a contingency depends upon conditions which may or may not be realised. That a man will die is certain. We can trace the necessity of death to his bodily constitution. But the manner of his death is not certain. It depends upon contingencies.

We must, however, so far as possible, define and explain contingency, and in so doing we shall show why there is no science of what is accidental.

We find that some things exist unchangeably and necessarily: others exist neither always, nor necessarily, but generally: others exist neither always, nor necessarily, nor generally. These last constitute the sphere of the contingent, or accidental. A cold day in the dog-days is an accident. Colour is an accident of man. An architect may, by accident, be also a doctor. A cook may, by accident, make a dish that improves the health, the essence of his art being to please the taste.

That which is always or generally has definite conditions, and there are definite ways of producing it. This is not the case with what is accidental: for the existence of what is contingent depends on the existence of something else which is also contingent. The explanation of contingency is to be found in matter, which is indifferent and capable of opposite determinations. Whether besides the universal, the general, and the contingent, there is also an eternally existent, is a question which will be considered later on. Enough has been said to show why there can be no science of the contingent. Science implies something absolutely or relatively permanent without which it would be impossible to state either universal propositions or general tendencies. The cases in which a general rule will not hold good escape it, being accidental in the sense that they depend on conditions which we cannot anticipate.

* This is not a satisfactory illustration. The property in question is not contingent in the sense in which contingency is defined in this Chapter. One commentator explains Aristotle's meaning to be, that the geometer considers the triangle merely as having its angles equal to two right angles, without caring whether the triangle is made of any particular material. This interpretation would be more satisfactory, but it is not borne out by the text.

† The answer to the first of these quibbles is that personality is not affected by a mere accident, and to the second that it is not a musician, as such, who is turned into a grammarian, but a man, who happens to be a musician, happens also to be a grammarian.

We may here dismiss the subject of the accidental. Nor need we trouble ourselves with being and not-being, in the sense in which they are convertible with truth and falsehood. Predication, whether true or false, consists in bringing together or separating ideas in a single act of thought. The consideration of it is not essential to the question of the nature and properties of simple existence.

The word *being* is used in many senses, but in the highest of all, it signifies *substance*. The word *substance* expresses the nature or reality of a thing, as distinguished from its accidents. Other categories than that of substance exist only as affections of substance.

Being properly means substance.

Bk. 6. Ch. 1.
Bk. 4. Ch. 7.

All predicates imply a subject of which existence may be predicated absolutely, and of which, therefore, existence is predicated in the highest sense. Substance is first existence, in every sense of the word. It is first in notion, first in knowledge, first in time:—*in time*, because all other predicates presuppose it, *in notion and in knowledge*, because it must enter into the definition of any thing, and because the knowledge of what a thing is, is higher than the knowledge of any of its accidents. Indeed we cannot even know the latter until we know what they are.

From the very beginning the problem of philosophy has been to determine what reality is, which is the same thing as an inquiry into the nature of substance. Some, like Thales, represented it as one: others, like Empedocles, assumed more than one substance. According to some, substance is limited: according to Anaxagoras and Democritus the real is infinite. In any case, our inquiry into the nature of being resolves itself into an inquiry into the nature of substance.

The most obvious substances are bodies. We apply the term to animals and plants, to substances in nature, such as fire, water, and earth, and to the parts of these, and to whatever is composed of the parts of these, and to the universe as embracing them all. Whether these really are substances or not, and whether, if they are, they are the only ones, is here to be determined.

The Pythagoreans thought that the limits of body, surface, line, point, units were substances, and substances in a higher sense than bodies and solids. Others (Hippo?) denied the existence of any realities other than the objects of sense. Plato asserted the existence of two orders of reality higher than sensible realities, *etc.*, ideas, and the objects of mathematics. Speusippus* assumed a still greater number of substances. Beginning with unity, he posited an independent principle for each kind of substance, a principle of numbers, a principle of magnitudes, a principle of the soul, and so forth. Other Platonists assigned one and the same nature to ideas and numbers, and then from them derived first geometrical figures, and next the sensible universe. Our object now is to determine what amount of truth there is in these different theories, whe-

* Speusippus was the nephew and successor of Plato. He probably attempted to generate the notion of the substances which he posited from one another and ultimately from unity. But that the attempt was in Aristotle's opinion unsatisfactory is evident from the obvious reference to him in Bk. IX., 10, 14, where he says that the substances and principles stood in no real or intelligible relation to one another.

ther there are any substances besides the objects of sense, and if so what they are, and whether there is any absolute and independent substance, and if so, why, and in what sense. But before attempting this, it is necessary to define in general terms the notion of substance.

The word substance has many possible meanings, but it seems most properly to signify *subject*, or that of which other things are predicated, though it cannot be predicated of anything else. Now matter,* form, and the union of the two, may all in a sense be called *subject*. But, if we take the above definition of subject, it would seem to be identical with matter. Qualities are not substances, but affections of substances, and when we have made abstraction of all possible qualities, it would seem that only the matter qualified by them remains, meaning by matter that which is purely formless and indeterminate, "that which is neither an individual object, nor a quantity, nor any of the modes by which reality is defined." As the subject of such predicates it must be different from all of them. For it cannot be maintained that it is the mere negation of such predicates, since negations do not exist absolutely, but only accidentally or relatively. Matter is presupposed in all change, as that which undergoes change, whether the change be one of place, quantity, or quality.

Substance not matter.

Ek. 6 Ch. 3.

Ek. 7. Ch. 1.

But though we are thus apparently driven to the conclusion that substance is matter, yet it cannot really be so. For independent individual existence seems essential to substance, and from this point of view, form and the union of form and matter seem more truly real than matter. We may omit for the present the union of form and matter, which must be posterior both to form and to matter, and as the notions of matter, and the union of form and matter, present no very great difficulties, we will proceed to elucidate the very difficult conception of form. The consideration of objects of sense should be of assistance to us here, for amongst them it is allowed that there are substances, and in all inquiries we must proceed from the individual to the universal, from the objects which are first presented in experience, to the Law which underlies and explains them. Science must develop the universal out of the particular, just as, in the sphere of practice, we have to build the State upon a foundation of individual interests. But just as the State, when formed, protects and secures individual interests, so the universal, when it is reached, is seen to explain what was previously mere empirical knowledge. Thus, in the natural order, the universal comes before the particular, though in time, the particular is apprehended before the universal, just as historically the family precedes the state. We may say that *form* in the abstract is equivalent to *essence*. For example, the form of you is what you are in yourself. It is what makes you to be, and to be called, you. In

What is Form?

Ek. 6. Ch. 5.

* The matter of a statue is the metal of which it is made. The form is the shape or figure. The union of the two is the statue. Aristotle remarks in the text that, in the order of thought the form is prior to, and more real than the matter and therefore, *a fortiori*, prior to, and more real than the union of the two. Sometimes Aristotle seems to regard the individual as the truly real, sometimes the universal. Mr. Wallace has remarked that the passages in which he insists on the reality of the individual are directed against Plato, who, according to Aristotle, allowed reality only to transcendental ideas, and denied it to particulars.

yourself you are not educated, though you happen to be so. Your education then is an accident of you, but not your form. Nor indeed is all that belongs to a thing-in-itself the form of it. Whiteness, for example, is not the form of a superficies, because to be a surface is not to be white. Nor is the form the compound of the two, or white superficies, because the term to be defined must not be included in the definition of it. Besides, colour is not the only attribute of a superficies. It must be rough or smooth. If, then, such attributes are to be made the essence of surface, they must be identical with one another, which is absurd.

There is no form of substances as qualified by the remaining categories, *e. g.*, of man as white. Whiteness is a mere accidental predicate of the real substance man. Form being equivalent to essence, it is plain that there can be no form of what has no positive existence. There can be no form except when there can be definition, *i. e.*, in the case of substance, or what can be expressed without being made a predicate of something else. We must not confuse definitions with mere descriptions, or think that every equivalent term is a definition. The word definition has a stricter and a looser sense, just as the word being has. There may be a so-called definition of other categories than substance, just as existence is in a sense predicable of them, and even of the conception of not being. But it is only substance that can be called real, or can be said to exist, in the highest sense of the word, and consequently definition, as the expression of reality, can only be of species which fall within a genus. There can be no definition of mere aggregates,* or wholes based on mere accidents. Only of a substance can we say absolutely that it is. For we can only define a quality by reference to a substance of which it is a quality.

If, however, we restrict definition, in the proper sense of the term, to substances, as opposed to substances qualified by attributes, *i. e.*, if definition is the explication not of every common notion, but of such only as represent what is essential in the individual objects, the question arises whether there can be any definition of a complex notion like snub-nosed. This attribute is to nose, as male and female are to animal, and odd and even to number. All these are inseparable attributes. They are no part of the definition, but they cannot be explained apart from the objects of which they are attributes.

Ek. 6. Ch. 5.

It is impossible to explain the words male and female without introducing the word animal, or the word snub-nosed, without introducing the word nose. It would appear therefore that such notions, being non-essential, cannot be defined. Besides, as the conception nose is involved in that of snub-nosed, it is impossible to make snub-nosed a predicate of nose without repeating the same conception. It is plain, therefore, that it is substance only which admits of definition. Any attempt to define the remaining categories leads to a repetition of the same idea. Definitions set forth the essence of things, and essence belongs either exclusively or in a peculiar sense to substance.

Ek. 4. Ch. 30, § 4.

* Aristotle's favourite example of an aggregate, which is not a real and substantial unity, is the bundle of songs known as the *Iliad*.

Next the question arises—is the form of a thing identical with the thing itself? If we can solve this question, it will help us to clear up the notion of substance. For each thing appears to be identical with its substance, and the substance seems to be identical with the form, from which it would follow that form and reality are identical.

In the case of a substance qualified by an accidental predicate the form and the reality are not one. A white man is not one with the form of the man who is white, otherwise man and white man would be identical, as the Sophists pretend, and the notion of man would be also the notion of white man. But it is plain that a man is not necessarily white. The attribute of whiteness may be truly predicated of a particular man, but it forms no part of our conception of man as such.

But as regards absolute reality the case is different. If we assume for instance the existence of Ideas in the Platonic sense, then we must allow that the Idea, say, of good, is identical with the form of goodness. If it is not, we must assume a still higher idea which shall stand to it in the same relation in which it stands to individual good things. But such an assumption is incompatible with the Platonic doctrine that the Ideas are themselves the highest realities.

Besides, if the form is distinct from the reality, then the form is not real, and the real is not knowable. For to know a thing is to know the form or essence of it. The unity of form and reality is evident too from the fact that that, to which the form, say, of goodness, does not attach, is not good. This argument, it will be seen, is quite independent of the Ideal theory of Plato.

It is to be observed, however, that if we accept Plato's Ideal theory we cannot identify substance with subject, *i. e.*, we cannot identify the individual with the real. For it is in the Ideas that form and reality are combined. They do not derive their reality from the individual. The individual exists by participation in them.

It appears then that reality is not accidentally, but essentially, one with the form of reality, and that to know a thing is to know its form. But in the case of accidental predicates, form and reality do not absolutely coincide, because an accidental predicate has a double signification. White, for instance, signifies both that which has the quality of whiteness, and whiteness. In one sense therefore, form and reality do coincide, in another they do not. The form and reality of whiteness are the same: but the form of whiteness is not identical with the man who is white.

The absurdity of separating form from reality may be shown in another way. If instead of merely separating them, we would also give them distinct names, we should see that the form and the reality of the form itself must also differ, and that when a name had been in turn given to this form, two further names would be required to distinguish the form of it from its reality, and so on *ad infinitum*. If it be replied that after the first separation of the form from the thing, it would be unnecessary to make a further distinction of form from reality within form itself, Aristotle says that it is simpler to recognize the identity of form and reality in the first instance, without dividing them at all. Lastly, from the essential unity of form and reality, it follows that the notion of the two is one and the same.

The identity then of form and reality in the sphere of substance may be regarded as proved. All the fallacies of the Sophists may be met, by bearing in mind the distinction between essential and accidental predication.

Whatever comes into existence is produced either by nature, by chance, or by art. It must be produced by something, and from something, and it must be something, whether substance, quantity, or quality, or any other category.

Modes of coming into being.
Bk. 6. Ch. 7.

Those things are produced by nature, which have their origin from nature.

Nature.
In this sense of the word, nature is equivalent to matter. The instrument too by which they are produced is some object in nature. Lastly, by saying that the product is something, we mean that it is a man or a plant, or one of that class of things to which the name substance is pre-eminently applied.

Whatever comes into existence either by nature or art has matter. For it might either be, or not be, and this double possibility is just what we mean by matter. But by the nature of a thing, we understand not only the matter of which it is made, but also its distinctive form or character. From this point of view the nature

Bk. 4. Ch. 4.
of the instrument is one in kind with that of the product, *e. g.*, it is by man that man is begotten.*

So much for the process of natural becoming. To other forms or modes of generation we apply the term production, and this is referable either to thought, or to power, or to art. In this sphere of production, some things are due to spontaneity or chance. But the same is true also in the sphere of nature, where what grows from seed also comes into existence without seed. This, however, is a point which we will consider later. Those things are called products of art, the form of which is in the mind. And by form is to be understood the essence or prime reality. In a certain sense, indeed, the form of opposites is the same. The reality of a negation is in its opposite. For instance, sickness has its reality in health. It is in the absence of health that sickness shows itself. Now health is the conception in the mind and in the science of medicine. Health is brought about as the result of the following process of thought. "Health is such and such a state. If health is to be restored, that state must be produced. Let it be defined as an equilibrium of the juices of the body. To produce that, I must produce warmth." Thus the physician travels in thought from one condition to another, until at last he comes to one which he can directly produce. To the process thus initiated, having for its object the restoration of health, we give the name of production or creation. Thus in a manner health comes from health, and a house from a house, *i. e.*, the material concrete house from the immaterial concept of

* In short, in the sphere of natural becoming, the word nature signifies at once the material, the efficient, and the formal cause.

† Schwegler explains that whatever happens by chance happens also spontaneously. But every thing that happens spontaneously does not also happen by chance. Chance is specially applicable to the accidents of human life. Spontaneity is predicated of phenomena in nature.

‡ Opposites imply one another. The conception of sickness implies that of health. The form of both is identical in the sense that we can only know sickness by knowing what health is.

the house. The arts of medicine and of building are respectively the form of health and houses, and the form is simply immaterial reality. Thus creative processes combine in them the elements of thought and action. Thought proceeds from the first principle and the form: action proceeds in the reverse way from the last point reached by thought. Thought ends and action begins, when thought has reached a condition of the ultimate end which it is in the power of the thinker to realise. When then a physician restores health, his point of departure is the conception of health in his own mind. When health is restored spontaneously, the starting point is the same as it would be to a physician acting after the process of thought described above. If, for example, the physician begins the process of restoring health by producing warmth by friction, warmth will also be the starting point of the natural or spontaneous process of recovery. The process of nature may be simply a copy of the conscious process of art. The warmth therefore in the body is the immediate or remote condition of health, and the first condition, whether of health or of anything else, may be called a part of it, just as much as the stones are of a house.

It is then a true saying that nothing comes into existence without something pre-existing. It is plain that a part must pre-exist, and the matter is part of a thing, for it is contained in it and becomes it. Matter also enters into the notion of a definition. Brass is in one sense the matter of a brazen circle: but so also is the genus circle to which we refer a circle of brass. For the genus is the matter of its differentia. When, however, things have come into existence they are not called by the name of the matter from which they are produced, but by an adjective formed from that name. For example a circle made of brass is not called brass but brazen. And this mode of expression may be explained; for the material of a thing undergoes a change in the process of being made into the thing, so that the thing is not strictly speaking the matter.

On the other hand, a man who, from being sick, gets well, is not called sick or by any word connected with sick. The reason of this is that, though it is the sick man that becomes well, yet sickness is not the matter of health, in the sense in which the marble is the matter of a statue, but the negation of it.* Whatever then is produced is produced by an efficient out of matter, and is something, *i. e.*, possesses a definite form, be it a ball, or a circle, or what you please. The producer does not make the matter. Nor does he make the form, except in the sense that the ball which he makes of brass is a ball. He merely embodies the form of a ball in the matter of brass. That the form is not produced is plain. For to produce, is to produce something out of something. In other words, production implies pre-existent form and matter. Form then, if itself produced, can only be produced out of a pre-existent form and matter.

Form does not come into existence.

Bk. 6. Ch. 8.

* Aristotle says that it is possible to talk of a house being made out of the negation *not-house*. But this mode of expression is not used because the notion *not-house* is perfectly indefinite. It is not, like the negation of health, perfectly clear and well understood. Aristotle in the text is drawing the very simple distinction between stones being made into a house and a sick man being made well. Schwegler points out that this analysis of the various modes of becoming is only preliminary to what follows, *viz.* that form is the necessary presupposition of all becoming.

That form, however, would again require a pre-existent form, and so on *ad infinitum*.

Form then, in itself, never becomes. It is only embodied in matter, whether it be by nature, or by the power and art of man. Everything that comes into being is a union of matter and form.

It must not be inferred from this, that Form exists independently of concrete objects, as Plato thought. If form were itself concrete reality, there could be no production of concrete reality, in the sense of embodying form in matter. Form simply means kind, which is not a concrete thing. It is given to a concrete thing, which then becomes of that kind. Socrates is a man—the form of man embodied in flesh and bone. But *man* expresses a kind.

Considered as causal principles, the Platonic Ideas contribute nothing to the explanation of real existence: nor is it in any sense necessary to assume the independent existence of Ideas to account for real existence. In the sphere of nature, the existence of a man is much more intelligibly explained by reference to the man, one in kind with himself, who begot him, than it is by reference to the Idea of man. The principle that in nature things are produced by their like in kind is not overthrown by the fact that a horse is sire to a mule. Horse and ass have common properties, and so might be referred to a single genus, though it happens that language has not created such a genus. This phenomenon presents really no greater difficulty than that of a man begetting a girl, or a woman giving birth to a boy. No difficulty appears in this case because male and female are embraced by the common term man.

Nor is there any need to set up the *Idea* as a pattern. Such a pattern, if required any where, would be required in the case of living beings and objects in nature, to which the name of substances is peculiarly applied. But the existence of these is sufficiently accounted for by reference to an efficient cause of the form existing in the matter. The matter of different individuals is of course different—that of Kallias from that of Socrates—but the form, being an indivisible unity, is the same in all men.

A question here suggests itself, namely, why some things, *e. g.*, health, are produced spontaneously as well as by art, and others, *e. g.*, a house, not. The answer is that the matter upon which art works, and which enters into a product of art, sometimes possesses a power of self-movement, sometimes not. Matter which does possess such a power cannot necessarily originate more than one particular kind of movement. A stone, for instance, has its own proper motion downwards. Any other movement must be imposed on it from without. Stones cannot place themselves in the form of a house. The consequence of this is, that things like a house cannot be produced except by art, while things like a sand bank can, the movement being initiated by something which possesses no artistic skill, but can either set itself in motion or can be set in motion by something else, such as wind or tide, which is also without artistic skill.

From what has been said, it appears that there are three possible forms of relation between a product and that out of which it comes into existence. Firstly, it may come from something which bears the same name

Products how related to their sources.

with itself. This is the case with living beings and objects in nature. Secondly, it may come from a part bearing the same name with itself.* This is the case with a house, in the sense in which a house comes from the idea of a house in the architect's mind. Thirdly, it may come from a part, or something which possesses a part, of the product itself. For instance health, which is either wholly or in part warmth, or at any rate is a consequent of warmth, is itself produced by warmth generated by friction.

In the sphere of production, then, the starting point is the form, just as it is in the syllogism. Just as by means of a middle term we connect the minor with a universal, a part of the form or essence of which is the attribute which we wish to demonstrate of the minor, so in production, the universal or form is realized in an individual. This is true equally of the products of nature and art. The seed contains within itself potentially the form of man, just as the artist has in his mind the form or notion of what he produces. The source of the seed, too, viz., man, is called by the same name with what springs from the seed, except, of course, in the case of an animal like the mule which cannot breed. Spontaneous production is possible in the case of those things, the matter of which can initiate the same movement that is set up by the seed. When this is impossible, generation must be by an external agent. The reasoning which proves with regard to substance that form never comes into being, is equally applicable to the remaining categories. Just as it is a brass ball which is produced, and not brass or ball, so it is not quantity or quality that is produced, but something of a certain quantity or quality. What is peculiar to substance is, that the production of it requires the actual pre-existence of another substance, while quantity and quality need not pre-exist unless potentially.

As every definition is a conception, and every conception has parts,† and as part of the notion is related to part of the thing, as the whole notion is to the whole thing, the question suggests itself, whether the conception of the parts must be in the conception of the whole or not.

The notion of the parts how far contained in that of the whole.

Bk. 6. Ch. 10.

In some cases it appears to be so, in others not. The notion of the circle does not contain that of the sections of the circle, but the notion of the syllable does contain that of the letters which compose it. A syllable can only be defined as a combination of sounds or letters. Yet the circle is divisible into segments as the syllable is into letters.

Another question suggests itself, namely, are the parts prior to the whole or not? If they are, the acute angle, as part of a right angle, will be prior to the right angle, and the finger, as part of a man, will be prior to man. Yet it would appear that man and the right angle are prior. For it is only by reference to a right angle that an acute angle can be defined: and man is prior to a finger in the sense that of two things, that is prior, which stands in no need of the other.

Bk. 4. Ch. 11.

* The form or idea is called a *part* relatively to a real house which is a compound of form and matter.

† He explains in Bk. 4, Ch. 25, that the notion of the genus enters as an element into, or is a part of, that of the species.

As to the first of these questions, it is to be noted that the word part is used in different senses. It is used, for example, to denote a measure of quantity. Three is part of nine. We are not now using the word in this sense. We are considering the parts of substance. If we give the name of substance to matter, form, and the union of the two, then from one point of view, matter is part of a thing, from another it is not. It is part of the product, but not of the form. For example, the flesh of a snub-nose is no part of flatness. It is only the matter in which flatness is embodied. But it is a part of the snub-nose. Similarly brass is a part of a real statue, but no part of the form or idea of a statue. For form admits of expression. Indeed a thing can only be described by expressing its form. But matter as such cannot be expressed.* Now we can see why the notion of a circle does not contain that of its segments, while that of a syllable does contain that of its component elements. The elements of a syllable are not material parts of it, but elements in the notion or form of a syllable. On the other hand the segments of a circle are material parts of it. It is true that they are nearer to the form of a circle than is the matter of which a particular circle is composed: for there can be no circle without segments, whereas a circle is not necessarily made of any particular matter. It must be noted too, that there is a sense in which sounds and letters do not enter into the notion of a syllable. Actual written letters and actual sounds or vibrations of the air are only the matter of a syllable. It is true that a man perishes when he is resolved into flesh and bone, but these are not on that account parts of the notion of man. They are only the matter of the concrete man. Therefore, as forming no part of the essence of man, they do not enter into the definition which is the explication of the essence. The notion then of material parts will be contained in the notion of a concrete individual, but not in the ideal notion or form. A concrete thing is dissolved into the material elements or parts of which it is composed. But pure form is not dissolved, or, at any rate, not in the same manner.

The notion of the whole contains that of Form, but not of material parts.

We are now in a position to answer the second question, as to the relative priority of whole and part. The elements of a notion or definition are, in some cases if not in all, prior to the notion itself. Now the notion of the right angle is not resolved into that of the acute angle, but that of the acute angle into that of the right angle. For the notion of the right angle is used to define that of the acute angle, the latter being a part of the former. Similarly the semi-circle can only be defined as a segment of a circle, and the finger as a part of the body. The material parts into which a thing is divided are posterior to, or imply the whole. But the elements in the form or notional essence are prior to the notion. For example, the soul, which is the reality of a living being, is the notional essence or form of a body. For no part of the body can be properly defined out of reference to its function, and the function implies a sensible soul. The parts therefore of soul, or at

When the whole is pure form, the part is prior. A concrete whole is prior to its parts.

* Because, as explained previously, it is nothing. It is only a capacity of becoming something.

least some of them, are prior to the concrete animal.* The body and its parts are posterior to the form: and it is not the form but the concrete individual which is resolved into material elements.

With regard to the concrete thing, the parts, so far as they cannot exist apart from it, are posterior to it. The finger of a corpse is only a finger in name. A finger is a vital part of a living organism. At the same time there are parts, the existence of which is essential to the existence of the whole. Such in the case of man are the vital parts—heart or brain—in which the form resides.

But though the elements in the notion are prior to the notion, and the notion to the individual, yet it must be remembered that the form, or general conception, has no real and independent existence. There exist only concrete individuals of which the general notion is a predicate. There is no such thing as man apart from individual men. By man is to be understood simply a form embodied in matter. A particular man is matter in which that form is realised. Form or essence then has parts, just as much as concrete wholes composed of form and matter have. But it is the parts of form only which are elements in the definition or expression of the universal. There is no distinction between circle, and the form of circle, soul, and the form of soul. A particular circle, whether it be a circle of metal or wood apprehended by sense, or the circle of geometry which is apprehended by thought, does not admit of being defined. It is cognized either by perception or by intuition. When a particular circle has passed from before our eyes, we cannot say whether it exists or not, since it is by perception alone that a concrete individual is apprehended. But we can in the absence of perception retain the universal notion of circle. Pure matter is unknowable. Matter is knowable only as a concrete embodiment of form. Sometimes it is an object of sense, as in the case with brass, wood, and all matter which is capable of motion. Sometimes, as in the case of geometry, it is an object of thought, being, it is true, in sensible objects, but not *qua* sensible.† If any one asks whether the right angle, the circle, and the living being are, or are not, prior to the parts of which they are composed and into which they are dissolved, we must reply that the question cannot be answered by a simple affirmative or negative. If by soul, circle, and living being, be meant the form of soul, circle, and living being, these are posterior to the elements or parts. The notion of circle, for example, is posterior to, or implies the notion of figure. On the other hand, the notion of circle is prior to a particular circle. If, on the other hand, by soul is meant the concrete living being, then the whole is prior to at least some of the parts, as has been explained.

* Aristotle means, that the soul stands in the relation of form to the matter of the body. It is only as living and sensitive that a hand is a part of a man. With regard to the expression at least some of them, Aristotle has already remarked that, in respect of some of its functions, the soul is purely material. He is thinking of what he calls the irrational soul, i.e. the mere nutritive functions which are possessed even by plants. The Greek word which we translate soul had a much wider connotation than our word soul. It embraced the more principle of vitality, animal consciousness, and the moral and speculative consciousness of man.

† He means that the circle in the mind of the mathematician is the result of abstraction from the objects of sense.

We have now to distinguish the elements of form or essence from the parts of a concrete whole. Until we have done this, we cannot define anything, for definition is the explication of the universal or the form. So long therefore as there is any doubt as to what parts are material and what not, the notion of a thing must be confused.

When a figure can be embodied in materials different in kind, it is evident that the material forms no part of the essence of the figure. A circle may be made of brass, or wood, or stone, but brass, wood and stone are no part of the essence of a circle, because we can conceive a circle apart from them. Even if we never saw a circle that was not of brass, still brass would be no part of the essence of a circle, though, in that case, it would require a greater effort of thought to separate the notion of circle from that of brass. This suggests a consideration of the case of man. The form of man always exists in flesh and bone, and consequently we are unable to separate, in thought, the idea of man and the idea of body. Are flesh and bone elements in the form of man, or only material parts of man? It is not clear in what case matter forms a part of the essence of things. The Pythagoreans, indeed, have gone so far as to maintain that the bounding lines by which we define geometrical

figures are no part of their essence, but only the matter of them, just as flesh and bone are the matter of man. They refer everything ultimately to numbers, and define the line as the number two. Of those too, who maintain the existence of *Ideas*, some say that the number two is the line-in-itself and not the actual line. Others say that it is the *Idea* of the line which is the essence of line, or the line-in-itself. For in some cases, they say, the form and the thing are identical. The ideal numbers are themselves *Ideas*. But in the case of a line, they say, this is not so. The *Idea* of a line is not a line, but two. The inevitable result of this is, as we saw in the Pythagorean system, that things, such as the number two, and the line, which altogether differ in essence, have one and the same *Idea*. We might with equal right assume one form only for all things, and so reduce everything to unity.

We have now set forth the difficulty connected with definition and the source of it. It is plain that we must not make entire abstraction of matter and refer everything to form, as the Platonists and Pythagoreans did. Some things are evidently a union of form and matter, or a definite arrangement of matter. The analogy employed by the younger Socrates* is misleading. He assumed that a man might exist without material parts, as a circle may exist without brass. The cases are not parallel. The living being is an object of sense. We can only define him with reference to motion,† and therefore with reference to parts which are related in a certain way. It is only the living hand, capable of performing its function, which is really a part of man.

Some one may ask why in the case of the objects of mathematics, which are not objects of sense, the notion, does not contain the notions of the parts—why, for

* This namesake of the great Socrates appears in some of the dialogues of Plato.

† Motion is equivalent to matter: for it is only matter which is capable of motion.

*Formal elements distinguish-
ed from material.*

Bk. 6. Ch. 11.

The Pythagoreans.

The Platonists.

instance, the notion of a semi-circle is not an element in the notion of a circle. Aristotle says that their not being objects of sense makes no difference. There is matter in some things which are not perceived by the senses. Everything has matter which is not pure form, but a particular thing. Matter is partly an object of sense, and partly an object of thought. Now we have already remarked that the segments are parts of particular circles. They do not, however, enter into the notion of the universal circle.

We may return from this short digression to the subject which we were discussing, namely, whether matter enters into the notion of man. We answer in the affirmative.

The subject resumed. Soul is the form, body is the matter, and the essential notion of man as man is that he is a union of soul and body. If an individual man is regarded as a union of soul and body, then the soul stands to the body as the universal to the particular. We will consider later whether there is any other kind of reality than material embodiments of form, and, if so, what it is. It is with a view to this question that we are now attempting to clear up the conception of sensible realities, the study of which belongs, in a sense, not to Metaphysics but to Physics. For the physicist is concerned partly, it is true, with the matter, but still more with the form or essence of things. We shall proceed now to consider in what sense the elements contained in the notion or definition are parts, and how the definition is yet a single notion. That the thing defined is one is plain, but there must be some explanation of its being a unity in spite of its having parts.

Cf. Bk. 5. Ch. I. § 5.

Meanwhile we have explained what form is, and in what sense it exists, and why in some cases the explication of the form embraces the parts of what is defined, and in others not. We have shown that the material parts will not enter into the definition of the form, because they are parts not of form but of the concrete manifestations of form. We have shown that such concrete manifestations of form in one sense can be defined, and in another not. The matter of them, being purely indefinite, does not admit of definition. But in virtue of their essence they can be defined. For the reality is the immanent form or essence, the meeting of which with matter is called substance. From the union of flatness with nose, arises the snub-nose, and snub-nosedness,* an expression which involves a repetition of the idea of nose. We have shown that matter does enter into the concrete individual. We have shown that in the case of "first substances" † form and reality are identical. There is no distinction between absolute curvature, if we take this as a first substance, and the form of curvature. Matter, on the other hand, or what is bound up with matter, is not identical with form. Nor is the union of a purely accidental quality with a subject identical with the essence.

Recapitulation.

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* It is difficult to bring this out in English. The English *snub-nose* appears literally in Greek as *snub-nosed nose*, the adjective itself signifying *snub-nosed*.

† By this expression Aristotle means what can be spoken of otherwise than as a mere predicate of a substance. "Man," *e.g.*, is a "first substance."

It will help still further to clear up the notion of substance if we attempt the solution of a difficulty left unsolved in *the Analytics*,* *viz.*, how the object of a definition is a unity. Let us take a two-footed animal

Bk. 6. Ch. 12.

as a definition of man. How do the two notions, two-footed and animal, form one notion? We can understand how the two notions white and man form a unity when white is a property of man. But this relation does not subsist between a genus and its differentia. If the differentia belonged to the genus, the same subject would admit of opposite determinations, since the various differentia of the same subject are opposites of one another. Even if we do attach the differentia to the genus, still the question remains—how do the many differentia constitute a unity? How can the notions land, animal, biped, unfeathered, form one notion? Certainly not merely as being in one and the same subject. On that supposition all the differentia would constitute a unity. Yet the elements in the definition must constitute a unity. For the definition is a single conception, and a conception of substance, so that it must be a conception of a unity. For substance, in our view of it, expresses a unity and an individual.

Let us begin by observing definitions which proceed by division. There is nothing in the process except the highest genus and its differentia. The intervening species are simply the highest genus with the various differentia attached to it. Of two terms one is the genus, the other the differentia. If for example, we combine animal and two-footed, animal is genus, and two-footed differentia. Now the genus has no existence apart from its species, or, at any rate, it exists only as the matter of them. Sound for instance is the genus out of which by differentiation arise the different species of sounds. It is the matter of the particular sounds. Definition then can only be the expression of the differentia, or the notion constituted by them. But here a caution must be given. In defining by division, each division must be on the basis of a differentia of the differentia immediately above it. For instance, if we start with the genus animal, and constitute as our first species animals with feet, we cannot divide these into feathered and unfeathered. We cannot constitute a species by a mere accident. We must take some property of feet to constitute the next species. We may, for instance, divide animals with feet into animals which have and animals which have not cloven feet. We must proceed in this way until we have reached the limits of division. Now we can see that the essence of the thing and its definition will be the last differentia simply, unless we mean to include superfluous repetitions in the definition. Starting from the genus animal to arrive at the definition of man, we reach the notion of a two-footed animal through the intermediate class of animal with feet. But as having two feet includes having feet, the introduction of 'having feet' into the definition of man would be a needless repetition. Thus when the division proceeds by real differences and not by mere accidents, the last differentia alone will be the form and the essence. This may be shown in another way, *viz.*, by reversing the order of the differentia, and placing first that which was arrived at last. If we define man as an animal having two feet and having feet, it is plain that the latter

* Aristotle's Logical Books. See *Post An.* 2, 6 and 7. As substance is a unity of matter and form, so a definition is a unity of matter (genus) and differentia (form).

is superfluous, to say nothing of the fact that it is really unmeaning to talk of order in time with reference to the differentia of a substance.

The solution of the difficulty then is this. The notion expressed in the definition is a unity, because it consists of a genus and a single differentia. But the genus has no real existence. There is therefore no real duality. The genus is only the matter of the species.*

* These various discussions about definition may not seem relevant. Aristotle explains, Bk. 7, Ch. 1, that it is impossible to discuss *form* without discussing definition, because definition is the statement of form.

CHAPTER V.

PLATO'S DOCTRINE OF BEING CRITICISED.

We have seen that the term substance is applied to matter or the substrate, to form, to the union of the two, and to the universal. We have discussed matter and form. We have shown that substrate or subject may signify an individual, in the sense in which animal is the subject of its attributes, or that it may signify generally the matter of actual existence.

There are some, however, to whom the universal appears to be in the highest sense a cause and a first principle. This view must now be considered.

It would seem impossible that a universal should be a substance. Substance is that which constitutes the peculiar nature of an individual. The universal, therefore, cannot be substance, for it is common to many things. It must be the substance either of all or of none. It cannot be of all: and if it is of any one, all the rest must be that one. For things which have one substance have one form and are one.

Further, we defined substance as that which is always the subject of predication and never a predicate of a subject. But the universal is always predicated of a subject. It may, however, be urged that, though the universal cannot be the form of the individual, yet the universal, say animal, may be immanent as substance in particular kinds of animals. This, however, is not possible. For animal can be defined. The universal, therefore, by reference to which it is defined will be the substance of *it*. Besides, if it is immanent in all the species of animals, as man is the essence of individual men, the former difficulty recurs. The universal will be the reality of any one species, and yet not peculiar to it. This argument does not affect the fact that the highest universals of all do not admit of definition. Moreover, it is impossible to derive an individual substance, say Socrates, not from an individual substance, but from kind or quality. To do so is to reverse the real relation of substance and quality. The qualities of substance cannot be prior to substance either in time, or in thought, or in the order of production. Otherwise they might exist independently of substance. The theory too would make substance inhere in an individual who is already a substance, so that each substance would be two substances. It is evident indeed that, if the term substance is properly applied to individuals, none of the elements which enter into the definition of a substance can itself be a reality or exist independently of individuals, or in any other way than *in* them or as a predicate of them. There is no universal animal besides particular animals. No universal therefore is substance. A universal predicate signifies not an individual thing but a kind. Any one who denies this may be confronted by "the third man argument"* to say nothing of other difficulties.

* He gives this name to the argument used in Bk. 1, Ch. 9, that if an idea of man is necessary to explain the likeness of individual men to one another, there must be a *third man* to explain the likeness of men to the idea.

Again, it is impossible that a substance should contain within itself real substances. Two realities can never make one real unity. It is only two potentialities that can be embraced in a unity. For example, a double contains two potential* halves. If you actually divide it, it disappears. Two real halves have taken its place. If then substance is unity, it cannot consist of indwelling substances. So far Democritus was quite right when he said that two things cannot become one, nor one two. For he meant by substances his indivisible magnitudes or atoms.† The same is true of number, if number is, as some say, a combination of units. Either the number two is not one or one is not in it *actually*.

Here, however, a difficulty arises. If the universal cannot be substance, because it signifies not an individual but a kind, and if it is impossible that any real substance can be compounded of substances, all substance must be uncompounded, and therefore undefinable. For definition is analysis. Yet it has been always held that substance alone, or in a preeminent degree, admits of definition. Yet now it would appear that even substance cannot be defined, and that, if so, nothing can be defined. The solution of this difficulty is that an individual can be defined so far as it is a universal, *i. e.*, in so far as it is an embodiment of form. Matter, as such, is unknowable: and the individual, considered simply as particular matter in which the form is embodied, cannot be defined. It is an object not for thought but for sense.

We are now in a position to criticise those who make the *Ideas* substance, and assign to them an independent existence, and who yet constitute the species by genus and differentia. If an *Idea*, *e. g.*, animal, is in

different animals, it is either one and the same in them all, or different. That it is one *in notion* is plain, for the definition of animal is the same whatever the animal may be. But how can it be *really* in a number of different things, and yet be numerically one and self-identical? If what is numerically separate can be numerically one, what is numerically one might also exist apart from itself. Besides, if the *Idea* is an independent individual reality, it must possess opposite attributes, which is absurd. Footed, footless, biped, quadruped, may all be predicated of animal, which would be impossible if the *Idea* of animal did

not *participate* in all these. This difficulty cannot be evaded by substituting any other mode of relation for that of *participation*.

If we take the opposite hypothesis, and say that the animal in different animals is different, there will be no limit to the things of which animal is the essence, and the animal-in-itself will be a manifold. For the animal in each animal is the substance or reality of it, since each is defined as an animal. If animal were not the substance of any animal, that one would be defined by reference to some other universal, which would be its genus. Besides, there must be an *Idea* for each species which enters into the definition of man. And, since the *Idea* must be the idea of the same thing of which the substance is the substance, it is plain that all

* The important distinction between potentiality and reality or entelechy is explained in Bk. VIII.

† As indivisible, the atom could not, of course, be split into two. Nor could two make one. Matter is not continuous but discrete.

the properties of different animals must attach to the *Idea* of animal. Lastly, no explanation is given of the genesis of particular animals from the *Idea*. It is impossible to conceive that a real individual animal should exist besides the animal-in-itself. That which had not the reality of an animal would not be an animal. From these and other difficulties which might be brought forward, it is plain that *Ideas* of things, in the Platonist sense, do not exist.

Substance, as we have seen, may signify either a concrete individual thing or pure form. Individual things come into and pass out of existence. This is not the case with form. That is why there can be

neither definition nor demonstration of individual objects of sense. They contain matter, the essence of which is that it can either be or not be. All sensible things therefore are perishable. Demonstration is of what is necessary, and the object of definition is the object of demonstrative science.* That, therefore, which may or may not be, cannot be defined or demonstrated. It is the object of opinion or empirical knowledge. Scientific knowledge cannot enable us to say whether an object that is perishable exists or not. That can only be known by sense-perception. If we attempt a definition of an individual object, the definition may always be overthrown, because the object may change or pass out of existence. For the same reason it is impossible to define an *Idea*. An *Idea* is an independent individual. Now definition can only be by words, and the words in use are common terms. It is impossible to give a definition of an individual which would not equally be a definition of other individuals. If it is objected that we may obtain a combination of terms which will apply to one individual only, the answer is that there must always be at least two, to whom it is applicable. A two-footed animal will describe an animal as well as a biped.† In the case of the *Idea* this must happen. The simple *Ideas* of animal and biped must meet in man, so that the term "two-footed animals" must be predicable both of animal and biped. But though they meet in man, yet if the *Idea* of man is individual, the *Ideas* of animal and biped must be so too. Both of them are individual, or neither is. If neither is, then the genus has no existence apart from the species. If, on the other hand, the genus is independent and individual, so also must be the differentia. Yet, if the genus and the differentia have an independent existence, that existence is independent of the existence, say, of man. But if they are man, how can they exist if man does not? Again, if the ideas are derived from other ideas, the ideas which compose an idea, such as animal and biped, must be predicable of a great number of things. Otherwise the things would be unknowable. But we must arrive at one *Idea* which is predicable only of a single thing. But this the Platonists would not allow. In their view, every *Idea* may be *participated in*. They do not see that it is impossible to define the objects which are eternal,‡ especially those which are unique in their kind, such as the sun or the moon. They make the mistake of defining the

* Definition gives the essence of the object defined. Demonstrative Science proves that an individual must possess an attribute by connecting the individual with a universal, a part of whose essence that attribute is.

† This is a manifest quibble.

‡ The phrase denotes not only the *Ideas* but also the heavenly bodies.

sun by mere accidents, such as its revolving round the earth, or disappearing at night, both of which it might cease to do and yet be the sun. For the sun, like all substances, is independent of its accidents. Besides, there might very well be another body, to which this definition of the sun would equally apply, so that it would no longer be a definition of the sun. Yet the sun is an individual. An Idealist has only to attempt a definition of an *Idea* to see that it is impossible.

It must always be borne in mind, that many things which are called

Actual and potential reality.
Bk. 6. Ch. 16.

substances are so not actually but only potentially. Such, *e. g.*, are the parts of animals, not one of which exists independently of the animal

of which it is a part. When separated from the whole to which they belong, they exist simply as matter. Not one of them is a real whole. The parts of living animals and the parts of the soul* might with some plausibility be said to be substances both potentially, as parts of a whole, and actually as possessed of an independent life of their own. For they possess a power of movement, inasmuch that some creatures live even after they have been divided. Still the parts of a real organic unity in nature have no real existence of their own. Animals, whose parts possess life and movement, fall short of being real organisms.†

As being and unity are convertible terms‡ and as the substance of the

The one and being are not substances.

one is one, and things whose substance is one are themselves one, it is plain that the one and being cannot be, as Plato thinks, the substance

or reality of things, any more than the mere notion of an element or first principle can. Fire, *e. g.*, is a material element, but we do not learn the real nature of fire, merely by being told that it is an element. The reality of things must be looked for in something more definite than such abstract conceptions as unity, being, element, or first principle. Of these four conceptions unity and being come nearest to substance, but they are not substance because they are common terms, and no common term can denote a substance. For substance belongs to nothing but itself or that of which it is the substance. That a universal cannot exist apart from particulars is further evident from this, that the universal is in many things at once, which *the one* cannot be. It must, therefore, be a mistake to make the one in the manifold, an *Idea*. The explanation of the mistake is very simple. If the Platonists had separated their *Ideas* from sensible realities, it would have been impossible to give any intelligible account of them. There is in truth no distinction, except in name, between them and the objects of sense. Yet there was no real necessity for making these mere eternal doubles of sensible realities. Eternal realities cannot of course be described if they have not been seen, yet *a priori* reasons may be discovered for

* As regards the soul of man, Aristotle maintained that only the highest function of it *viz.*, reason, can survive the body. But different elements of soul are found in different orders of existence. See note on p. 38.

† Schwegler remarks that Aristotle does not expressly indicate the bearing of the distinction here drawn between actual and potential existence upon his argument. We are left to infer that the *Ideas* as universal are not real substances. In Aristotle's view the universal or genus is merely the matter of the species, and matter exists only potentially.

‡ See above, p. 20.

asserting their *existence*. The stars would not any the less exist, if we had never seen them and were therefore unable to describe them.

The truth is that, to get a clear notion of what substance or reality is, we must regard it as a first principle or cause.

Substance as cause.
Bk. 6. Ch. 17.

Now a search for a cause is an attempt to explain how one thing can have another thing predicated of it. We never ask why a particular thing is itself. To such a question no answer is possible, except the unmeaning one that the thing is what it is. The question is not answered with regard to any particular thing by saying that the thing is identical with itself. That might be said of anything and in reality explains nothing. The existence of what is to be explained is presupposed when we ask for an explanation. We do not ask why a man is a man, but why something can be predicated of man. Similarly to ask for an explanation of thunder is to ask why there is a noise in the clouds. So also we ask why certain materials constitute a house. The cause which is sought is sometimes the final cause and sometimes the efficient. The efficient cause is looked for as an explanation of creation and destruction, the final cause as an explanation of existence also. The most puzzling questions to deal with are those which ask not for an explanation of something being something, but for an explanation of a thing. To ask us to account for a man is to ask us to do what is impossible, namely to explain why a man is a man. The proper mode of framing the question is to ask for an explanation of something with regard to a man. We may ask why given matter is a man, and the answer will be that it possesses the form or essence of man. In other words substance is the explanation of things. Whatever is a compound constitutes a real organic unity, as opposed to a mere aggregate, and yet is not the same with its constituent elements. Flesh is a compound of fire and earth, but it is not fire and earth. For when it is dissolved into its elements, it has disappeared while they remain. Flesh then is not its elements, but something other than they. The question then arises, what is this something other that makes fire and earth flesh? It cannot be simply another element, for, if it were, we should still have to inquire for the something else which would make those three elements into flesh. Neither can it be a compound of elements. For the very point at issue is what makes a compound of elements a particular thing. It must be something other than an element which is the explanation of this matter being flesh. It is, whether in the case of flesh or of anything else, the substance of the thing. For the substance of the thing is the first cause of its being. It is never to be found in the material constituents. Substance is that which constitutes material elements into a real organic unity.

CHAPTER VI.

FURTHER CONSIDERATION OF BEING.

We shall confine ourselves in this Chapter to the consideration of sensible substances, the existence of which is recognised by all, to the exclusion of the Platonic ideas and of mathematical entities, the existence of which is disputed.

Bk. 7. Ch. 1.

Scope of the inquiry.

Sensible substances all contain matter. Substance is in one sense matter—that which is, not actually, but only potentially, anything definite. In another sense it is the form or the notion, which has a separate existence only in thought. In a third sense it is the union of form and matter. This latter alone admits of generation and destruction, and has a separate existence absolutely and in fact.

That matter, as well as form, is substance, is plain. In all change there must be an underlying something which undergoes change. In change of place there must be

Substance as matter.

a something which is now here, and now there. In quantitative change there must be a something which is first of a certain size, and then greater or smaller. In change of state there must be something which is first healthy and then sick. Lastly when a thing comes into or passes out of existence, there must be a something which is destroyed—a something which is at one time a definite reality and at another time formless. The three kinds of change first mentioned are consequent upon the last, but the last is not necessarily consequent upon the rest. A thing cannot cease to exist without its quantitative and qualitative determinations disappearing along with it. But a change in quantity or quality does not involve the destruction of an object. The stars, for instance, change their position, but they are eternal.

The potential existence then of substance, in the sense of a material substrate, is allowed. But this is to be distinguished from the actual substance or reality of things.

Substance as form.

Bk. 7. Ch. 2.

We will now consider what is the actual reality or form of objects of sense.

Democritus apparently thought that the atoms, which are the material substrate of all things, could differ in three particulars only, *viz.* shape, position, and arrangement. But he seems to have overlooked many distinctions. There is a difference in the manner in which matter is compounded. Fluids are mixed, solids are tied together, or glued together, or pegged together, and sometimes more than one of these modes of composition is employed in a single case. Again, there is difference in situation. There is the difference between the doorstep and the lintel. There is difference in time, as between breakfast and dinner. There is difference in direction. The winds blow from different quarters. There are qualitative differences, such as hardness and softness. The same thing will often present more than one of these differences and in different degrees. Evi-

denly then existence is predicated in different senses. The existence of a lintel is its situation. The existence of ice is a certain density. In the case of some things, existence is determined by all the differences which we have noted. There is in them a peculiar mixture and condensation of fluids, a peculiar blending and binding of solids, and so forth. We should endeavour to classify these differentiae which constitute existence. Differences of amount, of density, and the like, are differences of degree. Differences of figure, and difference in roughness or smoothness, are differences of straight and bent. Again there is a class of things the existence of which is a certain blending.

But if these differentiae constitute the being of things, it would seem that substance should be looked for among them, if substance is the reality of things. But this is not really so, though there are points of resemblance between them and substance. What holds in the case of essences, *viz.* that what is predicated of matter is the reality, holds also in other definitions. A lintel is properly defined as a stone or wood in a certain position. A house, though it might also be defined with reference to its purpose, is properly defined as bricks and wood arranged in a certain way. Ice is properly defined as water condensed to a certain degree.

It is now evident that the reality, and consequently the definition, varies with the matter. Those who define a house by reference to the materials of which it is composed, define it as it is potentially. Those who define it by reference to its use as protecting person and property define it as it is actually. Those who combine the two give the substance in the sense of the union of form and matter. So that in the case of objects of sense, substance signifies matter, form, and the union of the two.

It is not always clear whether a name denotes the compound of matter and form, or the form only—whether, for instance, the word house signifies a shelter made of bricks and timber arranged in a certain way, or whether it signifies simply a shelter. But this consideration, however important it may be in other regards, has no bearing on the inquiry into the nature of sensible reality. For reality is form or actuality. We are not to suppose that a house is simply an arrangement of bricks. That which is arranged does not make the arrangement.

Form presupposed in reality.

Bk. 7. Ch. 3.

Similarly, if position is the reality of a threshold, the threshold does not make or account for the position. Something else is required than the material constituents of a thing to explain its existence, and this something else is form. That this form is neither created nor destroyed, but only embodied at times in matter, has already been shown. Whatever may be the truth as to the abstract possibility of the separate and independent existence of the form of what is perishable, it is quite plain that the form of the products of art exists only in those products.

Bk. 6. Ch. 8.

We may here incidentally solve a difficulty raised by some followers of Antisthenes and other equally ignorant persons. They say that it is impossible that a definition, which is only a round-about expression, should declare the nature of a thing. All that it is possible to do, they say, is to

Antisthenes' denial of definition.

describe the thing by comparing it to something else. Thus we cannot say what silver is. We can only compare it to tin. The true account of the matter is this. It is possible to define a concrete embodiment of form and matter. But you cannot define form or matter in abstraction, because definition is predication and implies both form and matter.*

If it be true, as some philosophers maintain, that numbers are the essences of things, then numbers must be understood to be like form, ideal unities, and not mere aggregates of units. There are undoubtedly certain points of resemblance between number and definition. Both can be analysed into parts which cannot themselves be decomposed. The essence of both is changed by any addition or subtraction, no matter how small. Again, there must be something which makes both a definition and a number a unity, though those who identify number with essence do not tell us what that something is.† It is of no use to tell us that essence is a mere potential unity like a monad or a point. Essence is a real unity. That is why it cannot be added to, or taken from, without its nature being altogether changed, which is not the case with material aggregates.

Passing from form to the material reality we must notice that even though all things may be ultimately traceable to the same material element or elements, yet each thing has its own immediate matter. The immediate matter of phlegm is something sweet or fat. The immediate matter of bile is something bitter. This remains true even if the matter of sweet, fat, and bitter, be one and the same. Indeed the matter of the same thing differs according to the mode of production. Phlegm may be produced directly out of something sweet and fat, which will in that case be the matter of it. Or it may resolve itself into bile, in which case bile will appear as the matter of it. The action of the efficient cause, too, may produce different things out of the same matter. The same piece of wood may be made either into a box or into a bed. In other cases different things require different matter. No one can make a saw out of wood. When the same thing can be made of different materials, it must be by one and the same art. For when both the matter and the efficient differ, the product must differ too.

Now when any one asks for the cause of anything, as the word cause has many significations, it is necessary to assign all the possible causes. For example, what is the cause of a man? The material cause is mensuration in the mother. The efficient cause is the semen of the father. The formal cause is the essence. The final cause is the end. We may perhaps identify the final with the formal cause.‡ Further, when the cause is asked for, the immediate cause must be given. When for instance the material cause of a thing is asked, we must not mention one of the four elements, but must state the immediate material of the thing inquired about.

Explanation implies all the four causes.

* See Campbell's Ed. of Plato's Theaetetus, Introd. p. xxii.
 † He returns to this matter in Ch. 5 of this book.
 ‡ Because, according to Aristotle, the end, in nature, is not some ulterior purpose which the thing serves, but simply the fully developed thing. He expressly identifies end and nature.