
This is a reproduction of a library book that was digitized by Google as part of an ongoing effort to preserve the information in books and make it universally accessible.

Google™ books

<https://books.google.com>







THE PHYSICS,
OR
PHYSICAL AUSCULTATION
OF
A R I S T O T L E.

TRANSLATED FROM THE GREEK.

WITH
COPIOUS NOTES,
IN WHICH THE SUBSTANCE IS GIVEN OF
THE INVALUABLE COMMENTARIES OF SIMPLICIUS.

BY THOMAS TAYLOR.

JOVE HONOURS ME, AND FAVOURS MY DESIGNS.

POPE'S HOMER, BOOK 9th, v. 717.

LONDON:

PRINTED FOR THE TRANSLATOR,
Manor-place, Walworth, Surrey;

BY ROBERT WILKS, 89, CHANCERY-LANE, FLEET-STREET.

1806.

ROYAL CANADIAN MOUNTED POLICE

NOTIFICATION OF ARREST

IN THE MATTER OF

THE PROCEEDINGS

AND

THE ARREST

OF THE ABOVE NAMED PERSON

AND THE REASONS THEREFOR

AND THE NAME OF THE

OFFICER IN CHARGE OF THE POLICE STATION

AND

THE NAME OF THE OFFICER WHO HAS

INTRODUCTION.



THE design, says Simplicius, of the Physical Auscultation of Aristotle, may be easily learnt, if we recollect his division of the physical part of philosophy. But it will not perhaps be improper to relate the whole division of philosophy according to Aristotle. Philosophy, then, is the perfection of the soul, in the same manner as medicine of the body. Of the soul, however, one part is rational, but another irrational. And, of the rational part, indeed, one part co-operates with irrationality, as that which is called by Aristotle intellect in capacity *,
but

* The rational soul has three conditions or modes of subsistence ; one, most perfect, according to which it abides in itself, does not proceed into body, and is similar to intellect; on which account also it is then called intellect, and its energy is the same with its essence. It has, in the second place, a most imperfect condition, according to which it proceeds into body, has no knowledge of any thing else than a corporeal nature, and is in pure capacity with respect to all intelligibles, or the proper objects of intellectual vision. It has also a middle condition between these two. So far, therefore, as it abides in itself, and is not converted to body, it is called *intellect*

but another part is separate from irrationality, as intellect in energy. But since every power of the soul is twofold, the one being orectic, and the other gnostic, the whole of that which is perfective of the orectic power in irrationality, and in the co-operation of intellect in capacity with the irrational appetites, is called by the Peripatetics *practic*, since it is conversant with action, and has for its end the choice and attainment of good. But that which is perfective of the gnostic power, having for its end truth, is called in common *theoretic*. So far, however, as it perfects the knowledge of the intellect which is in capacity, this knowledge being employed together with sense and phantasy about material forms, and which are inseparable from matter, so far they denominate it *physical*, because nature is conversant with things of this kind, and in these is shown to subsist. But so far as it is employed about forms entirely separate from matter, and the pure energy of intellect in energy, and is terminated together with the operation of intellect in capacity, so far they denominate it *theological*, *the first philosophy*, and *metaphysics*, as being arranged beyond physics. The gnostic power, however, which is conversant with forms that are partly separate, and partly inseparable from matter, they denominate *mathematic*, and *pertaining to speculations about the soul*: for they say that the mathematical essence has a middle subsistence, through *the universal* possessing separation from matter, but through *interval* and *discrete quantity*, the inseparable. In like manner they conceive that the soul according to the

tellect in energy; so far as it proceeds into body, it is called *intellect in capacity*; and so far as it begins to be perfected and to acquire the habit of science, it is called *intellect in habit*; this being its middle condition, according to which it arrives at its own perfection, through the acquisition of habits.

senses

senses and imaginations, and according to that intellect which is in capacity, has much of the material ; but that according to intellect in energy, which Aristotle demonstrates to be the summit of the soul, (though it appeared otherwise to Alexander Aphrodisiensis) they say it possesses the separate from matter. The other parts of the soul, however, will obtain a more accurate distinction in appropriate treatises.

But of the physical discussion, one part is conversant with the principles of natural things, so far as they are natural, that is to say, corporeal, and with whatever is necessarily consequent to such-like principles ; but another part is conversant with things proceeding from these principles. And since of these latter some are simple, but others composite ; about the simple, Aristotle teaches us in his treatise on the Heavens ; discoursing indeed in the first two books about the fifth essence of that which is properly heaven, and besides other things demonstrating that it is perpetual ; but in the remaining two, about the four sublunary elements, so far as these also are simple, and are moved with simple motions : for it is better to assert this, than to say with Alexander, that Aristotle's treatise on the Heavens, is about a perpetual and circulating body, and still farther, about every natural body, i. e. about the world : for that this treatise is about a physical body so far as physical, he also acknowledges. That likewise which is a composite is natural ; but nothing is said in the books on the Heavens about a composite, but about simple natures, as Aristotle himself renders evident in the third book of that treatise, when he says, " we have spoken, therefore, about the first of the elements, and shown what its nature is, and that it is incorruptible and unbegotten : it now remains to speak concerning the two." In which passage by the two, he means the
the

the two conjugations of the four elements, which are governed by two species of motion, that from the middle, and that to the middle; and he denominates simple things elements.

Since, however, all composite natures are generated and corruptible, but of simple natures, some are perpetual, but others generable and corruptible, about such as are perpetual Aristotle discourses in his first books on the Heavens; but about such as are generable and corruptible, as simple in the third and fourth books of that treatise. But intending to speak about generated natures as composites, he first writes two books on Generation and Corruption, instructing us in things consequent to all generable and corruptible natures, so far as they are such; discussing other things which remained to be considered about these in their proper places. And in such things indeed, as exist in the place proximately above us, he instructs us in his meteorologic treatise. But since of the things in the place in which we dwell, some are animated and others inanimate, about such as are inanimate, he teaches us in his treatise on Metals*. And of the animated, some are animals, others are plants, and others are zoophytes. About animals, therefore, he discourses in his all-various treatises on Animals, partly historically narrating the particulars about them, as in his history of animals, and partly assigning the causes of those particulars, as in his books on the generation, parts, and motion of Animals, on Sleep, and the like. In a similar manner also, he instructs us according to this twofold way, about plants †. Such, therefore, in short, is the division of natural philosophy, according to the Peripatetic sect.

* This treatise is unfortunately lost. † This treatise also is lost.

The

The design, however, of the present treatise is, to teach us about whatever pertains in common to natural things, so far as they are natural, that is, corporeal. But principles, and things consequent to principles, are common to all things. And principles are causes, properly so called, and con-causes. Causes too, according to the Peripatetics, are the producing and the final; but con-causes are matter and form, and in short, the elements: for Plato to causes adds the paradigmatic; and to con-causes, the instrumental. And that the design indeed of this treatise is about whatever is common to all natural things, the introduction to it immediately evinces: for it says it is necessary that a natural philosopher should first define things pertaining to principles. It is also manifest from the beginning of the third book, in which he says, "it is evident, therefore, that for these reasons, and because these things are common and universal to all things, we should, in the first place, make each of these the object of consideration: for the speculation of *peculiarities* is posterior to that of things *common*." Since, however, nature, which in a certain respect is the proximate cause of natural things, is shown to be a principle of motion, and every thing natural being a body, contains in itself a principle of motion, a discourse about motion is necessary to a natural philosopher. Since, also, that which is moved, is measured by time according to motion, and being a body is in place, it is also necessary to teach concerning time and place. As body, likewise, place, time, and motion are continued, the discussion of the continued is also necessary. And these things indeed, are consequent to physical principles. Enquiries also occur about the infinite and a vacuum. About the infinite indeed, because it is necessary that natural bodies, motion, place, and time,

b

being

being continued and possessing interval, should be divisible to infinity; and that they should be either infinite or finite, or partly possess the infinite, and partly the finite. Since, likewise, place appeared to some philosophers to be a certain void interval deprived of body, hence the discussion of a vacuum very properly occurs in the discourse about place; and also because some natural, and those not ignoble philosophers, considered a vacuum as ranking among principles. Such, therefore, is the scope of the Physical Auscultation, the consideration of whatever is or appears to be common to all natural things.

The cause of the inscription also of this treatise is evident: for since it instructs us in whatever is common to natural things, so far as they are natural, it is very properly inscribed by the common name *physical*; but it is inscribed *auscultation* as being written with such accuracy as to be preferred to the hearing of other things. Adrastus, however, in his treatise on the order of Aristotle's writings, relates, that by some this work is inscribed, *Concerning Principles*, and by others, *Physical Auscultation*. Some again, says he, inscribe the first five books, *Concerning Principles*, and the remaining three, *Concerning Motion*; and in this manner they appear to be frequently mentioned by Aristotle himself.

But physiology is useful, not only in affording principles to things pertaining to life, and to medicine and mechanics, and giving assistance to other arts; (for each of these requires its aid, so as to consider the nature and the natural differences of its subject matter) nor is it merely useful because it perfects in us that form of the soul, which is co-ordinate to the knowledge of natural things, as theology perfects that which is intellectual and the summit of our nature; but because it contributes in the most eminent degree to the other perfections of the soul:

INTRODUCTION.

soul: for it assists the practical virtues; *justice* indeed, so far as it shows the elements and the parts of the universe yielding to each other, loving their own order, and preserving geometric equality, and on account abandoning the immoderate desire of possessing. But it assists *temperance*, by showing the nature of pleasure, that it is no predominant good, but something attendant on good, so far then appearing to be vehement and eligible, as it is still mingled with much of the unnatural. The study also of the physical theory, easily transfers the soul from corporeal pleasures, and the admiration of things external, through which temperance and justice, and fidelity in contracts are produced. Thus also the student of it will acquire *fortitude*, as knowing from physiology, that man is no sensible * part of the universe, nor the measure of our life, of the time of the universe; and that corruption necessarily follows every thing generated, being a dissolution into things of a simple nature, a restitution of parts to their proper wholes, a renovation of the aged, and a restoration of things decayed. He will also know that whatever is now corrupted, or will be after a few years, has no proportion to the infinity of time. If, likewise, understanding the separate transcendency of the soul, he directs his attention to its employment when liberated from the body, he will then perfectly be enamoured of death. And what among things which appear to be dreadful, can terrify him who is thus affected towards death? Physiology also produces *prudence*, which possesses much alliance to the gnostic part of the soul. It likewise produces magnanimity, and mag-

* Man is no *sensible*, because he is so *diminutive* a part of the universe. He is indeed nothing more than the dregs of the rational nature; though by a proper cultivation of that portion of intellect which he possesses, he is capable of ascending to all the luminous orders of being above him, and of becoming at length united to the fountain of deity itself.

INTRODUCTION.

conceptions, persuading the students of it to consider nothing human affairs as great; and as it causes them to be satisfied with little, and on this account, to impart readily to others what they possess, without having occasion to receive from others, it renders them free. This, however, is its greatest good, that it is the most beautiful path to the knowledge of the essence of soul, and to the contemplation of separate and divine forms. This Plato demonstrates*, who from natural motions is led to the discovery of the self-motive essence, and an intellectual and divine subsistence; and Aristotle, in this very treatise, from the perpetuity of circular motion discovers the immoveable cause of all motion. Farther still, it especially, and in a beautiful manner, enflames our veneration of the divine transcendence; from an accurate knowledge of the productions of the fabricator of the world, exciting in us astonishment at the sublimity of his nature. But conjunction with divinity, together with belief and a firm hope in him, are the consequences of this astonishment; and for the sake of these, physiology is especially to be studied. Physiology, therefore, being thus useful, the present treatise may be justly considered as most useful, in consequence of instructing us in the principles of the whole of physiology, without which principles it is impossible to possess the science pertaining to nature; as Aristotle himself indicates at the very beginning of this treatise, when he says, "we then think that we know any thing, when we know the first causes, and the first principles, and as far as to the elements from which it is composed."

If also it be requisite to speak about the order of this treatise, it is evident from what has been said, that it precedes all the other

* See the Phædrus of Plato.

physical

physical treatises, as teaching physical principles. But after the ethical and logical discussions, the former of which give an orderly arrangement to our manners, and the latter instruct that power in us which is the criterion of truth, it is requisite to enter on the study of physics.

But it would be superfluous to prove that this work is the genuine production of Aristotle, since this is not disputed. It is also frequently cited by Aristotle himself in many of those writings which are universally admitted to be his ; by the most celebrated of his disciples ; and by all of the Peripatetic sect ; by some of whom a division of it into chapters, and synopses of it, have been made.

Since, however, the whole treatise first receives a twofold division, Adrastus says, that the first five books are about all physical principles, and things consequent to these, and which are the subjects of investigation ; but that Aristotle resuming the discussion of motion from the sixth book, delivers in the three remaining books, all-various physical theorems about motion. Hence Aristotle usually calls the first five books, *Concerning Principles*, but those that follow *Concerning Motion*. But in the first book of those concerning Principles, he teaches us about con-causes, I mean matter and form, and privation which is opposed to form ; and in the second book, about the proximate producing cause, which he says is nature ; and also about the final cause. Since, however, there are other apparently producing causes, possessing this power accidentally, such as fortune and chance, neither does he leave the definition of these unexplained. But having defined nature to be a principle of motion, and natural things, in short, being characterized according to motion, in the third book he teaches us what motion is, both in common, and according to each of its species. Since also natural motion

tion is continued, and that which is continued is divisible to infinity, he also discusses the continued and the infinite in the third book. But as natural things are bodies, and have position, they also require place in which they may exist, and may be moved. Hence in the fourth book he discourses about place. And as some philosophers conceived place to be a void interval, and ranked it among principles, he very properly likewise excites the investigations about a vacuum. But all motion being measured by time, it was also necessary that time should be discussed by a natural philosopher; and thus the fourth book is concluded. In the fifth he distinguishes motion from other mutations, and explains the oppositions of motions to each other, and also of rests to motions and to each other. He also describes what that which is one motion is.

Of those, however, who prior to Plato philosophized, Thales, Anaximander, and the like, (*philosophy then beginning in Greece after the deluge* *, and the acquisition of the necessaries of life,) investigating the causes of natural productions, surveyed material and elementary prin-

* Of the deluges mentioned by Greek writers, the two most celebrated are, the Ogygian, which happened in Attica during the reign of its king Ogyges; and that of Deucalion, in which Thessaly was so merged, that all its inhabitants perished except a few, who most probably were saved on the tops of very high mountains. The Ogygian deluge, according to Julius Afer in the third book of his Annals, Solinus and Acusilaus, happened one thousand and twenty years prior to the first Olympiad, i. e. one thousand seven hundred and ninety-six years before the vulgar æra: but that of Deucalion is supposed to have happened one thousand five hundred and twenty-nine years before Christ. By *the deluge*, therefore, Simplicius doubtless means the Ogygian; and which, as Thales was born in the thirty-fifth Olympiad, happened one thousand one hundred and sixty years prior to that philosopher. It must be observed, however, that it is the parts of the earth alone which are alternately deluged and destroyed by fire: for the *whole* earth, in consequence of being one of the *wholes* of the universe, is indestructible.

inciples,

ciples, and explained them indefinitely, as unfolding the principles of all things. But Xenophanes, the Colophonian, his disciple Parmenides, and the Pythagoreans, delivered their philosophy about natural and supernatural things, which was most perfect indeed, but enigmatical. And Anaxagoras the Clazomenian, though he asserted that the producing cause of things is intellect, yet made but little use of it in assigning the causes of things, as Socrates observes in the *Phædo*. Perhaps, however, there is no absurdity in this. For Timæus himself, and also the Timæus whom Plato introduces, having previously admitted the producing, paradigmatic and final cause of generated natures, at the same time assign corporeal causes from the figures of planes, and in short from the nature of the elements; except that Plato more clearly delivers the doctrine of the Pythagoreans and Eleatics; celebrates in a becoming manner things supernatural; and in things natural and generated, separates elementary principles from others; and was the first that denominated such-like principles, elements, as Eudemus narrates. Contemplating also the producing and final cause, and besides these the paradigmatic cause, i. e. ideas, he distinguished them from each other. For Aristotle afterwards employing these very conceptions discovered matter, and in a similar manner form. Plato also perceived that the producing cause of things is a divine intellect, and the final cause, the goodness of this intellect, through which he assimilates the whole of a sensible nature to its intelligible paradigm.

Aristotle however differs from the physiologists prior to Plato, not only because he introduces a producing cause, but because he likewise surveyed material causes, according to a more principal mode of subsistence. For they supposing either *homoimeriæ*, i. e. things of similar parts, or one of the four elements, or more than one, or all of them, or
arriving

arriving as far as to atomic bodies, he dissolved both the *homoiomeria*; and the four elements, and resolved a corporeal nature itself into form and matter; just as prior to him Plato, and prior to Plato, the Pythagorean Timæus, make the four elements to be the proximate causes of things, but prior to them planes, and assert that the first elementary principles are matter and form. At the same time, however, Aristotle differs both from Plato, and all those prior to Plato, in this, that while some discussed natural things as if discoursing about all things, which was the case with some philosophers prior to Plato, or as if investigating about the world and the parts of the world things which are the subjects of inquiry in this treatise, as was the case with Plato, and some prior to him, Aristotle distinguished the order which natural things possess among beings, and instructs us about a natural body by itself, as if the world had no existence. In the elements of things also, he demonstrates that privation is something different from matter; Plato defining privation to be matter, or to subsist according to matter. And while other philosophers neglected the producing cause, but Anaxagoras and Plato, viz. the Pythagoreans, admitted a divine intellect to be the producing cause, Aristotle investigating the proximate producing cause of natural effects, says that it is nature, which Plato ranks among instrumental causes, as being moved by something else and moving other things. Nor did Aristotle stop at nature, as at the first or properly producing cause, but ascended to the immoveable and motive cause of all things; from which, at the end of this treatise, he suspends all moveable beings.

The form also of the physiology of this man differs from that of others; from those more ancient, so far as he transfers their enigmatical to a clearer mode of discussion, and adds accuracy to demonstrations; but

but it differs from that of Plato, so far as he admits the more imbecil necessities of demonstrations, and endeavours to obtain principles of demonstration from sense, and obvious opinions. At the same time, he differs from all physiologists, in elaborately extending all the parts of physiology, as far as to the most partial natures.

But the writings of Aristotle receiving a twofold division, into the exoteric, such as the historical, and those composed in the form of dialogue, and, in short, those which do not pay attention to extreme accuracy, and into the acroamatic, to which class the present treatise belongs—this being the case, *in his acroamatic writings, he studies obscurity*, through this deterring the more indolent, as if their very appearance evinced they were not written for them. Alexander then, after the subversion of Persia, wrote to him as follows: Alexander wishing prosperity to Aristotle. You have not done right in publishing your acroamatic works; for in what shall we surpass others, if the doctrines in which we were instructed become common to all men? I indeed would rather excel others in the knowledge of the most excellent things than in power. To this Aristotle returned the following answer: Aristotle to king Alexander wishing prosperity. You wrote to me concerning my acroamatic works, thinking that they ought not to have been divulged. Know, therefore, that they are published, and not published; for they can be understood by my auditors alone. Farewell. * Plutarch, however,

* For the sake of the learned reader, I give the whole of this remarkable passage in the original. Διχῆ δὲ διηρημένων αὐτοῦ τῶν συγγραμμάτων, εἰς τὰ ἐξωτερικά, οἷα τὰ ἱστορικά, καὶ τὰ διαλογικά, καὶ ὅλως τὰ μὴ ἀκράως ἀκριβείας φρονιζόντα, καὶ εἰς τὰ ἀκροαματικά, ὧν καὶ αὕτη ἐστὶν ἡ πράγματεία, ἐν τοῖς ἀκροαματικοῖς ἀσάφειαν ἐπιτηδεύσει, διὰ ταύτης τοῖς ῥαθυμοτέροις ἀποκρουόμενος, ὡς παρ' ἐκείνης (lege ὡς περ ἐκεῖναι) μὴ δὲ γεγραφθῆναι δοκεῖν. Τοι γὰρ οὖν Ἀλεξάνδρου μετὰ τὴν Περσῶν καθαιρέσιν ταῦτα πρὸς αὐτὸν γεγραφοτά.

ever, in his life of Alexander, says that this letter refers to the publication of the *Metaphysics*.

Thus far the excellent *Simplicius*, of whose *Commentaries* on this work, the substance of which I have given in notes, I shall only observe that they are an incomparable treasury of physiological learning ; that they are written with the most scientific accuracy ; are replete with the most recondite information, containing large extracts from lost writings of the highest antiquity ; that they most satisfactorily unfold the abstruse theory of physical principles, and elucidate the studied obscurity of the *Stagirite* ; and admirably demonstrate that there is a perfect concord in the dogmas of those two unparalleled luminaries of philosophy, *Plato* and *Aristotle*. Had these invaluable *Commentaries* been properly studied, and thoroughly understood, the no less accurate than sublime physiology of *Aristotle*, would not have been unknown at the present period, and have thus been involved in oblivion for upwards of a thousand years ; nor would *scholastic jargon* with barbaric ignorance have presumed to personate genuine *philosophy*. I reserve, however, what I have further to say on this subject for the general Introduction which (if my infirmities will permit) I intend to prefix to the first volume of the translation of the whole of *Aristotle's* works. In this Introduction a summary account will be given of the philosophy of the *Stagirite* ; the profound ignorance of it by *Bacon*, *Malbranche*, *Locke*, *Newton*, and in short the greatest wits of modern times, exposed ; and its supe-

Ἀλεξάνδρος Ἀριστοτελεὶ εὐκρατεῖν. οὐκ ὀρθῶς ἐποίησας ἐκδύς τοὺς ἀκροαματικούς τῶν λόγων. τίτι γὰρ ἐτι διδοίμεν ἡμῖς τῶν ἀλλῶν, εἰ καθ' οὐς ἐπαιδευθῆμεν λόγους, οὗτοι πάντων ἐσονται κοινοὶ ; ἐγὼ δὲ βουλομένη εἶναι τὰς περὶ τὰ ἀρίστα ἐμπειρίας ἢ τὰς δυνάμεις διαφέρειν. αὐτὸς ταδε ἀπεγράφεν. Ἀριστοτέλης βασιλεὶ Ἀλεξάνδρῳ εὐκρατεῖν. ἐγράφας μοι περὶ τῶν ἀκροαματικῶν λόγων, οἰόμενος δεῖν αὐτοὺς φυλάττειν ἐν ἀπορρήτοις. ἰσθὶ οὖν αὐτοὺς καὶ ἐκδιδόμενους καὶ μὴ ἐκδεδομένους. συνέτοι γὰρ εἰσι μοι τοῖς ἡμῖν ἀπουσασίν. ἐρρωσθ.

riority

riority to other philosophies which have been presumptuously substituted in its stead, clearly demonstrated.

For the elucidations, in the Additional Notes, of Aristotle's geometrical demonstrations, the reader is principally indebted to the Analytical Commentaries of Julius Pacius, from whose edition of the Physics, conceiving it to be the best, the following translation was made. I shall rejoice if any observations of my own which may occur in the course of this *very laborious* work, shall be found to elucidate, and thus contribute to promulgate, the physiology of Aristotle.

As to the translation suffice it to say, that I have endeavoured to render it as literal as possible, and to preserve the manner as well as the matter of my Author; conceiving that every translation, and particularly of antient writers, where such an endeavour is wanting, is spurious; and that the translator who neglects it is neither a man of integrity, nor desirous of obtaining the honorable estimation of posterity.

THE

THE PHYSICS.

THE PHYSICS.

B O O K I.

CHAPTER I.

SINCE about all methods of which there are principles, or causes, or elements, it happens that we obtain knowledge and science from the knowledge of these (for we then think that we know any thing, when we know the first causes and the first principles of it, and as far as to the elements from which it is composed); this being the case, it is evident, that we should first endeavour to define those things which pertain to the principles of the science concerning nature¹. But the natural

¹ The preface, says Simplicius, immediately unfolds the scope of the work, that it is concerning physical principles. For Aristotle says, that we must first endeavour to define concerning these principles: and he clearly shows that the discourse about principles is necessary, syllogizing as follows: Natural things have principles. It happens that things which have principles are known by us, through knowing the principles from which they consist. The knowledge of physical principles, therefore, is necessary to him who intends to obtain physiological science. But that there are principles of natural things, the whole of the following treatise evinces, and does not now require demonstration; on which account Aristotle appears to have omitted this minor proposition. Theophrastus, however, in the beginning of his physics, demonstrates this as follows: "That there are principles of natural things is evident, from natural bodies being composites.

natural path in which we should proceed, is from things more known and manifest to us, to things which are more manifest and known to nature: for that which is known to us, is not the same with that which is simply known. Hence it is necessary to proceed, after this manner, from things more obscure to nature, but which are more manifest to us, to things more manifest and known to nature. To us, however, things which are more confused, are at first evident and clear; but afterwards from these, to those who divide them, the elements and principles become known. On this account it is necessary to proceed from universals to particulars; for the whole is more known according to

But every composite has principles from which it is composed. For every thing which has a natural subsistence is either a body, or possesses a body; and both these are composites." Porphyry, however, says, that it is not the business of a natural philosopher to investigate if there are principles of natural things, but of one who has ascended beyond physics. For a natural philosopher uses these as data. It may indeed be said to be rather the business of one who has ascended beyond physics to investigate whether there are certain principles; since neither does a geometrician, nor a physician, demonstrate his own principles, but uses them as existing, and as of such a particular nature. How, therefore, do nearly all natural philosophers investigate the principles of physics? May we not say, that because physical things are composites, and have principles, it is also the business of a natural philosopher to demonstrate these principles, just as it is the business of a physician to demonstrate, that the human body is composed from the four elements? But it is the business of one who has required a superior science, to show what power each of the elements possesses: of the musician, indeed, in letters; of the physiologist, in the human body; and of the first philosopher, in physical principles. Hence, Aristotle having shown that matter and form are the principles of physical things, says, that matter may be known from analogy, though the first philosopher demonstrates its subsistence, and from causes. But concerning the formal principle, says he, whether there be one or many, and what it or they are, it is the business of the first philosophy to determine. That things, however, which possess principles, are then known when their principles are known, Aristotle admits as an axiom. Hence, he uses what is called a sub-continuative conjunction, in which the antecedent is assumed as granted. For if science is a knowledge through demonstration, but demonstration is a syllogism, and syllogism is from principles, science, indeed, is a knowledge from principles. He also infers the same thing from induction and common opinion: "For we then think," says he, "that we know any thing, when we know the first causes and the first principles of it, and as far as to the elements from which it is composed." But he does not add the conclusion: viz. *It happens, therefore, that physical concerns are known, from knowing the causes of them*; but he subjoins what is consequent to the conclusion: "For we should first endeavour," says he, "to define those things which pertain to the principles of the science concerning nature;" in this also comprehending the conclusion.

sense;

sense ; and that which is universal is a certain whole, since it comprehends many things as parts. Names also, are after a certain manner thus affected with respect to definition : for they signify a certain whole, and this indefinitely ; as for instance, a circle :- but definition divides it into its several parts. Children also, at first, call all men fathers, and all women mothers ; but afterwards they distinguish each of these ².

CHAP.

² Aristotle having shown that a knowledge of physical principles is necessary to a scientific knowledge of physics, and afterwards passing to the doctrine concerning principles, in the first place defines the manner of this doctrine. For the enquiry is, if it be possible to know any thing concerning principles. For if every doctrine, and every dianoetic discipline originates from principles, and it is impossible to assume the principles of principles (since discipline would be impervious) ; this being the case, he unfolds to us the mode in which the knowledge of principles subsists. To show this, however, we must begin a little higher. Since every thing which is known is either credible from itself and the principle of knowledge, in consequence of being acknowledged by all men, such as are definitions, and immediate propositions (axioms) ; or is known from a certain pre-subsisting knowledge of definitions, and immediate propositions, such as are all things known through syllogism and demonstration ; this being the case, that the principles of natural things which are composites, are not self-credible, is evident from the different conceptions of physiologists, by whom different principles were adopted, as we shall learn. But being demonstrable, it is necessary that they should be demonstrated through certain things which are more known. For every doctrine and every dianoetic discipline, i. e. not produced from sense, nor according to intellect, but syllogistic and demonstrative, is produced from pre-subsisting knowledge, as we learn in the posterior analytics. But things more known are assumed either as the principles and causes of the things demonstrated (which happens in demonstrations properly so called, since these are produced from the principles and causes of the thing ; as when we syllogistically conclude that the world is beautiful, from its artificer being good, or the immortality of the soul, from its being self-motive ;) or they are assumed as things necessarily consequent to what is demonstrated, and hence, as together with this introducing themselves, they are assumed as more known ; as when we demonstrate that divinity is good, from the world being beautiful, and orderly arranged, this being more obvious to us according to sense ; and that the soul is immortal, from animated bodies being inwardly moved. And this mode of syllogism is rather conjectural, and not demonstrative. The things also which are assumed, in order to procure a credibility of this kind, are not the principles of the thing to be demonstrated, for they rather follow than precede it ; but they are the principles of a demonstration of this kind, because they are more known, and more previously manifest ; and belief in the thing to be demonstrated arises from these. It is necessary, therefore, that the principles of natural things, which are called principles as causes, should entirely be demonstrated from certain things which are more known, yet

CHAPTER II.

BUT it is necessary, that there should either be one principle or more than one: and if one, that it should either be immoveable, as Parmenides

yet not from such as have a more principal subsistence by nature, and the relation of causes, since these do not pertain to the physiologist. For it exceeds his province, to know the causes of his proper principles, and belongs to a superior science, or the first philosophy. For this demonstrates the principles of other sciences which are assumed as causes, and assumes for this purpose self-credible principles. It is possible, however, after a certain manner, from things consequent to principles, and from the composites themselves, no longer as from causes, but as from things more known, syllogistically to collect things pertaining to physical principles, not having a *scientific knowledge* of, but only *knowing* them. Hence, Aristotle does not say, "to know the principles *scientifically*," but "to *know* them;" because the knowledge of them is from things consequent. But things consequent to more principal and more elementary natures, are such as are composed from them, and wholes are consequent to parts. Composites likewise, and things confused, are more known to us than the things which compose them, and such as are simple. Hence, we know composites by sense, this knowledge being more obvious to the many; but simple things are naturally adapted to be apprehended by intellect. Thus we readily know an animal and a plant, and that this is a man, and that a horse, or that this is a fig, and that a vine. Merely, however, to know that these are composed from the four elements, is not to know them accurately; and to know in what manner the elements produce animal, and this particular animal, plant, and this particular plant, is alone the province of those who have arrived at the summit of philosophy. Thus also things ~~common and universal, in consequence of being more confused~~ and manifest knowledge, are more known to us than particulars. For it is easier to know that one who approaches from a distance, is an animal, than that he is a man, and that he is a man, than that he is Socrates. But universal is similar to whole, so far as it contains in itself a confused distinction of the many things which compose it, as parts in a whole. For the differences of the species of animal subsist indefinitely in animal. Universal, therefore, as a composite and confused is more known to us, and with relation to us is first according to knowledge; just as this universal is posterior* to nature, since it is generated after particulars. For things more simple are more manifest and known to nature, as being genuine and unmingled. Hence also the dialectic science is accustomed to consider what each particular thing is, philosophising in simple species, as proceeding together with the nature of things; according to which the more simple are more known and

* The universal of which Simplicius is now speaking, is obtained by an abstraction from particulars, and is, therefore, posterior to them. This universal, therefore, is very different from that which subsists *essentially* in the soul, and which is only excited into energy, and not produced by sensibles.

more

nides and Melissus^s say, or moved, as the natural philosophers assert, some of whom say, that the first principle is air, and others water. But if

more apparent than the more composite, and the genuine than the confused. But that the indefinite and confused, such as the whole appears to be, are more known to us, may be believed from hence, that every one receives a name as a certain whole, but delivers the definition of the name, as the distinct evolution of the parts and elements of the name. For it is evident that the knowledge of the circle, according to its name, is obvious to the many. But the definition of the circle, that it is a plain figure comprehended by one line, to which all lines falling from one point to the periphery of the circle are equal to each other; this definition is no longer obvious to all men. But this instance is properly adapted to that which is composite and a whole: for all the parts and elements in the definitions are contracted, and subsist confusedly in the name, as in one wholeness. It is not, however, adapted to universal: for universal accords with each of the things which give completion to it; since man is an animal, and also horse. But a name accords, indeed, with every thing contained in the definition, taken collectively, but no longer with each separately considered. For neither is *figure* a circle; nor *that which is comprehended under one line*; nor any thing else in which many parts of the definition are comprehended, unless it contains all of them together. Hence, Aristotle adduces a second example, that which is surveyed in the advancement according to age. For very young children, possessing as yet a gross and confused knowledge, call all men fathers, and all women mothers; but in the course of time they distinguish the confused into a proper particular, and thus obtain an accurate knowledge of their parents; hence we also, while our knowledge of things is obtained from attending to the grossness and confusion of sensible knowledge, are in no respect dissimilar to young children who call every man they meet with father; but when we arrive from things confused to such as are genuine, and from composites to things simple and elementary, then we shall approach near to science, as not only knowing things which are known by sense, but also those which are apprehended by reason; and not only composite effects, but also the causal elements of these. Such then is the whole meaning and order of what is said in the preface.

But it is here worth while to observe, in the first place, that the example of whole and composite, and not that of universal, is adapted to the things before us. For universal is not composed of particulars as elements, in the same manner as whole and composite; since no element receives the predication of composite, in the same manner as particulars of universal. In the second place, it deserves to be remarked, that the knowledge of whole and universal is two-fold, in the same manner as of name. The one general and confused, and subsisting according to a slender conception of the thing known, and which is also more gross than the knowledge according to definition. But the other is contracted and united, and comprehends in itself particulars, being a certain intellectual and simple perception, while the former is rather phantastic, and not united and contracted. And the one, indeed, viz. the gross and confused, is familiar to many; but the other to those who have arrived at the summit of philosophy. For the vulgar form a conception of universal from that which is common in particulars, receiving a slender peculiarity of it from ablation; this peculiarity rather shining forth to the view, through having dominion over the communion

if there are more principles than one, it is necessary that they should be either finite or infinite. And if finite, and more than one, that they should

communion of different things. But the highest kind of philosophers intellectually contract its whole comprehension of particulars, its permeating through all things, and its communion, which embraces things of a different nature. Hence, on hearing the name of man, for instance, the multitude are led to a confused imagination; but the philosopher contracts the definition in one simplicity, so as to conceive the united multitude of the definition, and receive at the same time multitude and the one; which Socrates, in the *Theætetus*, obscurely signifies to be the peculiarity of science. But the knowledge according to definition, and that which proceeds through the elements, is a certain middle between both these, being rather dianoetic than doxastic, and surpassing the inferior in accuracy, but falling short of the superior in consequence of its distribution into multitude. Thus also with respect to the knowledge of things common, that knowledge which is general and confused runs before the distinction according to differences; but the accurate succeeds, contracting the differences in that which is common. When, therefore, Aristotle calls the knowledge of things common, first with respect to us, but posterior to nature, he speaks of this confused and slender knowledge, produced by an ablation of that which is common, and which cannot subsist by itself.

In the third place, it is worth while for those who would know the principles and causes of physics, to observe what the nature is of the knowledge which is conversant with physical concerns. But we discover these from things composite and confused, which is not to know accurately, nor does it belong to causes which are accurately known. It is evident, therefore, that the knowledge concerning principles is conjectural and not demonstrative; and Plato very properly says, that physiology is conjectural, or founded in probability; with whom Aristotle also accords, since he conceives that demonstration, properly so called, is from immediate and self-credible principles which are prior by nature. Physiology, however, is not on this account to be despised; but it is proper to be satisfied with that which is accommodated to our ~~use~~ and power, as also appeared to be the case to Theophrastus.

In the fourth place, in addition to what has been said, it is worth while to enquire how Aristotle says, that things common are more manifest as with relation to us, but more immanifest to nature; for if they are more immanifest to nature, they are also more remote from and posterior to nature, though things common, at the same time take away, but are not at the same time taken away, which we say characterizes things prior to nature. Alexander Aphrodisiensis, indeed, acknowledges that what is common and universal is by nature prior to that which is under it, as animal is naturally prior to man, in consequence of at the same time taking away, and not at the same time being taken away; and this, indeed, Alexander says sufficiently. But having said, that universal is prior to nature, he adds, that it is not, however, properly prior, because neither is it essence; and that on this account the knowledge of any thing through what is common, is posterior to that which is acquired through what is peculiar, since things that are first in every thing manifest its peculiar nature. Some one, however, may wonder how that which is first to nature is not properly first? Whether or no, therefore, as Aristotle says, that the

should be either two, or three, or four, or some other number. But if infinite, it is requisite that either they should be, as Democritus asserts, one

the elements and parts of a whole and a composite are prior to nature (for he calls composites first to us, as being confused and apprehended by sense), in like manner he considers things common of posterior origin, and which subsist by ablation, or abstraction from particulars, which do not properly co-subvert particulars, being assumed as slender peculiarities, and not as comprehensions of particulars.

In the last place, Simplicius observes, it is worth while to enquire, since Aristotle says it is proper to recur from things common and composite, and prior to us, to the principles of physical concerns, what these things which are common, and also what those which are prior to nature, are. And in answer to this he says, that we discover the principles of physical things, from whatever in these things is clear and known to sense, as is also the opinion of Aristotle. For instance, that there is not one principle of things only, we collect from the diversity of beings, as we shall hereafter learn. For if, says Aristotle, there are substance or essence, quantity and quality in beings, and these, whether they are separated from each other or not, beings are many. We shall, however, shortly learn the accuracy of what is now said. But that principles are not immoveable is evinced by the manifest motion of physical things; and it is also evident from induction. That principles are contraries, we collect from the concord of natural philosophers about this; and that the principles are form, privation, and a certain subject, is shown from the mutation in physical concerns. And in short the truth about physical principles must be investigated from the senses and sensibles.

³ It follows in the next place, to enquire if there are principles of natural things, and then what and how many they are. For this is the order of problems, which is delivered by Aristotle, in his books of Demonstration*. But that there are principles of physical things, all natural philosophers accord in asserting, though they investigate what they are. For those who make being the object of their investigation, say, that they enquire concerning the principle of being; since those who philosophize concerning principles, investigate them as the principles of being. And some, indeed, indefinitely, not distinguishing natural things from such as are above nature. But others distinguish them, as the Pythagoreans, Xenophanes, Parmenides, Empedocles, and Anaxagoras, but through their obscurity cause the multitude to be ignorant of this. Hence, *Aristotle contradicts them as regarding their apparent meaning, giving assistance, by so doing, to those who superficially understand their assertions.* At the same time likewise that he shows there are such and so many principles, he demonstrates that there are principles. As, therefore, there are principles, Aristotle having shown that the knowledge concerning principles is necessary, and having delivered the mode of proceeding to them, he conceives it to be reasonable, not to unfold his own opinion about them, till he has considered the opinions of the ancients; hence, assuming a divisive axiom, that there is either one principle, or many principles. For through the axiom of contradiction, it is necessary either that there should be one or not one; but if not one, that there should be many; and if one, says

* viz. In his Posterior Analytics.

one in genus, but different in figure or species, or also contraries. In a similar manner likewise they enquire, who investigate the number of

he, it is again necessary that this one should either be immovable or moved. He afterwards subjoins to the members of the division, the opinions which are to be previously discussed. For there is either one immovable principle, as Parmenides and Melissus appear to say, or one moveable principle, as the natural philosophers assert. But if there are many principles, they are either finite, or infinite in number: And if they are finite, they are either two or three, or some other definite number. But if infinite, they are either homogeneous, or of opposite genera. As, however, it is possible, with respect to those who assert that there is one principle, to divide them into those who say it is infinite, and into those who say it is finite, and as it is also possible to divide the many principles into the moved or immovable, Alexander says, that Aristotle subjoins to each part of the division that which is more appropriate. But it is more appropriate to one principle to be moved or not; and to many principles to be finite or infinite.

Comprehending, however, all the opinions of the ancient philosophers, from a more perfect division, we may thus accede to the meaning of Aristotle. It is necessary, therefore, that there should either be one principle, or not one, i. e. more than one. And if one, that it should either be immovable or moved. And if immovable, that it should either be infinite, as Melissus the Samian, appears to say; or finite, as Parmenides the Elean, seems to assert; these philosophers not speaking about a physical element, but about true being. But Theophrastus says, that Xenophanes the Colophonian, the preceptor of Parmenides, asserted, that there is one principle, or in other words, the one which is being* and all, and is neither finite nor infinite, neither moved nor at rest; Theophrastus at the same time acknowledging, that the recording this opinion belongs rather to another narration than that concerning nature. For Xenophanes says, that this one and all is the divinity, whom he shows to be one, from his being the most powerful of all things. For, says he, since beings are many, it is in like manner necessary that there should be a ruler over all. ~~But the most powerful and best of all things is God. He likewise shows that this one is~~ unbegotten, from the necessity of that which is generated, being generated either from the similar or the dissimilar. But the similar, says he, is not passive to the similar; because it no more belongs to the similar to generate, than to be generated by the similar. And if it were generated from the dissimilar, being would be from non-being. And thus he demonstrates that it is unbegotten and eternal. He likewise shows that it is neither infinite nor finite. For it is not infinite, because it has neither beginning, nor middle, nor end; nor finite, because it is the many which mutually bound each other. In like manner, also, he takes away from it motion and rest. For he says, that non-being is immovable, because neither can any thing else approach to it, nor it to any thing else; and it is the many that are moved, for one thing changes into another. So that when he says, it abides in the same, and is not moved, but nothing which is moved abides in the same, and that it does not proceed, since if it did it would be differently moved at different times, he does not say that it abides according to the rest which is opposed to motion, but accord-

* viz. The summit of the intelligible order. See the Introduction and Notes to my translation of the Parmenides of Plato.

ing

of beings : for they enquire in the first place, whether the things from which beings consist, are one or many ; and if many, whether they are finite

ing to that which is exempt from motion and rest. But Nicolaus Damascenus, in his treatise concerning the Gods, relates that Xenophanes asserted the one principle to be infinite and immoveable ; but Alexander says, that he celebrated it as finite and spherical. However, that he demonstrated it to be neither infinite nor finite, is evident from what has been said. But he asserted it to be finite and spherical, through its being on all sides similar. He likewise affirms that it understands all things ; for he says,

All things with mind it shakes, from mental toil
Remote,——

But of those who say that there is one immoveable principle, whom Aristotle calls properly natural philosophers, some say that it is finite, as Thales the Milesian, and Hippon, who appears to have been an atheist ; and call the principle water, being led to this from the sensible phenomena. For the hot lives by the moist, and things which are about to perish become dry. The seeds likewise of all things are moist ; and all aliment is juicy. But that from which a thing derives its being, from this it is naturally adapted to be nourished : and water is the principle of a moist nature, and is connective of all things ; on which account they apprehended water to be the principle of all things, and affirmed that the earth is situated under water. But Thales is said to have been the first who unfolded to the Greeks the history of nature ; and though, as it appears to Theophrastus, there were many others prior to him, yet he very much differed from them, and eclipsed all his predecessors. He is said, however, to have left nothing in writing, except what is called his Nautical Astrology. Hippasus the Metapontine, and Heraclitus the Ephesian, admitted that there is one moveable and finite principle, but they said that it is fire ; and they asserted that all things are from fire, through the assistance of rarity and density. They also again dissolved all things into fire, as if this were the very subject nature of things. For they said, that there is a vicissitude of fire. But Heraclitus made all things to subsist, together with a certain order and definite time of the mutation of the world, according to a certain fatal necessity. And these philosophers, indeed, from surveying the vivific, demiurgic, digestive, universally pervading and alterative nature of heat, entertained this opinion. Hence, conformably to this opinion, they did not admit this principle to be infinite. Again, if an element is the least from which other things are generated, and into which they are resolved, but fire is the most attenuated and subtle of other things, this will be especially an element. And these, indeed, are those who asserted that there is one moveable and finite element of things.

But of those who say that there is one moveable and infinite principle, Anaximander the Milesian, the son of Praxiades, and who was the successor and disciple of Thales, said, that the infinite is the principle and element of beings ; he being the first who introduced this name of principle. But he says, that it is neither water, nor any other of those that are called elements, but another certain infinite nature, from which all the heavens, and all the worlds they contain, are produced.

finite or infinite. So that they enquire, with respect to principle and element, whether they are one or many. To consider, therefore, whether

He also said, that into those things from which beings are generated, beings ought also to be corrupted. For employing more poetic language, he says, that alternate generations and corruptions are assigned to some things, and that punishment is inflicted on injustice according to the order of time. But it is evident, that he, surveying the mutation of the four elements into each other, did not think fit to make one of these the subject of things, but something else besides these. He, therefore, did not conceive that generation is effected from the alteration of the elements, but from the separation of contraries, through an eternal motion. On which account also Aristotle ranks him among the followers of Anaxagoras. But Anaximenes the Milesian, the son of Euristrates, and who was the associate of Anaximander, says, that there is one infinite subject-nature, in the same manner as Anaximander, yet not indefinite, as he said it was, but definite, and which he calls air. He also asserts, that things differ in rarity and density according to their essences; and that when this subject-nature is divided, fire is generated; but when it is condensed, wind; afterwards a cloud; when still more condensed, water; afterwards earth, and afterwards stones. But he says that other things are produced from these. He likewise makes motion to be perpetual, through which also mutation is produced. And Diogenes Apoloniates, indeed, who was nearly the most recent of those who applied themselves to these speculations, wrote many useful things, sometimes speaking according to the doctrine of Anaxagoras, and at other times according to that of Leucippus. He also says, that the nature of the universe is air, and that it is infinite and perpetual; from which being condensed and rarified, and changing its qualities, the form of other things is produced. And these things, indeed, Theophrastus relates concerning Diogenes. One of his writings also came into my hands, inscribed 'Concerning Nature,' in which he clearly says, that air is that from which all things are generated. Nicolaus, moreover, relates that he adopted an element between fire and air. And these philosophers, indeed, conceived that the easily passive and alterative nature of air is adapted to mutation. Hence they did not think fit to admit earth as a principle, because it is with difficulty moved and changed. And thus are those divided who said that there is one principle only.

But of those who said that there are many principles, some asserted that the principles are finite, and others that they are infinite in number. And of those who contended that they are finite, some said they are two; as Parmenides, in his writings according to opinion, viz. fire and earth, or rather light and darkness; or, as the Stoics say, God and matter; not indeed calling God a principle as an element, but as that which is effective, and matter as that which is passive. But some, as Aristotle, said that there are three principles, matter, and the contraries (form and privation). According to others, as Empedocles the Agrigentine, there are four, who was not much posterior in time to Anaxagoras, and was allied to and emulous of Parmenides, and still more of the Pythagoreans. But he made four corporeal elements, fire and air, water and earth; which are, indeed, perpetual in multitude and paucity, but are changed according to mixture and separation: and he asserted, that the proper principles by which these are moved, are friendship and strife. For it is necessary that elements which are moved should be alternately disposed, at
one

whether being is one and immoveable, does not belong to the speculation concerning nature. For just as a geometrician can no longer discourse

one time being mingled by friendship, and at another, separated by strife. So that according to him there are six principles. For he gives a productive power to friendship and strife, when he says :

By friendship's aid, we sometimes into one
All things collect ; and sometimes strife detains
All things apart, discordant borne along.

He also then arranges these two as co-ordinate to the four elements, when he says :

Oft many things to one their being owe,
Fire, water, earth, and air immensely high ;
And each with equal power is found endued,
When strife pernicious is from each apart,
And friendship equalised in length and breadth.

And Plato, indeed, establishes three principles properly so called ; viz. that which produces, the paradigm, and the end ; and also three con-causes, matter, form, and the instrument. But Theophrastus, after having given the history of other philosophers, says, that Plato succeeded these, being prior to them in renown and ability, but posterior in time ; and that though he for the most part directed his attention to the first philosophy, yet he also gave himself to the phenomena, and slightly meddled with the history of nature ; in which he wished to introduce two principles, the one a subject, as matter, which he denominates the universal recipient, and the other a cause and mover, which he suspends from a divine nature, and the power of the good. And some, indeed, have extended principles as far as to the decad, though not elementary principles. Thus the Pythagoreans said, that numbers from the unad, as far as to the decad, are the principles of all things, or the ten co-ordinations* which different persons have differently described. And after this manner are those divided, who said that principles are many and finite in multitude.

But of those who said that they are infinite in multitude, some asserted that they are simple, not homogeneous, and contraries, but characterized by that which predominates. For Anaxagoras, indeed, the Clazomenian, the son of Egesibulus, and who was a partaker of the philosophy of Anaximenes, first transmuted the opinions concerning principles, and supplied the deficient cause, making the corporeal principles to be infinite. For he said, that all those things which have similar parts, such as water, or fire, or gold, are unbegotten and incorruptible ; and that

* These ten co-ordinations, according to Aristotle, in the first book of his *Metaphysics*, are as follow : Bound, the infinite ; the odd, the even ; the one, multitude ; right hand, left hand ; the masculine, the feminine ; the quiescent, that which is in motion ; the straight, the curved ; light, darkness ; good, evil ; the square, the oblong.

they

discourse with him who subverts the principles⁴ of geometry, but this is either the province of another science, or of that which is common to

they appear to be generated and corrupted through mixture and separation alone; all things, indeed, being in all, but each being characterized by that in it which predominates. For according to him, that appears to be gold in which there is much of a golden nature, though all things are inherent in it. Anaxagoras, therefore, says, that in every thing there is a part of every thing; and this, Theophrastus observes, Anaxagoras says conformably to Anaximander. For he says, that things of a kindred nature tend to each other in the separation of the infinite; and that gold was generated from a separation of the gold which was in the universe, earth by a separation of earth; and in like manner each of the rest, as not being generated, but having had a prior subsistence. Anaxagoras also asserted, that intellect is the cause of the motion and generation of things, by which, being separated, they generated the worlds, and the nature of other things. Whence, says Theophrastus, if the assertions of Anaxagoras are thus considered, he may appear to have made infinite material principles, and that there is one cause, viz. intellect, of motion and generation. But if any one should apprehend that the mixture of all things is one nature, indefinite both according to form and according to magnitude, it will happen that, he says, there are two principles, the nature of the infinite, and intellect. So that he appears to have introduced corporeal elements similar to Anaximander.

But Archelaus the Athenian, with whom also they say Socrates associated, having been the disciple of Anaxagoras, in his treatise on the generation of the world, and in his other writings, endeavoured to introduce some peculiar doctrine of his own. He admitted, however, the same principles as Anaxagoras. These philosophers, therefore, say, that principles are infinite in multitude, and of dissimilar genera; at the same time asserting that they consist of similar parts; but through what cause they were of this opinion, Aristotle will shortly inform us. For denying that there is generation, because that which is generated must necessarily be generated either from being or from non-being, and each of these being impossible, they ascribed apparent generation and corruption to mixture and separation. ~~But Leucippus the Milesian, or the DEMETRIAN, for he is said to be either of these, having been a partaker of the philosophy of Parmenides, did not proceed in the same way with Parmenides and Xenophanes concerning beings, but, as it seems, in a contrary path; for they made the universe to be one, immovable, unbegotten and finite, and did not even admit the investigation of non-being; but he asserted that the elements of things, viz. atoms, are infinite, and always moved, and that there is an infinite multitude of figures in them, because, without figure, nothing is this more than that; surveying this never-failing generation and mutation in beings. He also asserted, that being had not more a subsistence than non-being, and that both are similarly causes to generated natures. For having adopted the hypothesis, that the essence of atoms is the solid and the full, he said this is being, and that it is moved in a vacuum, which he called non-being, and which he says is not inferior to being. In a similar manner also, his associate Democritus the Abderite, established as principles the full and the void; one of which he calls being, and the other non-being.~~ For considering atoms as matter to beings, they generate

rate

to all the sciences; so neither can he who speculates concerning physical principles, discourse with him who denies those principles. For there

rate other things from the differences of these; and these are three, *rhythmos*, *trope*, and *diastibe*, viz. *figure*, *order*, and *position*. For, say they, the similar is naturally adapted to be moved by the similar, and kindred beings naturally tend to each other. Each of the figures likewise being arranged into a different mixture, produces a different disposition. So that since the principles are infinite, they very properly declare that they can assign all qualities and essences, together with that from which and how they are produced. Hence they say, that all things happen according to reason, to those alone who admit that there are infinite elements, and who say, that the multitude of figures in the atoms is infinite, because without figure nothing is more than that; for they assign this as the cause of infinity. Metrodorus also, the Chian, nearly adopted the same principles as the followers of Democritus, asserting, that the full and the void are the first causes of things, of which the former is being, but the latter non-being; but about other things he introduced a method peculiar to himself. Such then is the concise account of what is handed down to us by history concerning principles, not written, indeed, according to time, but according to the agreement of opinion. It is not, however, fit to think, on hearing these differences, that they are the contradictions of those who philosophized, which some meeting with merely historical writings, and understanding nothing which they relate, endeavour to defame; though they are themselves divided by an infinity of dissensions, not about physical principles, for of these they have not even a dreaming perception, but about the subversion of the divine transcendency*.

It may not perhaps, however, be improper digressing a little, to show the more studious how the antients, though they appear to differ in their opinions concerning principles, yet at the same time harmoniously agree. For some of them spoke concerning the intelligible and first principle, as Xenophanes, Parmenides, and Melissus. And Xenophanes, indeed, and Parmenides, called it one and finite: for it is necessary that the one should subsist prior to multitude; that the cause of bound and termination to all things, should rather be defined according to bound than infinity; and that the every way perfect, and which has received its proper end, should be finite; or rather that it should be the end and principle of all things: for the imperfect being indigent, has not yet received termination. Except, indeed, that Xenophanes considers this principle as the cause of all things, as transcending all things, and as beyond all motion and rest, and opposite arrangement, in the same manner as Plato in the first hypothesis of his Parmenides. But Parmenides beholding this principle as subsisting according to sameness, and in a similar manner, and as beyond all mutation, and perhaps energy and power, celebrated it as immoveable and alone, as being exempt from all things, as when he says:

The one immoveable has every name.

* Simplicius, in what he here says, alludes to the Christians, and most probably to their disputes about the Trinity.

Melissus

there is no longer a principle, if there is only one thing, and if it is thus one *. For principle is either the principle of a certain thing, or of a certain

Melissus too, in a similar manner, surveyed the immutable, but asserted that it was infinite, as well as unbegotten, according to never-failing essence, and infinite power. But this is evident from his demonstration concerning the infinite, which is framed according to the following conception. For he says, "Since, therefore, it was not generated, it is, and always was, and will be; and has neither beginning nor end, but is infinite. For if it were generated, it would have a beginning; since that which was once generated must have a beginning and an end. For it will die. But since it neither began to be, nor will die, but always was, it has neither beginning nor end, but is infinite." Thus, therefore, Melissus looking to that which according to time is without beginning and end, and perpetual being, asserts that this principle is infinite. Parmenides also testifies a thing of this kind concerning it, when he says, in nearly the same words :

Being is unproduced, without decay,
Unshaken, single, whole, without an end.
Nor once it was, nor will hereafter be,
Since it is now one simultaneous all.

After this manner, therefore, he says that it is never-failing, unbegotten, and infinite. But he manifests the conception of bound by the following verses :

Same in the same, and by itself abides,
So firm it there remains, held in the bonds
Of bound, by strong necessity, on every side.
Unlawful hence, that being without bound
Should e'er remain; for want it never knows.
~~But to non-being perfect want belongs.~~

For if it is being, and not non-being, it is unindigent; but being unindigent it is perfect; and being perfect, it has an end, and is not unfinished. But having an end, it possesses bound and limitation. Thus, therefore, according to the conception of these men, there is no contrariety in their assertions concerning this principle.

But Parmenides passing from intelligibles to sensibles, or, as he says, from truth to opinion, in the following verses :

Here about truth firm thoughts and reasonings' end;
Opinions human now attentive learn,
Clothed in fallacious ornament of words.

* i. e. If it is immovable: for if immovable, it is not a physical principle.

a certain number of things. To consider, therefore, in this manner, whether there is one principle resembles a discourse against any thesis whatever,

He established as the first elementary principles of generated natures, the first opposition, which he calls light and darkness, fire and earth, or the dense and the rare, or same and different, as is evident from the verses which follow those just recited :

Names they to forms from two opinions give,
 Improper one, in which they wander wide.
 Opposing natures separate they rank'd,
 Body and signals, each from each apart.
 Hence, in one class, ethereal flaming fire,
 Mild, rare, and light, and like itself throughout
 They rang'd; but in the class oppos'd to this,
 A nature wholly contrary they plac'd,
 Body nocturnal, gravitating, dense.

The meaning of Parmenides in these verses appears to be in prose as follows : In the one series, there is the rare and the hot, the luminous, the soft, and the light ; but in the dense are denominated the cold and the dark, the hard and the heavy : for, in these, each is separated from the other. After this manner, therefore, he plainly assumes two elements opposed to each other. Hence, prior to this he separates the *one being*, and says, that they err who do not perceive the opposition of the elements which compose generation, or who do not clearly unfold it. And Aristotle, following Parmenides, establishes the principles of things to be contraries. Parmenides also clearly delivers the producing cause, not only of the bodies which are in generation, but also of the incorporeal natures which give completion to generation, when he says :

But these to night belong ; resplendent fate
 Succeeds ; and in the midst the power divine
 Who governs all ; for he of hateful births
 And copulation is the source. He sends
 The female with the male to mix ; and then
 The male again, the female to embrace.

Empedocles also teaching us concerning the intelligible and the sensible world, and establishing the former as the archetypal paradigm of the latter, places in each, as principles and elements, these four : fire, air, earth and water ; and as producing causes, friendship and strife : except that things in the intelligible world, being vanquished by intelligible union, are said to be rather collected together by friendship ; but things in the sensible world to be rather separated by strife. And with him Plato accords, or, prior to Plato, Timæus, who says, that in the first intelligible paradigm, four ideas pre-subsist, characterized from the four elements, and producing this sensible world, distributed into four parts, among the last of things ; strife here having
 D dominion,

whatever, which is advanced for the sake of argument; such as against the Heraclitean thesis; or if any one should say that being is

dominion, through a separation, departing from intelligible union. Empedocles also speaks in common about both worlds, except that placing the elements in the ratio of matter, he surveys about them the contrariety of friendship and strife. For that friendship alone did not, as the vulgar think, produce, according to Empedocles, the intelligible world, nor strife alone the sensible world; but that he surveyed both every where, in an appropriate manner, is evident from what he says in his Physics, in which he asserts that Venus, or friendship, is the cause of the mixture which is here. But he calls fire, Vulcan, the sun, and flame; but water he calls rain; and air, æther. And he says these things, indeed, in many places, and also in the following verses:

All-shining æther, Vulcan, showers of rain,
Earth above all things, equally obtains,
Establish'd in fair Venus' perfect ports;
Whether the small to great, or more to less is chang'd,
Blood, and the forms of other flesh from these were made.

And prior to these verses, he delivers in others the energy of both these in the same things, as follows:

When at the bottom of the whirlpool deep
Strife had arriv'd, and Love was in the midst,
All things in this were gather'd into one;
And from their mixture countless mortal tribes
Arose, tho' many things unmingled stood,
Which strife in durance had detain'd on high.
For to the utmost limits of the orb.
Not without blame, the universe withdrew.
But of its members some remain'd within,
And some departed from the mingled whole.
Whate'er too Strife's victorious force destroy'd,
This blameless Love with all-propitious aid,
Immortal impulse! constantly restor'd.
Then instant mortal natures that before
Had learnt to be immortal, sprung to light.
Unmingled once and pure, they chang'd their paths;
And from their mixture countless mortal tribes
Arose, of forms all-various wond'rous to the view.

In these verses, he clearly says, that mortal natures were harmonized from friendship; and that in those in which friendship has dominion, strife was not yet perfectly exterminated. In those verses

is one man. It also resembles the solution of the litigious argument which the assertions both of Melissus and Parmenides contain: for they

verses also, in which he clearly delivers the marks or tokens by which the four elements are known, as likewise friendship and strife, he indicates the mixture of these two in all things. But the verses are as follow:

Dark and tremendous rain in all is seen *,
 But trees and solids from the earth are pour'd.
 In wrath, all biform'd natures separate lie,
 But in love mingling, for each other burn.
 From these what was, is, will be, is deriv'd:
 From these trees blossom, men and women spring,
 Beasts, birds, and fishes that in water live,
 And long-liv'd gods, transcendently renown'd.

And again, shortly after, he adds:

In part they govern the revolving orb,
 Into each other perish, and by turns
 Of fate increase; for such their nature is.
 But thro' each other when again they run,
 Then men arise, and countless ills beside.
 Into one world they now together come
 Thro' friendship; each divided borne along
 Is now by strife subdu'd. And while these two
 Connascent are, the whole beneath, is born.
 Alternate hence, from many one is form'd,
 And many to perfection rise from one.
 Hence as begotten, not to these belongs
 Stable eternity; tho' chang'd howe'er throughout,
 Yet since the change is endless, they remain
 Immoveable in one eternal orb.

So that the subsistence of one thing from many, which happens through friendship, and of many from one, which is effected by the domination of strife, Empedocles also surveys in this sublunary world, in which mortal natures exist according to periods which are different at different times; at one time strife, and at another time friendship having dominion. Perhaps too, he delivers a certain procession of the union and separation of beings, obscurely signifying the many dif-

* There are two lines prior to this in the original; but in their present state they are not intelligible: for this reason I have not attempted to translate them.

they assume that which is false, and are^s unsyllogistic. But the argument of Melissus is more troublesome, and is not the subject of doubt.

One

ferences of the intelligible above this sensible world, according to the more and less domination of friendship; and in the sensible world shows the differences of the dominion of strife comprehended in certain bounds, as in other parts of his poem he endeavours to demonstrate; except that he also does not assert any thing contrary to Parmenides and Melissus, but as well as Parmenides surveyed the elementary opposition. Parmenides also admitted that there is one common efficient cause of all generation, which is established in the midst of all things, and which cause is a divine power; but Empedocles surveyed the opposition in the efficient causes.

But Anaxagoras the Clazomenian, appears to have surveyed the triple difference of all forms, one, contracted in intelligible union, as when he says, "All things were together infinite, both in multitude and smallness." And again, "Before these were separated, all things subsisting together, no one colour was apparent. For the mixture of all things prevented this, viz. of the moist and the dry, the hot and the cold, the splendid and the dark, being abundantly inherent, together with seeds infinite in multitude, none of which resembled each other. But things thus subsisting, it is necessary that all things in the universe should appear to be one." This *universe*, therefore, or *all* of Anaxagoras, will be *the one being* of Parmenides. But Anaxagoras appears to have surveyed another difference, distinguished according to intellectual separation, to which the difference in the sensible world is assimilated: for a little after the beginning of his first book Concerning Nature, he says as follows: "Things thus subsisting, it is necessary that many and all-various things should appear to be one in all things which are collected together. Likewise, that there should be the seeds of all things, possessing all-various ideas, colours, and pleasures. Also that men, and such other animals as possess a soul, should be mingled with each other; together with cities inhabited by men, and works such as are among us. Likewise, that the inhabitants there should have a sun and moon, and whatever else we possess; and that the earth should produce for them many and all-various things, which they necessarily employ to the useful purposes of their habitation." And thus much I have said concerning the separation of things, because not only the things which are with us are separated according to Anaxagoras, but also others. Perhaps, indeed, he may appear to some not to compare the separation which is in generation with that which is intellectual, but to contrast our habitation with other places of the earth. If this, however, were the case, he would not have said concerning other places, that they had a sun and moon, and other things such as are with us; nor that they had seeds there, and the ideas of all things. Let us also hear what he says a little after, when he makes a comparison of both: "Thus, therefore, departing and being separated by force and swiftness; swiftness produces force. But their swiftness does not resemble the swiftness of any thing which is now among men, but is entirely multifariously swift." If, therefore, Anaxagoras had this conception, he says, that all things are in all; in one way according to intelligible union; but in another according to intellectual connexion; and in another according to sensible conspiracy, and generation from the same, and analysis into the same.

Again,

One absurdity, however, being admitted, other things happen as the consequence; but this is attended with no ⁶ difficulty. We, indeed, suppose,

Again, Leucippus, Democritus, and the Pythagoric Timæus, are not adverse to the dogma, that the four elements are the principles of composite bodies. And they, as well as the Pythagoreans, Plato and Aristotle, surveying the mutations of fire, air, water, and perhaps of earth also, into each other, investigated certain more principal and simple causes of these, through which also they defended the difference of these elements according to qualities. Thus, indeed, Timæus, and Plato according with him, consider superficies possessing a certain depth, and differences of figures, as the first elements of the four elements, and are of opinion that a corporeal nature, in conjunction with corporeal figures, has a more principal subsistence, and is the cause of the differences of qualities. But Leucippus and Democritus, calling the least first bodies atoms, were of opinion they differed according to the difference of figure, position, and order; and they denominated those bodies hot and fiery, which are composed from more acute and attenuated first bodies, and situated in a similar position. But they said, that those bodies were cold and watery which are composed from first bodies contrary to those just mentioned; and also that some of these atoms are splendid and luminous, but others obscure and dark.

With respect to such also as asserted that there is one element of things, as Thales, Anaximander, and Heraclitus, each of these directed his attention to the efficacious nature, and aptitude to generation of this element. Thales, indeed, to the prolific, nutritive, connective, vital, and easily-to-be-fashioned nature of water; but Heraclitus to the vivific and demiurgic nature of fire; and Anaximenes to the plastic nature of air, and its easily receding on both sides, viz. to fire and to water. Just as Anaximander also directed his attention to a middle element, through its being easily susceptible of mutation. Thus, therefore, some looking to the intelligible, but others to the sensible order; some investigating the proximate elements of bodies, and others those which have more the relation of a principle; some considering that which is more partial, and others that which is more total in an elementary nature; and some investigating elements alone, but others all causes and con-causes, assert *different* things in physiologizing, but not such as are *contrary*, to him who is able to judge. Aristotle himself also, who seems to have indicated their dissonance, says, a little farther on, that they differ from each other, because some assume prior, and others posterior principles; some, things more known according to reason, and others, according to sense. So that, says he, in a certain respect their assertions are the same with, and different from each other. But I have been compelled to be thus prolix, on account of those who are readily disposed to object to the ancients a disagreement in their opinions.

Since, however, we shall hear Aristotle confuting the opinions of the more ancient philosophers, and, prior to Aristotle, Plato appears to have done this, and still prior to both these, Parmenides and Xenophanes, it must be observed that they, directing their attention to superficial readers, confute the apparent absurdity in the assertions of those philosophers, *it being usual with the ancients to exhibit their opinions enigmatically*. Plato evinces the truth of this, by so much admiring Parmenides, whom he seems to confute, and when he says that his conceptions require a profound

suppose, that with respect to things which have a natural subsistence, either all or some of them are moved. And this is manifest from induction.

a profound diver*. Aristotle also appears to have suspected the profundity of his wisdom, when he says Parmenides seems to have seen this. Hence Plato and Aristotle, at one time supplying what the ancients have omitted, and at another time rendering conspicuous what they obscurely assert; at one time separating what is said of intelligibles, as not being able to adapt it to physics, as when the ancients call being one and immoveable, and at another time repressing the easy interpretations of the more superficial, thus appear to confute them. This also we shall endeavour to observe in commenting on the objections of Aristotle to the assertions of the ancients.

* With respect to the principles of every art and science, some are self-credible, and on this account are known by the sciences of which they are principles, such, for instance, as the common conceptions, as they are called, and definitions in geometry; for these are indemonstrable. Hence demonstrations, properly so denominated, are from definitions, as from immediate propositions; but others are as it were from hypothesis, such as are the subsistences (hypostases) of definitions. For that a point brings with it the conception of something impartible, and a line, of a length without breadth, are self-credible assertions. But that there is entirely something impartible in partible natures, and something without breadth in things which have breadth, this the geometrician assumes as a principle, but does not demonstrate it. The first philosopher, however, i. e. the metaphysician, demonstrates it from self-credible and indemonstrable principles; and he, according to Plato, is the † dialectician. But the dialectician, according to Aristotle, is one who syllogizes about every proposed problem, from subjects of opinion, and first uses principles founded in opinion. Aristotle, in his topics, shows that this method is useful to the philosophic sciences: for being investigative, says he, it leads the way to the principles of all the sciences. Thus the dialectician will show that a point is without parts, and that a line is a length without breadth, by assuming this common axiom, that body is triply divisible, and also that every thing which bounds, is less by one interval than that which is bounded.

Thus then, we shall neither proceed to infinity by admitting principles prior to principles, for we shall arrive at self-credible and indemonstrable principles, nor will he possess the science of principles, who merely possesses the science of which they are the principles, since science is a demonstrative syllogism, and syllogism is from known principles. But the principles of one science are known scientifically by another, because it demonstrates them from self-credible and indemonstrable principles. So that it will not be the province of the physiologist or natural philosopher to discourse with those who subvert physical principles: for he must either discourse, as we have said, from prior principles, and no longer as a natural philosopher; or from posterior

* See the *Theætetus* of Plato.

† See the *Introduction and Notes* to my translation of the *Parmenides* of Plato, for an ample account of the dialectic of Plato.

principles,

duction. At the same time, however, it is not proper to solve all the arguments, but those only, in which some one, demonstrating from principles,

principles, and thus he will beg the existence of the principles, since things posterior will demonstrate the things from which they consist: for if principles are not, neither will things posterior to principles have a subsistence. On which account, as Alexander says, Aristotle himself, when he speaks against those who assert that being is one and immoveable, and who subvert physical principles, does not speak as a physiologist, but as a philosopher. But may we not say, that it is impossible for the physiologist to contradict scientifically those that subvert physical principles, so far as they subvert them, but that he may scientifically contradict them as from the principles of the thing? For so far as he is a physiologist, he has no knowledge of other principles which are superior to the physical; but he may demonstrate them from the principles of demonstration. But the principles of demonstration are things manifest from the evidence of sense, from particulars, and, in short, induction. Aristotle, therefore, in replying to those who assert that being is one, shows that there is essence or substance, quantity and quality, in beings, and that these are not one. But in answer to those who say that being is immoveable, he observes, "it is supposed by us that of things which have a natural subsistence, either some, or all of them, are moved;" and this is evident from induction. So that the physiologist is not destitute of all argument, against those who subvert physical principles: for he is not destitute of that argument which is derived from the principles of demonstration, but of that which is derived from the principles of principles.

⁵ There are many modes of assertions, which it is not proper he should contradict who discourses philosophically and legally: for neither should he oppose those who subvert the principles of the things which are the subject-matter to those with whom he discourses, nor those who assert things paradoxical and obscure: for such is the position of Heraclitus, who says, that good and evil unite in the same thing, like the stretching of a bow and a lyre; who also appears to have called this a position, because he thus speaks indefinitely. But he indicates the harmonious mixture of contraries in generation, as is evident from what Plato says in the Sophista, where he mentions the opinion of Heraclitus, to which also he adds that of Empedocles.

In short, each of those who introduce false opinions, either preserves the principles of the things which are the subject of his opinion (and if he does this, it is necessary that physiologists should contend against him), or he subverts these principles; and in this case the physiologist has nothing to say to him. Again, he either enunciatively introduces his opinion, or he appears to employ syllogism. And if he introduces it enunciatively, he either says something which may be easily admitted, and is probable, and it is necessary to contradict him, in consequence of what he says not being improbable, though it is false; or he says something obscure and paradoxical, and nothing can be said to such a one by him who tends to truth: for neither will it be the province of one skilled in dialectic to oppose him who says, that the just is a porch. But if he should attempt to syllogize, deceiving through a love of contention; if he forms his syllogism from opinable propositions, the deception must be confuted, not on his own account, but for the sake of superficial hearers. But if the propositions are not even opinable, but are alone contentious, the province of contradicting these rather belongs to the idle, than to those who are busily employed.

principles, concludes falsely: for such as do not thus conclude are not to be solved. Thus, for instance, with respect to the quadrature of lunulas, that which is effected through segments, it is the business of a geometrician to solve; but it is not the province of a geometrician to solve that of ⁷ Antiphon. However, though Parmenides and Melissus do

employed. If, therefore, the assertion of Parmenides and Melissus, that being is one, subverts physical principles, and introduces something paradoxical and obscure, and in syllogizing not only admits false propositions, but unsyllogistically concludes, on all these accounts, it will not deserve contradiction, and especially from the physiologist, whose principles it subverts.

⁶ Aristotle says, that the argument of Melissus is more troublesome, because he not only calls being one and immoveable, in the same manner as Parmenides, but besides this, he also asserts it to be infinite. Hence Aristotle, speaking in opposition to both, adds, "But Melissus says, that being is infinite; and, therefore, being is a certain quantity." Hence his argument is troublesome, because introducing quantity which must necessarily be in a subject essence, he at the same time asserts being to be one. But Aristotle says, that the argument of Melissus is not the subject of doubt, because it may be easily dissolved, and does not produce doubt, in consequence of being superficial.

⁷ Antiphon and Hippocrates, who thought they had discovered the quadrature of the circle, were similarly deceived. But the fallacy in the invention of Antiphon, since it does not originate from geometrical principles, as we shall learn, it is not the business of a geometrician to solve. This, however, is not the case with that of Hippocrates, because it preserves geometrical principles. But the reasoning of Antiphon is summarily as follows: A polygon of an infinite number of sides may be considered as equal to a circle: a square may be made equal to any polygon: a square, therefore, may be made equal to a circle. This deduction, as Simplicius well observes, is made contrary to geometrical principles, because it is impossible for a right line, however small it may be, to coincide with a periphery: for a right line external to a circle touches it only in one point, and a right line within a circle, cuts the circle in two points only, and not in more. Besides, by always cutting the superficies between the right line and the periphery of the circle, you will not consume it, nor will it ever coincide with the periphery of the circle, because this superficies is divisible ad infinitum: for if it should coincide, the geometrical principle would be subverted, which says, that magnitudes are divisible to infinity. And this principle, Eudemus says, is subverted by Antiphon.

Aristotle, however, says, that it is the business of a geometrician to solve that quadrature of the circle which is effected through segments, by which he means the quadrature through lunulas invented by Hippocrates the Chian. If, therefore, on the two sides of a square in a circle, two semicircles be described, those two semicircles will be equal to the half of that circle in which the said square is inscribed, because circles are to each other as the squares of their diameters. And the two lunulas which will thus be formed, will be equal to the half of the said square; or, in other words, each lunula will be equal to the half of a right angled isosceles triangle inscribed in

do not discourse concerning nature, yet as it happens that their assertions are attended with physical doubts, it will perhaps be well to speak a little concerning these: for the consideration of these is philosophic.

CHAPTER III.

SINCE, however, being is multifariously predicated, we shall begin in a manner the best adapted of all others to the subject, if we consider what those mean who assert that all things are one: Whether they conceive that all things are essence, or quantities, or qualities? And again, whether all things are one essence; as for instance, one man, or one horse, or one soul? Or whether they are one quality; and this such as a thing white, or hot, or any thing else of this kind? For all these very

in the half of the said circle. This quadrature of the lunula is legitimate; but Hippocrates concludes from hence, that every lunula may be reduced into the form of a square, which, however, is not demonstrated; and in consequence of this he assumes as universal that which is not universally demonstrated. If, indeed, this were admitted, the circle might easily be squared by the method of Hippocrates, which, as we learn from Simplicius, consisted in inscribing the sides of a hexagon in a semicircle, and afterwards describing a semicircle on each of the three sides: for then the semicircle in which the sides of the hexagon are inscribed will be equal to four such semicircles as are described on the sides of the hexagon, and consequently by taking away what is common, the three lunulas which will be thus formed, and the fourth semicircle, will be equal to the remaining quadrilateral space formed by the diameters of the circles described on the sides of the hexagon, and the diameter of the circle in which the sides of the hexagon are inscribed. If, therefore, from this quadrilateral space, that which is equal to the lunulas be taken away, the remainder will be equal to the remaining fourth semicircle.

Simplicius also informs us, that Eudemus, who was an auditor of Aristotle, in his Geometrical History, says, that Hippocrates did not demonstrate the quadrature of the lunula in the side of a square, but, as one may say, universally: for if every lunula external to the periphery is either equal to, less or greater than the semicircle, but Hippocrates squares that lunula which is equal to, that which is less, and that which is greater than the semicircle, he will, as it seems, have demonstrated the quadrature of the lunula universally. After this, Simplicius presents us from Eudemus with the manner in which this was demonstrated by Hippocrates, which appears to me to be well worth the attention of the mathematical reader, not only for its great ingenuity and antiquity, but also because it seems to have escaped the attention of all mathematicians since the time of Simplicius. Unfortunately there is no diagram to this very interesting part.

E

much

much differ from each other, and cannot be made the subject of discourse: for if all things are substance or essence, quantity and quality, whether these are separated from each other or not, beings will be many. But if all things are quality or quantity, whether essence has a subsistence or not, an absurdity will ensue; if it be necessary to call that absurd which is impossible: for none of the rest is separate except essence; since all of them are predicated of essence as their subject. But Melissus says, that being is infinite; being, therefore, is a certain quantity; for the infinite subsists in quantity. But it is not possible that essence, or quality, or a participated property should be infinite, except according to accident: viz. from certain quantities subsisting together: for the definition of the infinite employs quantity, but not essence or quality. If, therefore, there are essence and quantity, being will be two things, and not one. But if being be essence alone, it will not be infinite, nor possess any magnitude; for it will be a certain^s quantity. Besides, since the one itself is predicated multifariously,

just

^s He who contradicts any opinion, endeavours to do this in a two-fold manner: for he either subverts the arguments which support it, or entirely destroys it. But he who only subverts the arguments that support, does not yet destroy the dogma: for what if there should be other arguments in confirmation of it stronger than those that are subverted? And those who do not oppose the arguments that support, but the dogma itself, and entirely subvert it, these, indeed, wholly subvert the dogma, but leave the doubts, unless they also subvert the arguments by which it is supported. Hence, Aristotle proposing to confute the assertion of Parmenides and Melissus, in the first place, opposes it universally, from an evident division confuting him, who says, that being is one; and in the next place subverts the arguments which support this dogma. But Aristotle employs a dialectic argument, originating from the division of beings; and the whole of his reasoning is as follows: Since they say that being is one, but each of these, viz. being and the one, is predicated multifariously, each must be separately divided. As, therefore, being is predicated in a ten-fold respect, viz. either as substance (i. e. essence), or as quality, or as quantity, or as some other of the ten categories, we ask those who say that being is one, whether they say it is one only in name but many in reality, so that all things should be called essence, though in reality they are ten things, or whether it is a certain number of these? For this must be added to the division, viz. or all things are one in reality; as for instance, essence, or quantity, or quality; so that all things are one essence in number: for if they should say, that all things are one in genus or species, they will, indeed, be many in number. Either, therefore, they assert that all things are thus one, as one man or horse, or one soul, or that they are one in quality,

and

just as being is, let us consider after what manner they say that the universe is one. But that is called one, which is either continuous, or indivisible, or when the definition unfolding the essence is one and the same, as in *methu* and *oinos* (wine). If, therefore, being is continuous, it is many: for the continuous is divisible to infinity. There is a doubt, however, with respect to part and ⁹ whole (though perhaps it does not belong to this discussion, but is to be considered by itself) whether part and whole are one, or more than one¹. Likewise how they

and not in genus; for thus they would again be immediately many, as for instance, that they are this one white thing, or hot thing, or some one of other such like particulars: for these are all the modes of exceptions; and they very much differ from each other, and are all of them impossible. For if being were one only in name, but in reality were essence, quantity and quality, and all the genera, or a certain number of them, whether separated from or subsisting together with each other, there will be many beings. But if all things are some one of the ten genera, as essence, or quality, or quantity, and are on this account one, because they are reduced to one of the ten genera, whether essence is or is not, an absurdity will ensue: for if essence having a prior subsistence, as it is natural it should, some one of these is connected with it, again, being will not be one, but will be essence and quality, or whatever else of the ten categories being is admitted to be. But if essence is not, this also is impossible; since no one of the other genera can subsist separate from essence; because essence is the foundation of the other genera, in which they possess their being. To this it may also be added, that whether Melissus and Parmenides suppose being to be quality, or whether they suppose it to be essence, since the one says that being is infinite, and the other that it is finite, quantity will be immediately introduced; for both the infinite and the finite belong to quantity, and neither essence, nor quality, nor participated property, can be either infinite or finite, unless from accident, if at the same time they should likewise be connected with quantity: for the definition of the infinite and of the finite employs quantity, but neither essence, nor quality.

⁹ The solution of this doubt, as Simplicius justly observes, is, that it does not follow, because each of the parts separately considered is different from the whole, that, therefore, all the parts taken together should be different from the whole.

¹ I admire, says Simplicius, that Aristotle should contradict those significations of the one, which Parmenides says, are present with the one being: for he celebrates it as continuous, when he sings:

Continued is the whole; for that which is
To that which is approximates; and since
All is alike, it no division knows.

they are one, or more than one : and if they are more than one, after what manner they are so ; (the same consideration also pertains to parts

But that there is one and the same definition of all things as of being, is asserted by Parmenides in the following verses :

'Tis fit to assert that mentally to see
Is to be being ; since it is to be.
But nothing is not.

If, therefore, whatever any one may understand or say is being, there will be one and the same definition of all things as of being.

For besides being, nothing either is,
Or will hereafter be ; since fate the whole
Immoveable has bound ; and all things are its name.

And Parmenides and Melissus will admit the absurdities adduced by Aristotle, as consequent to these hypotheses, if any one equitably attends to their assertions : for since *the one being* with them is indivisible, it will neither be finite, nor infinite, in the same manner as body ; for Parmenides ranks bodies among the objects of opinion. And Melissus says, " It is necessary that *the one* should not have a body ; for if it had thickness, it would have parts, and would no longer be one." It is indivisible, therefore, as a boundary, not as if it had the boundary of body, but as the end and beginning of all things. And in short it is indivisible in the same manner as Aristotle says, that intellect, which is, according to him, the first cause, is a certain one, and who also exclaims that a multitude of rulers is not good, and shows that this intellect is impartible, immoveable, and the end of all things. He likewise asserts that intellect, the intelligible and intelligence, are the same, receiving this not only from Plato, but also from Parmenides, who says, that " to understand, and that for the sake of which intellectual conception subsists, are the same : for you will not find intellectual perception without being ; since intellectual perception is for the sake of the intelligible, viz. of being, for it is the end of it." But Aristotle assuming whole and parts, and the continued, as in body, adduces the consequent absurdities. If, however, they are admitted according to the conceptions of those men, it must also be granted that parts have a subsistence in a certain order of being, which Parmenides calls whole itself,

Only-begotten whole.

And says, that through its continuity it proceeds divisible to infinity.

Continued is the whole ; for that which is
To that which is approximates.

But Parmenides, in Plato, more clearly unfolds this absurdity respecting the one being, in the second of the hypotheses, in which he says, " What then with respect to each of these parts of the one being, viz. the one and being ? Does, therefore, either the one desert a part of being, or being

parts which are not continuous) and if each is one with the whole, as being indivisible, whether in this case they are the same with each other.

If, however, being is one as indivisible, nothing will be a quantity or a quality; neither will being be infinite, as Melissus says it is, nor finite, as it is said to be by Parmenides; for bound is indivisible, not

being a part of the one? It does not. Again, therefore, each of the parts will have the one and being, so that each part will consist at least of two parts. And thus according to the same reasoning, every part that is generated, will always contain these two: for being will always have the one, and the one being; so that being generated two things, it is necessary that it should never be one. Entirely so. Will not, therefore, the one being, thus be infinite multitude? So it seems." That all those, however, should have the same nature of being, and should be the same with each other, is not at all absurd: for if the one being is the cause of all things, and is all things * prior to all, all things will have a prior subsistence in it, and will be comprehended in it according to one union, through which being impartibly separated, each is all things. Aristotle, as it appears to me, was also of this opinion, when he calls that which, according to him, is the first intellect, the cause of all things, and says, that there is a two-fold order, one in the cause †, and the other in the effect. Simplicius adds, that if it were not that he should appear to some to interpret Aristotle's meaning wantonly, he should say, that Aristotle perceiving the third ‡ order of the one being of Parmenides, directs his discourse to him in this manner: for the summit of the one being is indivisibly united, but the middle remitting union into that which connectedly contains, generates whole and parts. Hence also Aristotle, when he discourses about the continued, introduces the doubt concerning whole. But the extremity of the one being unfolding unitedly formal separation, exhibits all things in itself according to cause; though in consequence of the separation being intelligible, all things are vanquished by the union of the one being. Hence, whatever any one may consider as separated, preserving this, he will find the intelligible union of the one being. But separation according to cause becoming apparent, the progression also to infinity of the generation of the parts, thence receives a never-failing multitude. How then, some one may say, does Aristotle seem to contradict these divine dogmas? Shall we say it is because being extended to physical theory, they seem to be foreign from the truth? For the sensible divulsion cannot receive intelligible union. Nor as in intelligibles an united essence causally comprehends a multiplied separation, so far as this is capable of being perceived there, in like manner is it possible to behold in sensibles the all-perfect union of the one. The indivisible, therefore, which is here, the continued, and communion according to one reason, are not in concord with *the one*.

* The cause of all from containing the causes of all things in himself, involved in ineffable union, is said to be all things prior to all, priority denoting causal subsistence, i. e. a subsistence transcendently better than that of effects.

† See the 12th book of my translation of Aristotle's *Metaphysics*.

‡ See the Parmenides of Plato.

that

that which is bounded. But if all beings are one in definition, in the same manner as a garment and a robe, it happens that they will make the assertion of Heraclitus : for there will be the same essence of good and evil, and of that which is not good, and good ; so that what is not good and good will be the same. Man likewise will be the same with horse ; and the consideration will not be whether all things are one, but whether they are nothing. The quality also and the quantity of a thing will be the same. Posterior philosophers also, as well as the ancient, were disturbed, lest it should happen to them that the same thing should at the same time be one and many. Hence some of them took away the word *is*, as was the case with Lycophon ; but others reformed the language, and did not say that a man *is white*, but that he *grows white* ; or that a man *is walking*, but that he *walks* ; lest by adding the word *is*, they should make the one to be many ; as if the one or being were to be predicated in one way only. Beings, however, are many, either by definition (as for instance, the essence of that which is white is different from the essence of a musician, and yet both are in the same subject ; whence also the one is many) or by division, as whole and parts. Here, however, they doubt, and acknowledge the one to be many, as if it were not possible for the same thing to be one and many ; but yet they do not on that account admit the subsistence of opposites : for the one is both in capacity and energy². To those, therefore, who employ these arguments, it appears to be impossible that beings should be one.

² Beings are many, in the first place, by predications, as essence by the predication of goodness, and other things ; and according to whatever may be predicated of them, some are many in capacity, others in energy, and farther still, in genus, or species, or number. Besides these too, they are many by division, or definition, or name. Nor is it at all absurd that the same thing after one mode should appear and be called one, and after another, many, and that it should be at the same time one and many, though not, indeed, opposites. But the reason of this is, because neither being nor the one is predicated in one way, but each of them manifoldly ; which the philosophers prior to Aristotle not perceiving, they were disturbed, some of them calling beings many and infinite, but suspended from each other, and others calling them one, though there is neither one being, as that which is simply without interval, nor many beings, as a choir, but there is one being, and not one, in the manner we have explained.

CHAPTER IV.

It is likewise not difficult to solve the arguments from which they demonstrate: for both Melissus and Parmenides syllogize litigiously; since they assume that which is false, and their arguments are not conclusive. The argument of Melissus, however, is more troublesome, and does not contain a doubt; but one absurdity being admitted, the rest happens as the consequence of this;—a circumstance which it is not at all difficult to suppose. That Melissus, therefore, paralogizes, is evident: for he fancies it should be assumed, that if every thing which is generated has a beginning, that which is not generated, has not a beginning³. In the next place this also is absurd, to fancy that there is a beginning of every thing, and not of time only; and that there is a beginning of generation not only of that which is simple, but also of change according to quality, as if there were no mutation produced collectively and at once⁴. Besides, why is being immoveable, if it be one?

³ Aristotle says, it is not difficult to solve the arguments of Parmenides and Melissus, because their assumptions are false, and the forms of their reasoning unsyllogistic. But he rather accuses the argument of Melissus, as was observed before, either because in addition to other things Melissus says that being is infinite, or because he seems to admit false assumptions, and reason unsyllogistically, when he says, “If that which is generated has a beginning, that which is not generated has not a beginning;” though it is proper that making the subversion from what is consequent, he should have said, that which has not a beginning is not generated; for thus the second mode of hypothetic syllogisms concludes. Parmenides, indeed, places the propositions in order, but he does not infer the conclusion which follows from the premises, but something else, when he says, “That which is besides being is non-being, that which is non-being is nothing;” and does not infer, that which is besides being is nothing, which follows, but concludes, being therefore is one. These things, however, will be examined hereafter.

⁴ As Melissus was a wise man, says Simplicius, it is proper to dissolve the accusations which are brought against him. And that he did not, indeed, consider being as corporeal, is evident from his demonstrating it to be immoveable and indivisible; bodies clearly exhibiting motion and division. But instead of the sensible and divisible, he assumes the generated, just as Timæus in Plato says: “It was generated; for it is sensible and tangible, and has a body.” But instead of
of

one? For as a part being one, as for instance, this water is moved in the same place, why is not this also the case with the universe? And in the next place, why will there not be change according to quality⁵?

To

of the intelligible and impartible, Melissus assumes the unbegotten; just as again Plato in the *Timæus*, when he says, "What is that which is eternal being, but has not generation?" When, therefore, Melissus says, that which is generated has a beginning, he speaks of that which is sensible and divisible, which as being finite, has a beginning and an end: for there is not an infinite body. But when Melissus infers, that what is not generated has not a beginning, he then says, that true being is impartible, and has neither a beginning nor an end. Hence, also, it is infinite. Indeed, that being is unbegotten, Aristotle also admits, being delighted with the dogma, and with the demonstration of Melissus about it. Eudemus likewise grants, that being simply considered is unbegotten: for he says, "It is well to admit that the whole of being is not generated collectively or at once, since it is not possible that it should be generated from non-being; but that according to a part many things should be generated and corrupted, this is reasonable, and we see that it is so."

⁵ It appears to me, says Simplicius, that Melissus concluding what he had said concerning being, viz. that it is unbegotten and eternal, infinite, one, and similar, hence takes away likewise all other motions about generation from being. And in the first place he shows that being is neither moved as that which is destroyed, nor as that which is increased or diminished, nor as that which is changed according to quality, nor, in short, as that which becomes something else, which is common both to increase and change, according to quality: for if it suffered these things, it would neither be eternal, nor infinite, nor one, nor similar. In the next place he shows, that neither is it moved in a vacuum: for that which is void, not of body, but of being, is nothing. Previously assuming, therefore, that being is a plenum, which is the same thing as to say that it is full, and having demonstrated that there is not a vacuum, he infers that being will not be moved locally, neither as into a place different from itself, for there is not any thing void of being, into which it can be moved, nor into itself: for in this case it is necessary, that from being more rare it should become more dense. But it will not be the rare and the dense: for the rare has a certain vacuum, and a vacuum in short is not; and especially is not in being, because it is full. But that being is full, he demonstrates from its receiving nothing in itself: for if it received any thing, there would be a certain vacuum of being; but there is not a vacuum. Since, however, Melissus, though he thus writes after the manner of the ancients, yet does not write obscurely, I will add, says Simplicius, the ancient writings themselves, in order that those who meet with them may become more accurate judges of apt interpretations. Melissus, therefore, having concluded what he had before said, thus speaks, adducing the particulars concerning motion: "Thus, therefore, the whole is eternal, infinite, one, and similar. And neither will it be destroyed, nor become greater, nor be transformed, nor suffer pain, nor be afflicted: for if it were subject to any one of these, it would no longer be one. For if it should become something else, it is necessary that being should not be similar, but that the

To which we may add, that neither is it possible to be one in species, except according to the material cause; for according to this mode some of the natural philosophers say, that being is one, but not according to the other mode: for man is different in species from horse, and contraries from each other⁶.

Against Parmenides also there is the same mode of reasoning, though there are certain arguments which are peculiar to him, partly because

the former being should be destroyed, and that it should become non-being. If, therefore, in an infinity of years *the all* should become something else, it would perish in the whole of time. But neither can the perfect and efficacious be transformed: for the world which had a prior existence is not destroyed, nor is that which is not, generated. But when nothing is generated, nor destroyed, nor changed into something else, how can any one among the number of beings be transformed? For, if any thing should become different from what it was, it would now be transformed. Nor is it afflicted; since if it were sorrowful it would not be the all: for it is not possible, that a thing which is sorrowful should always be. Nor would it have an equal power with that which is sane, nor be similar, if it were afflicted: for, in consequence of something departing or acceding, it would be sorrowful, and thus would no longer be similar. Nor can that which is sane be afflicted: for its health and its being would perish, and it would become non-being. The same also may be said with respect to its suffering pain. Nor is there any vacuum, for a vacuum is nothing. It will not, therefore, be nothing, nor will it be moved: for there is not any place into which it can recede, but it is full: for if there were a vacuum, it might recede into a vacuum; but as there is not a vacuum, there is not any place into which it is possible for it to recede. But it will not be the rare and the dense: for the rare is not perfectly full, similar to the dense; but the rare is more void than the dense. It is also necessary to form this judgment of the full, and the not full: for if it receives or admits any thing into itself, it is not full. But if it neither receives nor admits any thing, it is full. It is necessary, therefore, that it should be full, if it is not void. And if it is full, it is not moved." The being, therefore, of which Melissus speaks, is true incorporeal being; but the objections of Aristotle are directed to corporeal being.

⁶ Since there are three significations of the one, viz. 1, according to continuity: 2, as indivisible: and, 3, in definition, Aristotle having shown that being cannot be one according to any of these significations, and having objected to the arguments of Melissus, adds this common reason, that in short it is not possible for being to be one in species, except as that *from which* (*πλην τῆ ἐξ ου*), i. e. except according to the material cause: for according to this, as Alexander observes, it is possible to say, that being is one in species, as also other natural philosophers have said; Thales indeed and Hippo asserting that it is water, but Anaximenes air, and Heraclitus fire. Immediately, therefore, to say, that beings are one in species, is absurd, unless it should be said that they are one, so far as all things are generated from one first principle, which also some natural philosophers have asserted: for, according to those who admit one principle of things, all things are one in definition, so far as they are from one, but not so far as they are.

he assumes that which is false, and partly because his arguments are not conclusive. He assumes that which is false, so far as he considers being to be simply predicated, when at the same time, it is predicated multifariously; and his arguments are inconclusive, because if things which are white were alone assumed, since that which is white signifies one thing, there would nevertheless be many white things, and not one alone: for that which is white will not be one alone either by continuity or definition; since the essence of whiteness will be different from that of its recipient, and it will not follow, that nothing will have a separate subsistence besides whiteness: for there is no difference so far as it is separate; but the essence of whiteness and of that in which it subsists are different. This, however, Parmenides had not yet seen⁷. It is necessary, therefore, that those who assert that being is one, should not only assume that being signifies one of which it is predicated, but also that it truly *is*, and truly is one: for accident is predicated of a certain subject; so that if being is *one accident*, that to which being is an accident, will not have any subsistence; since it is different from being. Hence, there will be something which is not being. It is requisite, therefore, that Parmenides should assume that which is properly and essentially being: for accident will not have the essence of being, unless being signifies many things, so that each may be some particular thing. But it is supposed that being signifies one thing. If, therefore, that which is properly being, is not an accident to any thing, but something else is an accident to it, why should that which is properly and essentially being signify being, rather than non-being? For if that which is properly being is the same as that which is white, but the essence of white is not properly and essentially being (for it is not possible that any thing can be an accident to it), if this be the case, since there is no being except that which is truly and properly being, that which is white will not be being. It will not, however, be non-being, as if it were some particular non-entity, but

⁷ Viz. Parmenides, says Aristotle, had not yet seen that it is possible for things which are one in subsistence, to have different definitions, and, according to this, to be many.

it

it will be entirely non-being. Hence, that which is properly and essentially being, is non-being: for the assertion is true, that it is white; but this signifies non-being. So that if that which is white signifies being properly and essentially so called, being will signify⁸ many things. Hence, neither will being have any magnitude, since it is truly and essentially being: for the being of each of the parts⁹ of magnitude is different. But that being, properly so called, may be divided into something else which is properly and essentially being,

⁸ What was just before, and what is now asserted, may not only be said against Parmenides, but also against Melissus: for since of beings some subsist as accidents, but others as subjects in which accidents are inherent, and these are not only not the same with each other, but in a certain respect contrary, since the subject subsists by itself, but accident is in something different from itself, it is necessary to call being one of these, viz. either accident, or the subject of accidents. At the same time, however, since it was absurd to accuse such illustrious men of being ignorant that accident introduces together with itself something else to which it is an accident, it is necessary to admit that by *being* they signified that which is properly and especially being, and as Plato would say, *being itself* (*το αυτο ον*), but Aristotle *that which is being* (*το οντες ον*): for this with Aristotle signifies *that which is properly and especially being*, which he thinks to be essence, as subsisting by itself, and as the cause of being to other things. It is not reasonable, therefore, to suppose that Parmenides and Melissus spoke either of being or the one as an accident, but as of the *truly* being, and the *truly* one, and of both these conjoined, whatever it may be, not as an accident to something else, but as itself subsisting by itself.

Simplicius farther observes, that Aristotle appears to him in what he now says to indicate to Parmenides, that he, wishing to take away non-being, and through this introducing the one being, since that which is besides being is nothing, not only introduces non-being through the hypothesis, but shows that being itself is non-being. This, indeed, is also demonstrated by Plato in the *Sophista*; and likewise that being is one, but is not many; for it is neither motion, nor permanency, nor any of the other genera. Aristotle, however, to those who assert that being is one, demonstrates that being is not only a certain non-being, but that it is simply non-being. But he adds obscurity to his words, because, having admitted that being is substance or essence, he again shows that it is not accident.

⁹ Aristotle, as Simplicius well observes, does not here charge Parmenides and Melissus with the absurdity which many of his interpreters fancy he does, viz. that being has no magnitude, though it is said by them to be either finite or infinite; for he was not ignorant that they considered and demonstrated it to be without magnitude and indivisible. But he adduces this absurdity, because if being is supposed to be one alone, there will not be any thing which has magnitude among beings, nor whole and parts. This, however, is very remote from clear evidence, because all sensible and physical things are bodies possessing magnitude.

is evident to reason. Thus, for instance, if man is something which is properly being, it is necessary that animal also and biped should each of them be essentially being: for if they are not truly beings, they will be accidents. They will either, therefore, be accidents to man, or to some other subject. This, however, is impossible: for that is, and is said to be an accident, which may or may not be inherent; or in the definition of which that is inherent to which it is an accident. Thus, for instance, *to sit* is an accident, as that which may be separated; but in a flat nose, the definition of nose is inherent, to which we say flatness is an accident.

Farther still, with respect to such things as are inherent in a definitive sentence, or from which a thing consists, in the definition of these, the definition of the whole is not inherent: for instance, in biped, the definition of man is not inherent, nor in that which is white is the definition of a white man contained. If, therefore, these things subsist after this manner, and biped also is an accident to man, it is necessary that it should be separate, so that it may happen that man may not be a biped; or in the definition of biped the definition of man will be inherent. This, however, is impossible; for the former is inherent in the definition of the latter. But if biped and animal are accidents to any other subject than man, and neither of them is a certain being, properly and essentially so called, man also will be in the number of things accidental to something different from themselves. Let, however, that which is properly and essentially being, be that which is not an accident to any thing; and of which both, and each of the essential parts, and that which consists from these, are predicated. The universe, therefore, consists from indivisibles. Some, however, have assented to both the assertions; to the one, because all things are one, if being signifies one, since there is also non-being; but to the other, by making from bisection¹ indivisible magnitudes. But it is evident

¹ Since Xenocrates, says Simplicius, was a wise man, how could he admit the existence of indivisible lines? For he was not ignorant of the nature of magnitude. Perhaps, therefore, he did not oppose the division of magnitude to infinity: for being a geometrician, he would not subvert

dent that it is not true, if being signifies one, and it is not possible for contradiction to be simultaneous, that there will be no such thing as non-being :

subvert a geometrical principle. But he denied the infinite divisibility of physical lines, because there are always certain indivisible magnitudes which cannot actually be of themselves divided, on account of their smallness ; but being again united to other bodies, the whole being divided, they thus receive a division in themselves, which when alone they would not sustain. As Plato, therefore, says, that planes are the first and least bodies, so Xenocrates asserts, that there are lines, indivisible indeed through their smallness, though of themselves they are naturally divisible.

Since, however, Simplicius adds, we have arrived at the end of the arguments against Parmenides, it will be well to investigate the opinion of Parmenides himself, about the one being, as commensurate to our purpose, and to consider on what account Aristotle's contradictions of his doctrine were adduced. That Parmenides, therefore, did not admit the one being to be any thing which can be generated and corrupted, is evident from his assertion that the one is ungenerated and incorruptible. Nor, in short, does he admit, that the one being is corporeal, since he says it is indivisible. Hence, neither can what he says accord with the heavens, as some, according to Eudemus, conceived it did, in consequence of this line of Parmenides,

Throughout resembling a revolving sphere.

For the heavens are not indivisible, nor a similar sphere, though they are the most accurate of all natural spheres. That Parmenides also did not consider the one being as psychical, or belonging to soul, is evident from his calling it immoveable, as when he says,

The one immoveable has every name.

For the psychical essence, according to the Eleatic philosophers, possesses motion. He also says, that being is all things at once,

. . . . Since now 'tis all at once.

Also that it subsists according to the same, and after a similar manner,

Same in the same, and by itself abides.

And it is evident, that according to essence, power, and energy, it possesses the all at once, and sameness of subsistence ; which are properties beyond the essence of soul. May we not also assert that neither does Parmenides say, that the one being is intellectual ? For the intellectual subsists according to separation from the intelligible, and a conversion to the intelligible. But in the one being, he says, that intellectual perception and the intelligible are the same : for thus he writes :

Perception intellectual is the same
With that for which intelligence subsists.

He

non-being : for nothing hinders but that non-being, though it has not simply a subsistence, yet may be a certain non-being. The assertion, therefore,

He adds, " for they are not without being," i. e. the intelligible,

In which perception mental you will find.

Again, the intellectual is separated into forms, just as the intelligible unitedly comprehends, according to cause, the separation of forms. But where separation is, there difference is : and this subsisting *, non-being also presents itself to the view. Parmenides, however, entirely exterminates non-being from being :

Non-being ne'er, and in no mode subsists,
But there thy intellectual notions check
When in this path exploring.

Nor did he conceive the one being to be something which is common ; neither that common something which is of posterior origin, subsisting by ablation in our conceptions ; since a thing of this kind is neither unbegotten, nor indestructible ; nor that which is in things themselves ; for this is sensible, and belongs to objects of opinion, and things of a deceitful nature, about which he afterwards speaks. For how could it be true to say of this, that " it is now the whole at once," or that " it contracts in itself intellect and the intelligible ?" Does he, therefore, say, that the one being is an individual essence : or is not this very dissonant from the one being ? For an individual essence is generated, is divided by difference, and is material and sensible, and different from accident. It is also divisible, and in motion. It remains, therefore, that the one being of Parmenides, is the intelligible cause of all things, through which intellect and intellectual perception subsist, and in which all things are comprehended according to one union, contractedly, and unitedly : in which also there is one nature of the one and being. Hence Zeno said, " If any one should demonstrate the one itself, he would unfold being." He did not, however, say this as denying the subsistence of *the one*, but in consequence of the one subsisting together with being. But to this one being, all the above-mentioned conclusions are adapted : for it is unbegotten, indestructible, entire, and only-begotten ; since it will not be second to any other, as being prior to all separation. To this also, the collective all, or an all subsisting at once, pertains ; and likewise the assertion that non-being has no place in it. Farther still, the indivisible, and the immoveable, according to every species of division and motion, and invariable subsistence, accord with this one being. Likewise end ; for this is the end of all things. And if this is that for the sake of which intellectual perception subsists, it is evidently the intelligible ; for intellectual perception and intellect are for the sake of the intelligible. If also intellectual perception and the intelligible are the same in it, the transcendency of its union will be ineffable.

* Hence Plato, in the Sophista, considers *difference*, one of the five genera of being, to be non-being. But the five genera of being, of which difference is one, are, *essence, motion, permanency, sameness, and difference*.

And

therefore, that all things will be one, if there is not any thing else besides being itself, is absurd : for who can understand being itself to be

And that I may not appear to say this without sufficient authority, I will add the verses of Parmenides concerning the one being, in order to give credibility to my assertions, and because the writings of Parmenides are rare. They are, then, as follows :

This truth alone it now remains to tell,
 That in this path *one being* we shall find,
 As numerous tokens manifestly show ;
 And these its characters : without decay,
 And unbegotten, stable, without end,
 Only-begotten, whole ; nor once it was,
 Nor will hereafter be, since now 'tis all,
 At once collected, a continued one.
 For whence its source, or growth, would you explore ?
 Not from non-being, which nor mind can see,
 Nor speech reveal ; since as of being void
 'Tis not an object of the mental eye.
 But as from no one it derived its birth,
 Say, why in time posterior it began
 Rather than in some prior time, to be ?
 Thus must it wholly be, or wholly not.
 For never will the power of faith permit
 That aught should ever into being rise,
 Without subsisting for the sake of this.
 Nor will the goddess, Justice, with her bonds
 Encircling all, e'er suffer without this
 Aught to be generated, or to be no more.

Next, what is being ? How was it produc'd ?
 If generated, 'tis not ; and if once it was,
 Then in some future time 'twill cease to be.
 Hence generation is to this unknown,
 And void of faith, corruption ; nor can it e'er
 Divided be, since similar the whole.
 Nothing than this is greater, nor a part
 Is found in this inferior to the whole.

But

be any thing else than that which is properly and essentially some particular being? But if this be the case, nothing prevents the subsistence

But all with being is replete, through which
 All is continued ; since to being here
 Being approximates ; but in the bounds
 Of mighty bonds, immoveable it lies,
 Without beginning, and with ceaseless power.
 For generation in these lower realms,
 Leagu'd with corruption, wand'ring wide are seen,
 And faithful truth is nowhere to be found.
 Same in the same and by itself abides,
 So firm it there remains, held in the bonds
 Of bound, by strong necessity, on every side.
 Unlawful, hence, that being without bound
 Should e'er remain ; for want it never knows.
 But to non-being perfect want belongs.
 Perception intellectual is the same
 With that for which intelligence subsists ;
 For without being never can be found
 Mental conception ; since 'tis truly said,
 In being, intellectual vision dwells.
 Nor is there now, or will hereafter be,
 Aught besides being, e'en tho' time exist,
 Since Fate immoveable the whole has bound,
 Which ev'ry name, by mortals fashioned, claims.

On all sides like a sphere's revolving bulk,
 And from the middle equal every way.
 For nothing it is fit should greater be
 Or less, in aught that being comprehends.
 Since it is not of being void, that e'er
 To sameness it should cease at length t' arrive.
 Nor is it partially with being fill'd,
 Of this a void possessing more and less ;
 But safe and undefiled in ev'ry part,
 The whole is one inviolable all.
 For equal every way, in bounds it reigns.

Here

sistence of a multitude of beings, in the manner we have mentioned. That it is impossible, therefore, for being to be thus one is manifest.

CHAP.

Here about truth firm thoughts and reasonings end :

Opinions human now attentive learn,
Cloth'd in fallacious ornament of words.

These then are the verses of Parmenides about the one being; after which he speaks about objects of opinion, adopting in them other principles, which Aristotle mentions in what follows, saying, "For Parmenides makes the hot and the cold to be principles, and these he denominates fire and earth." But if Parmenides says, that the one being is similar to the bulk of a revolving sphere, we must not wonder; for through his poetry he employs a certain mythological fiction. What does it differ, therefore, to assert this, or to say with Orpheus, that being is of a white texture? And it is evident that some of the assertions of Parmenides entirely accord with other things posterior to the one being. Thus the unbegotten and the indestructible pertain both to soul and to intellect; and the immoveable and abiding in the same, to intellect. But all of them, collectively and genuinely considered, are adapted to the one being: for, according to a certain signification, soul and intellect are unbegotten, but they are produced by the intelligible. The one being also possesses the immoveable peculiarity, in which, motion according to energy has not separate subsistence. The abiding in sameness likewise properly belongs to this; but soul and much-honoured intellect proceed from that which abides, and are converted to it. It is also evident, that such things as are said to subsist in the one being, are comprehended in it unitedly, but proceed from it with separation. And it appears, indeed, to be delivered by Parmenides as the first cause, if it is one collected all, and the ultimate bound. If, however, he does not simply call it one, but one being, and only-begotten, and bound but finite, perhaps he indicates that the ineffable cause of all is established above it. How, therefore, do Plato and Aristotle appear to contradict Parmenides? Plato, indeed, contradicts him in a twofold respect, both from his calling being the one, and perfectly taking away non-being from the intellectual and separated worlds, in which being is divided from the one (so that both do not remain one), and the parts from the whole: for, from hence, Plato shows that beings are not one, but more than one. But he demonstrates non-being from the difference which subsists in separated forms; through which the being that is there, considered according to one peculiarity, is not motion or permanency, and each of the rest is what it is, but *is not* other things. And it is evident, that non-being is entirely there, where separation and difference * are unfolded into light; in intellectual natures, indeed, according to form, but in sensibles according to interval and division. But this non-being Parmenides also himself appears to admit in objects of opinion, since he calls the

* Separation and difference are perfectly unfolded into light according to form, in the extremity of the intellectual order. See the Notes on the first and second hypothesis of the Parmenides of Plato, in my translation of that dialogue.

CHAPTER V.

THE assertions of the natural philosophers may be referred to two modes : for, some of them making being to be one, viz. body, which is a subject, and this either one of the three elements, or something else which is more dense than fire, but more attenuated than air, generated the rest of things, making many things by density and rarity. But

ornament of his verses, about mortal opinions, fallacious : for, where deception is, there also is non-being ; since he is deceived who thinks that non-being is, or that being is not. Hence, not only Parmenides, but likewise Plato, subverts the existence of perfect non-entity, who also avoids the investigation of it ; for he says, " Let no one, therefore, say, that we, having shown that non-being is contrary to being, dare to assert that it is ; for we have sometime since bid farewell to the consideration of that which is contrary to it, whether it is reasonable or perfectly irrational that it should be or not. But that which we now assert to be non-being, either some one, confuting, should persuade us that it is not properly denominated by us ; or, so far as he is incapable of confuting us, so far he should assent to what we say." And, indeed, it is not at all wonderful that in being of this kind, which is defined according to one peculiarity, Plato should demonstrate such a kind of non-being ; at the same time that in the intelligible, which is perfect, entire, and unitedly all things prior to all, non-being of this kind has no place whatever. But Aristotle, adducing the contradiction from division, says, that being is either predicated in many ways, and thus there will be many beings, or in one way only ; and thus it will either be essence or accident. And it is evident, that no one of these belongs to the intelligible ; since this division becomes apparent in generation ; and prior to generation subsists according to cause in intellectual separation. But let no one blame Plato and Aristotle for contradicting Parmenides on account of other causes : for they benevolently repress the interpretations of superficial readers. That they conceived, indeed, Parmenides to be a wise man, is evident from hence, that Plato testifies the profundity of his mind to be perfectly generous, and introduces him as the preceptor of Socrates in the highest disciplines. And Aristotle, suspecting him to look elsewhere than to physics, classes him in contradistinction to physiologists. Plato also, in the *Parmenides*, delivers *this one*, and celebrates its transcendency. And Aristotle in his *Metaphysics*, contending that the cause of all is one, exclaiming that the domination of many is not good, and celebrating the union of this cause, very properly there surveys as the same, intellect and the intelligible, essence, power, and energy. But enough of these things, lest, according to the proverb, we should appear to leap beyond the prescribed limits, inserting, in a physical treatise, theological sublimities.

these

these are contraries. And universally they are excess and defect, just as Plato says they are the great and the small; except that he makes these to be matter, but the one to be form; but they make the one which is the subject to be matter, and the contraries to be differences² and forms. Others separate from the one the contrarieties which are inherent in it, as Anaximander; and those who assert that beings are one and many, as Empedocles and Anaxagoras: for they separate from that which is mixed the rest of things. They differ, however, from each other, because the one makes a circulation of these; but the other asserts, that they subsisted once only: and the one says, that they are infinite, of similar parts, and contraries; but the other, that they are those things only which are called³ elements. But it seems

² Aristotle, having confuted the opinion of those who say that being is one, and in such a manner one, as being itself, and this immoveable, which is not the opinion of physiologists, but of those who investigate things which have a subsistence above nature, benignantly separates them from physiologists, and from those who make being to be body. He likewise again shows that they did not discourse concerning nature, and manifests that they spoke about principle, because they considered being and principle to be the same. Having, therefore, shown that it is impossible for being to be thus one, he in the next place proposes to investigate how physiologists assert that from which a thing is produced, and element, to be one: for of physiologists, some say that there is one element, and others, that there are many. And he says there are two modes of those who assert that there is one element from which the generation of things is derived: for all of them suppose this one element to be corporeal; but some, that it is one of the three elements: Thales, indeed, and Hippon, that it is water; but Anaximenes and Diogenes, that it is air; and Heraclitus and Hippasus, that it is fire. But no one thinks fit to suppose that it is earth alone, because it is changed with difficulty. Others, again, supposed that it is something different from the three elements, and which is more dense than fire, but more attenuated than air; or, as he elsewhere says, more dense than air, but more attenuated than water.

It must here, however, be observed, that Plato, by the great and the small, signified matter, which he thus symbolically denominated, indicating perhaps by this, says Simplicius, that matter, considered as being incorporeal and without magnitude, may be called *small*, but, as the cause of all bulk, and of every dimension, may be denominated *great*.

³ Aristotle having spoken concerning those who assert that there is one physical principle which subsists as a subject, and having delivered the difference, according to the twofold mode of generation, from this subject, viz. that according to change in quality, and that according to separation,

seems that Anaxagoras thought they were thus infinite, because he conceived that the common opinion of natural philosophers was true,

separation, he proceeds in the next place to Empedocles and Anaxagoras, who said, that the principle is both one and many: for Anaxagoras, introducing things of similar parts as subject principles, said, that these are infinite. He also said, that the producing cause is one, which is separating intellect. But Empedocles introduced as many subject principles, the four elements, but one efficient, friendship and strife; because each of them has dominion, and produces alternately, and not both at once: for, thus, there is always, according to him, one efficient. Or shall we say, that they did not assert there is one efficient principle, but the mixture itself, which, according to Anaxagoras, is mingled from things of similar parts, infinite in multitude; but, according to Empedocles, from the four elements, at one time mingled together by friendship, and at another separated by strife, and producing this world. But Theophrastus, classing Anaxagoras with Anaximander, considers what is asserted by Anaxagoras, as if he admitted one subject nature: for Theophrastus, in his Physical History, thus writes: "Since Anaxagoras admits these things, he may appear, as we have said, to make infinite material principles, but one cause of motion and generation. But if any one apprehends that the mixture of all things is one nature indefinite, both according to form and according to magnitude, which he may seem to be willing to say, it happens that he will assert there are two principles, the nature of the infinite, and intellect; so that it will entirely appear that he introduces corporeal elements, similar to Anaximander." But Aristotle very properly, after those who assert, that there is one principle, and this either immoveable or moveable, ranks those who say there is one and many principles, prior to those who seem to say that there are many alone, as Democritus and his followers: for these have a middle order. But those who assert that there is one principle, have something in common with those who make generation from co-mixture and separation. And Anaxagoras is more allied to those who suppose that the generation of things is effected by separation. But they differ from those who say there is only one principle, because they assert that there is both one and many; but they differ from each other, in the first place, because Anaxagoras says, that the world, being once generated from the mixture, remained afterwards governed and separated by presiding intellect; but Empedocles supposes that the world subsists alternately, according to certain periods, at one time the mixture of the four elements being effected by friendship, and at another time their separation by strife. And in the second place, they differ from each other, because Anaxagoras supposes that the many principles from which the universe consists, are infinite, and of similar parts; but Empedocles supposes that they are finite; for they are what are called the four elements.

But that Anaxagoras (Simplicius adds) asserts that infinite things of similar parts are separated from a certain mixture, all things being in every thing, but each being characterized by that which predominates, is evident from the first book of his Physics, in the beginning of which he says, "All things were together, infinite both in multitude and smallness: for the small was infinite. And all things subsisting together, nothing was manifest through its smallness: for
air

true, that from nothing, nothing is produced. Hence, they say,

All things together were.

And,

Generation is in quality a change.

But others said, that generation is concretion⁴ and separation.

Farther

air and æther contained all things, both being infinite; since these, which are the greatest both in multitude and magnitude, are inherent in all things." And shortly after he observes, "For air and æther are separated from that which abundantly contains, and that which contains is infinite in multitude." And soon after he adds: "This being the case, it is requisite to see that there are many and all-various things in all the mutual mixtures, and seeds of all things, possessing all-various ideas, colours, and pleasures. But before they were separated, in consequence of all things subsisting together, no one colour was manifest: for the commixture of all things prevented this, viz. of the moist and the dry, the hot and the cold, the splendid and the dark, much earth also being inherent, and infinite seeds, in no respect dissimilar to each other: for of other things which were there, one did not appear to be different from the other." But that no one of these things of similar parts, is either generated or corrupted, but is always the same, he manifests as follows: "These being thus separated, it is requisite to know that all things are neither less nor more; for neither is it easy to be more than all things. But all things are always equal."

This is what Anaxagoras says concerning the mixture, and things of similar parts. But concerning intellect he writes as follows: "Intellect is infinite and self-ruling, and is mingled with nothing, but is itself alone by itself; for if it were not by itself, but was mingled with any thing else, it would participate of all things; for in every thing, a part of every thing is inherent, as I have observed before; and the things mingled with it would be an impediment to its similarly ruling over all things: so that it subsists alone by itself. It is, indeed, the most attenuated, and the purest of all things, and possesses a universal knowledge of every thing, and the greatest power. It likewise rules over all such things as have a soul, and are greater and lesser. Every thing too that comprehends, is subject to its dominion, so that it even comprehends the principle itself. And first of all, indeed, it began, from that which is small, to exercise its comprehending power; but afterwards it comprehended more and more abundantly. Intellect also knew all that was mingled together, and separated, and divided, together with what they would be in future, what they had been, and what they now are. All these intellect adorned in an orderly manner, together with this circular enclosure which now consists of the stars, the sun and the moon, the air and the æther, which are separated from each other. It likewise separated the dense from the rare, the hot from the cold, the lucid from the dark, and the dry from the moist. There are many parts, indeed, of many things; but, in short, no one thing is separated from another, except intellect. Every intellect, too, is similar, both the greater and the lesser; but no other thing

Farther still, Anaxagoras was induced to this opinion, from contraries being generated from each other; and hence he concluded, that

thing is similar to another. Since, however, many things are inherent in one thing, each individual is, and was manifestly these."

But that he admitted that there is a twofold order, one intellectual, and the other sensible, proceeding from the intellectual, is evident from what has been said, and is also evident from what follows: "But intellect was in the highest degree such things as these *, and now is; that every thing else might subsist in that which comprehends a multitude, and in conjunctions and separations." Having likewise said, that there are many and all-various things in all the mixtures, and the seeds of all things, possessing all-various ideas, colours, and pleasures, and that men are mingled together, and other animals endued with soul, he adds: "With men also cities are conjoined, and works are provided, such as are with us. They have also a sun and moon, and other things such as we possess. The earth also affords them many and all-various productions, which are used by them, after they have brought them into their habitations, as things most advantageous." And that he obscurely signifies another order of things, different from that which is with us, is evident from his saying, not once only, "*Such as are with us.*" Likewise, that he did not conceive that sensible order to precede this in time, is evident from the words, "are used by them, after they have brought them into their habitations, as things most advantageous:" for he does not say, *they were used by them*, but, *they are used by them*. Neither does he speak as with reference to certain other habitations, which resemble the constitution of things with us: for he does not say, *there is a sun and moon with them, just in the same manner as there is with us*; but, "*that they have a sun and moon as we have.*" Whether, however, these things are so or not, deserves to be investigated.

But Empedocles asserted, that there is one principle and many finite principles, a periodical restoration of things, and generation and corruption, according to commixture and separation, as is evident from the following verses, in the first book of his Physics.

. Twofold, I say :
 For now, from many, one alone increas'd,
 And then the many from the one arose.
 And mortals were assign'd their birth and their decay.
 For this, the congress of the whole of things
 Led forth to light, and, when produc'd, destroy'd.
 And this, when forms have into life emerg'd,
 Again divides them into parts minute,
 And gathers them again. These two, throughout

* By this Anaxagoras meant to insinuate that all things subsist *causally* in intellect; viz. that corporeal natures subsist in it incorporeally; and every thing, in short, according to a more excellent condition, than when considered by itself, or such as it essentially is.

Diversified,

that they were inherent in each other: for if it is necessary that whatever is generated, should either be generated from beings, or from non-

Diversified, are doom'd to endless change.
 All things in union now thro' love conspire,
 And now, thro' strife divuls'd, are borne along.
 Hence, when again emerging into light
 The one is seen, 'tis from the many form'd.
 All mortals, too, so far as they are born,
 Of permanent duration are depriv'd;
 But as diversified with endless change,
 Thro' this unmov'd forever they remain,
 Like a sphere rolling round its centre firm.
 But to a fable listen, for the wit
 Ebriety increases.—As before
 A fable I announc'd, again I say,
 That these are twofold: at one period, hence,
 One thing alone from many was increas'd,
 And at another many rose from one.
 Fire, water, earth, and air immensely high,
 With strife pernicious, from the rest apart;
 And each possess'd equality of power:
 While love in these had equal length and breadth.

 But to my words, devoid of guile, attend,
 For all these equal are, and equal in their birth,
 And nothing adventitious is, or ever fails.

In these verses he says, that there is one thing from many, i. e. from the four elements; and that at one time friendship has dominion, and at another strife: for that neither of these entirely fails, is evident from his asserting that all things are equal, and of an equal age, according to their birth, and that nothing is adventitious or fails. And not only friendship is one, but strife also is reduced to one. Asserting also many other things, he adds the character of each of the above-mentioned particulars, calling fire, the sun; air, splendor and heaven; and water, rain and the sea. That he also obscurely signified a twofold order, the one intelligible, and the other sensible, and the one divine, but the other mortal, of which the former has the relation of a paradigm, and the latter of an image, is evident from the following verses:

Dark and tremendous rain in all is seen,
 But trees and solids from the earth are pour'd.

In

non-beings, and it is impossible that things should be generated from non-beings (for in this opinion all physiologists accord) they thought that what remains must necessarily happen, viz. that they must be

In wrath, all biform'd natures separate lie,
But in love mingling for each other burn.
From these, what was, is, will be, is deriv'd.
From these, trees blossom, men and women spring,
Beasts, birds, and fishes that in water live,
And long-liv'd gods, transcendently renown'd.

For in these verses, he not only says, that generated and corrupted natures are composed from friendship and strife, but also the gods themselves. From the following verses also, he may be supposed obscurely to signify a twofold order :

In their own parts all these envelop'd lie,
The sun, the earth, the heavens, and the sea,
With all that is adapted to be form'd
In mortal realms. In temperament, besides,
All that were more sufficient to themselves,
Venus, as similarly form'd, conjoin'd.
But hatred from each other far apart
Divides them, in their temperament and source,
And forms resemblant ; since, to coalesce
Is to them strange, and bitter in th' extreme.
For, born themselves from strife, an offspring they desire.

For he manifests that these things are adapted to mortal natures ; but in intelligibles they are more united, and adhere to each other, being rendered mutually similar by Venus. He also shows that these are everywhere, but that intelligibles are assimilated by friendship, and sensibles subdued by strife ; and that being divulsed far apart from each other in their origin and temperament, they subsist in forms resemblant, which have the relation of images, and are produced by strife, and are unaccustomed to be united to each other. But that Empedocles also admitted generation, according to a certain mixture and separation, is evident from what he says in the beginning :

For now, from many, one alone increas'd,
And then the many from the one arose.

* In this also, says Simplicius, Aristotle, emulating the benevolence of Plato, wishes not to introduce ancient and illustrious men as asserting things perfectly absurd, nor to despise their decision, but to mention certain arguments, by which they were led to promulgate opinions that appear to be discordant.

generated

generated from beings, and these such as are inherent; but that they were not perceived by us, through the smallness of their bulk. Hence, they say that every thing is mingled in every thing, because they saw that every thing is generated from every thing; but they assert that things appear different, and are denominated different from each other, from that which especially transcends, through the multitude of infinites in the mixture: for they say that the whole is not genuinely white, or black, or sweet, or flesh, or bone, but that what each particular possesses in greater abundance than other things, is the nature of that thing. If, therefore, the infinite, so far as infinite is unknown, that which is infinite, according to multitude or magnitude, is a certain unknown quantity; but that which is infinite according to form, is a certain unknown quality. But if principles are infinite, both according to number and according to form, it is impossible that the things consisting from these should be known: for thus we apprehend that we know a composite, when we know from what, and from how many things it consists⁵.

Again, if it is necessary that when the part of a thing may be of an indefinite magnitude, that thing also should itself be indefinitely great or small, (but I mean some one of such parts into which, being inherent in the whole, the whole itself is divided); and it is impossible for an animal or a plant to be of indefinite dimensions, according to magnitude and parvitude; if this be the case, it is manifest that no one of the parts can be indefinitely great or small; for, if it could, this must also be the case with the whole. But flesh and bone, and things of this kind, are parts of an animal; and fruits are parts of plants. It is evident, therefore, that it is impossible for flesh, or bone, or any thing else, to be indefinitely great or small. Besides, if all such

⁵ That Anaxagoras, by the infinite, meant a multitude of forms which rank as principles, and are incomprehensible by us, and that he did not mean the infinite by nature, is evident from his saying, "Intellect knew all the things that were mingled and separated, together with such as will be, and such as have been. It likewise orderly disposed all such things as now are and will be." If, therefore, they are known to intellect, they will not be naturally infinite. Nevertheless, what Aristotle says is true, that if the forms of principles are unknown, the things composed from them will be unknown.

things are inherent in each other, and are not generated, but, being inherent, are separated, and are denominated from that which is more abundant; if also any thing is generated from any thing, as, for instance, water from flesh by secretion, and flesh from water; and if every finite body is consumed by a finite body, it is evident that every thing cannot be inherent in every thing: for flesh being taken from water, and again other flesh being generated from the remaining water by secretion, though that which is separated will be always less, yet at the same time, it will not surpass a certain magnitude in smallness. Hence, if the secretion should stop, every thing would not be inherent in every thing; for in the remaining water, flesh will not be inherent. But if it should not stop, and there should be a perpetual ablation, in a finite magnitude, there would be equal finites, infinite in multitude; which is impossible. To which we may add, that if any body necessarily becomes less, when something is taken from it, but the quantity of flesh is definite, both in magnitude and parvitude, it is evident, that from the smallest flesh no body will be separated; for, otherwise, there would be a less than the least. Besides, in infinite bodies, infinite flesh would now be inherent, together with blood and brain, and these would be separated from each other, would no less have a subsistence, and each of them would be infinite. This, however, is absurd⁶. But it is not sagaciously, though it

⁶ The assertion of Anaxagoras, says Simplicius, receives, in what is now said by Aristotle, a fifth, and in my opinion the strongest confutation, if it is considered merely according to its apparent meaning. And the argument is against the whole hypothesis which asserts that there are infinite principles consisting of similar parts, and that all things are mingled in all. Anaxagoras, however, did not say that the elements are infinite in such a manner as to be infinite, and numberless by nature, but as incomprehensible by us, since in themselves they are finite, and bounded by form and number: for, as he says, intellect knew all that were mingled together and separated, together with such as would be in future, such as now are, and such as have been: all these, intellect disposed in order. If, however, the elements and their mixtures were actually infinite, according to multitude, in species, intellect would neither have known, nor disposed them in order: for, order is not in infinities, and the knowledge of intellect is a definite and not an indefinite comprehension, subsisting according to definite, and not according to infinite species. But that Anaxagoras, when he uses the word infinite, does not consider it as that which

it is rightly asserted by Anaxagoras, that one thing will never be entirely separated from another: for passions (i. e. accidents) are inseparable from substance. If, therefore, colours and habits are mingled, if they are separated, there will be something white or salubrious, which will not be any thing else, and which will not be predicated of a subject; so that intellect, by investigating things impossible, will act absurdly, if it wishes, indeed, to separate. It is impossible, however, for this to be done, as well according to quantity, as according to quality. It is not possible according to quantity, because there is not a least magnitude; nor according to quality, because accidents are inseparable⁷. Nor does he rightly assume, that
generation

is entirely not to be passed through in multitude, is evident from his calling intellect infinite, as when he says, "Intellect is infinite and self-ruling." If, therefore, Anaxagoras does not call the elements infinite in species, neither were the things mingled from them infinite, but finite in species, and the homoiomeriæ or things of similar parts will in every thing be finite. But neither does Anaxagoras appear to separate every thing from every thing, although he says, "All things subsisted together:" for he clearly says, that in the separation contraries were separated from contraries, and not any thing from any thing indiscriminately: "for, says he, the dense was separated from the rare, the hot from the cold, the splendid from the dark, and the dry from the moist." So that every thing was not separated from every thing, nor from water, flesh, or brain. And thus Anaxagoras will escape all the objections brought against him: for if principles are not infinite, neither they nor their progeny are unknown, nor will the infinite be less or greater, nor will there be a separation to infinity, as of infinite forms. In order to confute Anaxagoras, therefore, it will be necessary to adduce other arguments against him, if he says that generation subsists according to separation: for how from the water in a bowl could so much air be separated, unless there were change according to quality? And what is it that makes man from flesh and bones, and things of this kind? For man is not inherent. But if we see that man is generated from that which is not man, what hinders but that flesh may be generated from that which is not flesh, by the cause which produces man, whether it be intellect, or any other cause. Simplicius adds, it is worthy of remark that Aristotle here considers the brain as a thing of similar parts, though it is an organic part, since it has veins and arteries from which it derives its completion, and is invested with the *pia mater*.

⁷ Anaxagoras having said, that one thing was not divided nor separated from another, because all things are in all; and that neither the hot was cut off and taken away from the cold, nor the cold from the hot, because nothing is essentially genuine; this Aristotle says is not said sagaciously: for, it does not happen that they are not separated because all things are in all,

generation consists from things which possess a similar form : for clay is partly distributed into clay, and partly not. Nor are water and air produced from each other and generated, in the same manner as tiles from a house, and a house from tiles. But it is better to assume principles less in number and finite, as Empedocles makes them to be.

though it happens on another account. Hence it is not sagaciously, but at the same time is truly asserted. For passions, viz. accidents, are inseparable from essence, such as colours and habits ; since, essence and accidents being mingled together, if accident were separated, it would no longer be accident, but essence or substance, as subsisting by itself, and not having its being in a subject. Anaxagoras, however, Simplicius adds, does not so directly say that intellect wished to separate the homoimeriæ, and that to do this is impossible ; but that it is intellect which moves, and leads forth, and arranges, and is the cause of all separation : for, having said that intellect is the cause of circular regression, he adds, “ This circular regression produced separation, and separated the dense from the rare, the hot from the cold, the splendid from the dark, and the dry from the moist.” And shortly after, he adds, “ But one thing was not divided, nor separated from the other.” It is evident, therefore, that in one way it is said the dense was separated from the rare, &c. ; and in another way, neither was one thing separated from another : for Anaxagoras asserts the latter, because there is not a generation of all things from each other, since he does not say that a line was separated from the white, but from contraries. But he asserts the former, because the things which are contained in one world, are not separated from each other, nor cut off with an axe, as he elsewhere says, but, as being united, are present with and subsist in each other. According to Anaxagoras, therefore, forms are separated and united, and possess both, through intellect, which Anaxagoras deservedly celebrates, for he says, “ Intellect is infinite, self-ruling, and not mingled with any thing, but is alone by itself.” And again, “ For it is the most attenuated and the most pure of all things, and possesses a knowledge of every thing. It has likewise the greatest power, and rules over such things as possess a soul, and are greater and lesser, and over all things. It also has dominion over the whole circular regression ; knows all things that are mingled, divided, and separated ; and disposed in order such things as will be hereafter, such as have been, and such as now are.” So that intellect, according to Anaxagoras, was not willing that things impossible should be effected ; but by an intellectual separation, it segregates the forms in the world, being itself separate from them. The forms also in the world, through the intellectual nature of their producing principle, and through the confusion in generation, are mingled with each other.

CHAP.

CHAPTER VI.

ALL philosophers, therefore, make principles to be contraries; as well those who say that the universe is one and not moved, (for Parmenides makes principles to be the hot and the cold, and these he denominates fire and earth) as those who introduce as principles the rare and the dense. But Democritus makes principles to be the solid and the void; of which the former, he says, has the relation of being, but the latter of non-being. Besides this, he distinguishes the solid by position, figure, and order (for these are the genera of contraries); by position, as upwards, downwards, behind, before; by figure, as angular and without angles, straight, and circular. That all philosophers, therefore, in a certain respect make principles to be contraries, is manifest⁸. And it is reasonable that they should: for it

⁸ Aristotle, says Simplicius, having shown that there is neither one principle, nor infinite principles, and having concluded that those speak better who admit that there are many and finite principles, as Empedocles, ought immediately to have demonstrated how many those principles are. Omitting this, however, he first shows what they are, in so doing not acting absurdly: for, together with what they are, it is also demonstrated how many they are; since, if they are contraries, the extremes are entirely two. But he shows that the elementary principles of physical things are contraries; first, from the concord of nearly all physiologists in this, although they dissent in other particulars: for those who assert that being is one and immovable, as Parmenides, even these make the principles of natural things to be contraries: for Parmenides, in the verses which he composed according to opinion, makes the principles to be the hot and the cold; and these he denominates fire and earth, and light and night, or darkness.

Those also who asserted that there is one, and that a moveable principle, as Thales and Anaximenes, and who contended that generation was effected by rarity and density, made principles to be contraries, viz. rarefaction and condensation. Democritus likewise made principles to be contraries, assuming the full and the void; the former of which he called being, and the latter non-being. He also surveyed contrariety in the atoms themselves: for he said they are distinguished by three ultimate differences, rymos, diathige, and trope: calling figure, rym; order, diathege;

it is necessary that principles should neither be produced from each other, nor from other things; and that from these all things should be

diathege; and position, trope. Thus the letter A, for instance, differs from the letter M, in figure; Z from N, in position; and A N from N A, in order. But these three are the genera of contraries; position, indeed, of upwards and downwards, the right hand and the left, before and behind; but figure, of that which is angular, and that which is without angles, of the right-lined, and the circular. And in order, the first and the last are contraries. But Aristotle omits at present Empedocles and Anaxagoras; the former because contrariety is manifest according to him, in the elements, and according to friendship and strife, and likewise according to mixture and separation: for, he says that generation is nothing else than the mixture and permutation of things mingling together. But he omits Anaxagoras, because he had mentioned him before, as admitting contraries in principles. The Pythagoreans also asserted that the secondary and elementary principles are contraries, not only of natural things, but in short of all things after *the one*, which they called the principle of all things; under which two principles, as no longer being principles properly so called, they arranged two co-ordinations. But Eudorus writes concerning these, as follows: "According to the highest discussion we must say, that the Pythagoreans assert *the one* to be the principle of all things; but according to the second discussion, that there are two principles of effects, i. e. *the one*, and the nature contrary to this. But all things being conceived to subsist according to contrariety, under *the one* they arrange whatever is elegant, and under the nature contrary to this whatever is vile. Hence, these principles, according to these men, are not the whole: for if one is the principle of these things, and the other of those, yet they are not the common principles of all things, in the same manner as *the one*." And again, "On this account, says he, they assert *the one* to be the principle of all things after another manner, since matter itself, and all beings are generated from it. But this is the Supreme Deity." Afterwards Eudorus, having accurately discussed these particulars, adds, that the Pythagoreans assert the one to be the principle of things, but that elements are produced from the one, which they call by many names. "For, he adds, I say, therefore, that the Pythagoreans leave *the one* as the principle of all things; but introduce, after another manner, two extreme elements. But they call these elements by many names: for one of them they denominate the arranged, the definitive, the known, the male, the odd, the right hand, light. But the contrary to this, the inordinate, the indefinite, the unknown, the female, the even, the left hand, darkness. So that as the principle it is the one; but as elements, the one, and the indefinite duad; both which are principles, and again are one. It is evident, therefore, that *the one* which is the principle of all things is different from that one which is opposed to the duad, which one also they call the monad." But it is worth while to observe how Aristotle does not say that all philosophers make principles to be contraries, but, "in a certain respect contraries." For they do not say that principles are contraries properly so called, but such as they considered to be contraries: for neither are the full and the void contraries, but are rather opposed as privation and habit. Nor are the angular, and that which is without an angle, contraries; nor the

be generated. But these requisites are inherent in the first contraries : for, because they are first, they are not from other things ; and because they are contraries, they are not from each other⁹. But it is necessary

the right-lined and the circular : for, that which is right-lined is a certain figure ; and Aristotle shows that there is no contrariety in figures. Perhaps, however, the ancients did not consider these as properly contraries, but as opposites : for Aristotle himself, as we shall learn, when he calls principles contraries, asserts that form and privation are the first contrariety ; which are not opposed as contraries, but after another manner. He says, therefore, "contraries in a certain respect," that is, according to different modes of opposition.

⁹ Aristotle having rendered it credible that principles are contraries, through the concord of other philosophers, which was a partial proof, he universally procures belief in this opinion, through the following syllogism. The first contraries are neither from other things, nor from each other, but other things derive their subsistence from these. But things with these conditions are principles. The first contraries, therefore, are principles. But he calls the first contraries, such as are the most generic. Indeed, if there is any thing which is simply first, it is manifest that it does not subsist from any thing else : for the first, so far as it is first, will not be from another. And that the principle is not from another, is evident. That principles, too, are not from each other, is also manifest : for if the principle is from a principle, says Plato, it will not be the principle. And, in short, if they are from each other, they are no more principles than from principles. But how is it true that contraries are not from each other ? for Aristotle has shown the very contrary, that they are from each other ; since the black is from the white, and that which is musical from that which is unmusical. May we not reply, that as generated one after another, they are said to be from each other ; but as from elements and things which remain, in the same manner, as a bed is said to be made from wood, contrary will not be generated from contrary. But this is the proper mode of generation from something : for it is not possible that matter can be the contrary to a contrary : for it is not possible that one contrary can sustain another. That, however, which is said of principles, viz. that other things are derived from them, is indubitably adapted to principles : for things posterior to the principle are from the principle, if it is truly the principle. It is also adapted to contraries, because the generation of things posterior to principles, is according to mutation ; and all mutation, as will be shown, is produced from a contrary into a contrary. But how are contraries principles, since, in the 12th book of his *Metaphysics*, Aristotle divinely exclaims that the domination of many is not good. Or, may we not say, that we now investigate the principles of natural things, and these not such as are exempt, but the elementary, and from which, being inherent, generated natures are produced, as he will hereafter show, when he says, that the elements are three : for since natural things have their being in mutation, and all mutation is from something into something, about a common subject, there will not be one principle only, but, besides the subject, two at least. May we not, however, inquire, whether first contraries entirely subsist in such a manner,

necessary to consider how it happens that all things originate from principles.

In the first place, therefore, it must be assumed, that in the universality of things, nothing is naturally adapted to act casually upon any thing, or to be casually acted upon by any thing; nor is any thing disposed to be generated from any thing, unless some one considers these things as taking place according to accident: for how can that which is white be generated from that which is musical, unless the being musical happens to that which is white or black? But white is generated from that which is not white; and this, not from every thing which is not white, but from black, or some one of the intermediate colours. That which is musical also is generated from that which is not musical, yet not from every thing which is not, but from that which is void of music, or something, if there be any such thing, which subsists between these. Neither is a thing corrupted into any casual first. Thus, for instance, white is not corrupted into that which is musical, unless, perhaps, according to accident, but into that which is not white; and this not into any thing not white, which may occur, but into black, or some intermediate colour. In like manner, that which is musical is corrupted into that which is not musical, and this not into any thing unmusical which may occur, but into that which is void of music, or into something between

manner, as neither to be produced from other things, nor from each other, yet not first contraries only, but also things which are different, but not contraries: for not all things which are different are contraries; as if some one should say, that quality and quantity are principles: for they are not from other things if they are principles; nor from each other, if both are similarly first. Unless we say, that quantity and quality are not first principles; for a subsistence in a subject is common to all the nine categories; and not to be in a subject belongs to essence or substance: for such things as are first and of equal power, are surveyed in a certain opposition. Hence things which are not opposite, are in a certain respect under each other, though the order of them is not manifest. Hence, after the one cause of all things, a duad, which is the leader of all opposition, is acknowledged as well by those who mythologically, as by those who philosophically unfold the divine orders. And this opposition, indeed, is concealed in divine natures, being vanquished by the union which is there; but here it appears with a multiform subsistence.

these,

these, if there be any such thing. The like also takes place in other things; because things which are not simple, but composite, subsist according to a similar reasoning. As, however, the opposite dispositions are not denominated, we are ignorant that this circumstance happens: for it is necessary that every thing which is harmonized, should be generated from that which is void of harmony, and that which is void of harmony from that which is harmonized. It is also necessary that what is harmonized should be corrupted into a privation of harmony; and this not casually, but into its opposite. But there is no difference, whether this is asserted of harmony, or of order, or composition: for it is evident that the same reasoning will apply to all these. A house also, a statue, and any thing else, are generated after a similar manner: for a house is generated not from the particulars from which it is composed, being so composed as to form the house, but from their being separated; and a statue, and any thing which is figured, are generated from a privation of figure; and each of these is partly order, and partly a certain composition. If, therefore, this is true, whatever is generated is generated from contraries, and whatever is corrupted is corrupted into contraries, and into the media which subsist between these. But these media subsist from contraries: as, for instance, intermediate colours subsist from white and black. Hence all things which are generated by nature, are either contraries, or from contraries¹. Thus far, therefore, nearly, the ancient philosophers

¹ Aristotle, says Simplicius, may here be suspected to contradict himself: for, previous to this, he asserts that contraries are not generated from each other, and now he says that the contrary is generated from the contrary. There, however, it was said, that contraries are not generated from each other, as from matter; for black is not generated as from inherent white, in the same manner as a bed from wood. Or rather, that they are not generated from each other, as from producing causes; for contraries are not productive of each other. But here it is said, that a contrary form departing from a subject, a form contrary to it accedes from its maker. Let it, however, be manifest, that nothing is naturally adapted to act upon or be passively affected by any thing indiscriminately: yet whence is it evident that things which are naturally adapted to act upon, and be passive to each other, are contraries? For the soul is said to be illuminated by the divinity, yet, not being contrary, by that which is contrary: for it is passively affected as

philosophers have advanced together with us, and most others, as we have before said: for all of them assert that the elements, and those things which are called by them principles, are contraries, though they establish them without reason*, as if they were compelled to assert this by truth itself. They differ, however, from each other in this, that some of them assume prior, and others posterior principles; and some of them things more known according to reason, but others such as are more known according to sense: for some establish the hot and the cold, others the moist and the dry, others the odd and the even, and others strife and friendship, as the causes

that which is indigent by that which is full, and changes from the privation to the possession of divinity. In short, every thing which is generated, is not that which it is made to be; for if it were, it would not be generated. So that it is generated from that which is not such a thing as itself, but is naturally adapted to become so. But the same thing is naturally adapted to be the recipient of opposites; for the same body is the recipient of heat and cold, of black and white; and the same soul of music and the privation of music. When, therefore, is the soul naturally adapted to be changed into the musical? Is it when it is musical? By no means. Hence, it must be when it is not musical, but is naturally adapted to become musical. And when does the body become white? Shall we say when it is white? By no means. But when it is not white, indeed, but is naturally adapted to become so. If, therefore, to be naturally adapted is this, for a thing to be the recipient of contraries, not having that which it is said to become, it is evident that it will either have the opposite to it, or that which subsists between; and from that will change into that which it becomes. And precedaneously, indeed, generation is from that which is not a thing of such a kind, but is naturally adapted to become so. Hence, mutation is from privation into habit; but also from a contrary, so far as this likewise is not a thing of such a kind, and is naturally adapted. And, in short, it is from the opposite, according to any kind of opposition; for it is not necessary that the white should be generated from black, so far as black, but from that which is not white, and is naturally adapted to become white. But that which is naturally adapted to become white, is also naturally adapted to become black: so that when it is not white, it is either black, or that which has an intermediate subsistence. Hence, it is either from black, or that which subsists between. But a thing is corrupted into that from which it is generated.

Simplicius adds, it is well observed by Alexander, that a thing to which nothing is contrary, or which is not the recipient of contraries, will be unbegotten; adding the latter, says Simplicius, as it appears to me, on account of an individual essence; for to this nothing is contrary, but it is the recipient of contraries; and on this account, it not only receives form, but also the privation of form.

* i. e. Without a demonstrative cause.

of

of generation. But these differ from each other in the manner above mentioned. Hence in a certain respect they assert the same things, and speak differently from each other. They assert different things, indeed, as is also apparent to most men; but the same things, so far as they speak analogously. For they assume principles from the same co-ordination; since, of contraries, some contain, and others are contained. Hence they speak similarly and differently, and worse and better. And some, indeed, establish things more known according to reason, as we have before observed; but others, such as are more known according to sense: for universal is known according to reason, but that which is particular, according to sense; since universals are the objects of reason, but particulars of sense. Thus, for instance, the great and the small are more known according to reason, but the rare and the dense according to sense. That it is necessary, therefore, that principles should be contraries, is evident.

CHAPTER VII.

AFTER this, it follows that we should say, whether there are two, or three, or more principles: for it is impossible that there should be one principle only, because contraries are not one. But there cannot be infinite principles, because if this were admitted, being would not be an object of scientific knowledge. There is also one contrariety in every one genus; but essence is one certain genus². The causes also of all natural things

² Simplicius observes, that when Aristotle says essence is one certain genus, he does not, perhaps, now speak of the essence or substance, which receives a division opposite to the other categories, but of the whole essence of a natural subsistence, the being of which consists in mutation; which is the subject of the present discourse, and of which we investigate the principles; and in which all contrariety, according to form and privation, are beheld, subsisting through mutation. But that in such an essence there ought to be one supreme contrariety, he shows by assuming that such an essence, physical, generated, and material, is as it were one certain

things may be better assigned from finite principles, as Empedocles does, than from infinite principles: for Empedocles thinks that he unfolds all things from finite, in the same manner as Anaxagoras from infinite principles. Farther still, some contraries are prior to others, and some are generated from others; as, for instance, the sweet and the bitter, the white and the black; but it is necessary that principles should always remain³. From these things, therefore, it is evident that there is

certain genus; just as if it should be said, that there is one certain genus of an intelligible, unbegotten, and perfectly immaterial subsistence. Afterwards assuming that in every one genus there is one supreme contrariety, he collects that in the genus which is our present subject, there is one principal contrariety of genus, and that on this account there will not be infinite principles. Nor must we wonder that the name of essence or substance is assumed in common; for at present, accurately speaking of generation and corruption, he calls them mutations according to essence: but he frequently uses them in quality, asserting that the white is generated from the black, and that the black is corrupted into the white; though in that which is black becoming white, no mutation according to essence, but according to quality, is produced. However, that in every one genus there is one first contrariety, is evident from hence, that genus signifies a common nature; and that which is common is either above, so as to be the cause of differences, as essence and matter, in the same manner as the ten categories, or it is below, so as to be the recipient of differences. But if it be the cause, it will indeed, in the extent of the generation of differences, produce two extremes, very much distant from each other; that is to say, it will produce contraries. And if it be the subject, it will possess, in those things which are changed about it, not more than two contraries proximately, as is evident in things themselves: for as in quality there is one supreme contrariety, the similar and the dissimilar; and in quantity, the equal and the unequal; so, likewise, in common essence there is one contrariety, form and privation.

³ It is well observed by Simplicius, that the word *always*, here, does not signify the perpetual; nor does it manifest that the principles, about which Aristotle is speaking, are unbegotten, and incorruptible: for if this were the case, how would there be generation and corruption from the mutation of these, which is the object of investigation. But it is said to be necessary that principles should always remain, because it is requisite, in every thing which is generated and corrupted, that either form or privation should be found in that which is changed; or rather, both form and privation: for every thing has form, and also privation, which is the absence of that form into which it is naturally adapted to be changed. And this will be truly the peculiarity of principal contrariety. Hence, Aristotle adduces this as the cause of other contraries not being principles, since they do not proceed through all things: for you will not find any one of more partial oppositions extended to all natural things; since neither are all physical things black or white, or sweet or bitter; but in every thing natural, there is form; except that in things

is neither one principle, nor infinite principles. But, since they are finite, there is some reason why they should not be considered as two alone. Some one, however, may doubt how density is naturally adapted to produce rarity, or rarity density; and in like manner with respect to any other contrariety whatever: for friendship does not conjoin strife, or produce any thing from it; nor does strife make any thing from friendship; but both produce a certain other third thing. But some assume many principles, from which they constitute the nature of things. To which may be added, that the following doubt may be urged by some one, unless another nature is introduced as a subject to contraries: for we see that contraries are not the essence of any thing; and principle ought not to be predicated of any subject; since if it were, there would be a principle of a principle: for subject appears to be the principle, and to be prior to that which is predicated of it.

Farther still, we say that essence is not contrary to essence; how, therefore, will essence consist from things which are not essences? or, how will non-essence be prior to essence? Hence, if some one should think that what is before asserted is true, and should also admit the truth of what is now said, it is necessary, if he wishes to preserve both assertions, that he should introduce a certain third thing as a subject to contraries. Just as they say who affirm that the universe is one certain nature, such as water or fire, or that which subsists between these. But it appears that the subject is rather that which subsists between the elements: for fire and earth, air and water, are complicated with contrarieties. Hence they do not act absurdly, who

things perpetual, there is form alone, but in generable and corruptible natures, together with form, there is also privation, not of the same form, but of the opposite, into which it is naturally adapted to be changed. Thus, therefore, *principal* opposition is said always to remain, though *other* oppositions do not remain. Just as if it should be said, that the first matter always remains, since it is seen in all material natures, though wood and brass, and partial matters, are not in all such natures. May we not also say, that the term *always* not only denotes the *allness* of time, but likewise of things, so that it is now asserted of the *everywhere*.

make

make the subject to be different from these. But of the rest, they think more rightly who make air to be the subject; for air has less sensible differences than the rest. And water follows air. All, however, give form to this one thing from contraries, as, for instance, from density and rarity, and from the more and the less. And these things in short are excess and defect, as was before said. This opinion, too, appears to be ancient, I mean, that *the one, excess and defect*, are the principles of things; except that the ancients did not consider these principles after the same manner as the moderns: for the ancients asserted that two of these principles are active, but that the one is passive; but certain of the moderns⁴ assert, on the contrary, that the one is active, but that the two are rather passive. The assertion, therefore, that there are three elements, may appear to have some weight, as we have before observed, to those who, from these and other speculations of the same kind, consider the affair.

It is not, however, probable that there are more than three principles; for one principle is sufficient for the purpose of being passive. But if there are four principles, there will be two contrarieties; and it will be necessary that a certain other middle nature should subsist as a subject separate from both. If, too, they are able to generate from each other, the other of the contrarieties will be superfluous. At the same time, however, it is impossible that there should be many first

⁴ Plato, as Simplicius observes, appears to assert this, since he admits that there is one productive principle, but calls the passive principle, i. e. matter, excess and defect, the great and the small, and by this asserts that two of the principles are the same thing. But it is evident, if Plato says that the producing cause, properly so called, is one, this cause was not an element. And if he says that form is one, but matter two, according to the custom of the Pythagoreans, who signified things through numbers, in this case, he very properly calls form one, as defining and bounding whatever it comprehends, but denominates matter two, as indefinite, the cause of bulk and division, and naturally adapted to receive opposites. Aristotle himself also, as we shall shortly see, considers privation and matter as the same, when he says, "The subject is, indeed, one in number, but two in species." And it is evident, that he calls the subject two, but form one.

contrarieties;

contrarieties ; for essence⁵ is one certain genus of being : so that principles will differ from each other in prior and posterior alone, but not in genus, for in one genus there is always one contrariety, and all contrarieties appear to be referred to one. That there is neither one element, therefore, nor more than two or three, is evident. But which of these assertions is the more true, is, as we have said, attended with much doubt.

CHAPTER VIII.

WE, therefore, shall speak as follows, first discussing the whole of generation ; for it is conformable to nature, having first considered such things as are common, to contemplate afterwards the peculiarities of any individual : for we say that one thing is generated from another, and a different thing from a different thing, when we speak either of things simple, or of such as are composite. My meaning is this : a man may become a musician ; something also which is not musical may become a musician ; or a man who is not a musician, may become a musical man. That which is simply generated, therefore, I call man, and that which is not musical. The simple which is generated I call that which is musical ; but the composite of which there is a generation, and which is generated, I consider as subsisting, when we say that a man who is not a musician becomes a musician.

⁵ By essence and one certain genus, it is better, perhaps, says Simplicius, to understand every thing that is generated, and which belongs in common to the ten categories. Hence, proximate contrariety, i. e. habit and privation, is common to these ten genera. We may also understand essence as signifying, in this place, matter, because through this every thing generated, and material, subsists. Not, indeed, that matter is properly essence ; since it is neither intelligible, nor sensible essence : for the former is entirely immaterial, and the latter has generation and corruption, as being properly a *generated* essence. But that which is generated and corrupted, is indigent of a subject, and matter, as we shall learn in what follows. To admit, however, that there is a matter of matter, is perfectly absurd.

But

But of these, the one is not only said to have become this particular thing, but also to have been generated from this particular thing, as, for instance, a musician from that which is not a musician ; but the other is not predicated of all things ; for a musician is not generated from a man, but a man becomes a musician. Of things, however, which are generated, as we say that things simple are generated, one thing when in generation, or becoming to be, remains, but the other does not remain : for man remains, and is in becoming a musician ; but that which is not musical, and that which is void of music, neither simply, nor in a composite manner, remains.

But these things being defined from every thing which is generated, this may be concluded by any one who directs his attention to it, that it is necessary, as we have said, there should always be something which is the subject of generation. And this, though it is one in number, yet is not one in form : (for, by one in form, I mean the same thing as one in definition) for the essence of man, and of that which is void of music, are not the same. And the one, indeed, remains, but the other does not remain. That which is not opposed remains, for man remains ; but that which is musical, and that which is void of music, do not remain. Nor does that which is composed from both remain, as, for instance, an unmusical man. But that something should be generated from something, and that something should not become this particular thing—each of these is rather predicated of things which do not remain, as, for instance, that which is musical is said to be generated from that which is void of music, but not from man. Nevertheless, this is sometimes similarly asserted of things which remain : for we say that a statue is generated from brass, and not that the brass is generated a statue. Of that, however, which is opposed, and does not remain, the predication is made in both ways, viz. this particular thing is said to be generated from that, and that particular thing is said to be generated this. A musician also is generated from that which is void of music, and he who

who is void of music becomes a musician. Hence also the like takes place in the composite: for from an unmusical man, a man void of music is said to have become a musician.

Since, however, the term generation is multifariously predicated, and some things are said not to be generated simply, but to be generated this particular thing, but simply to be generated is the property of essences only;—this being the case, in other things, it is evident that there must necessarily be something which is the subject of generation; for quantity and quality, that which is a relative, when and where, become the subjects of a certain thing, because essence alone is predicated of no other subject, but all other things are predicated of essence. But that essences, and such other things as have a simple subsistence are generated from a certain subject, will become evident to him who considers this affair. For there is always something which is placed under these, from which the thing produced is generated, as, for instance, plants and animals from seed. But things which are simply generated, are generated partly by a mutation of figure, as a statue from brass, and partly by addition, as things which are increased. Some, too, are generated by ablation, as Mercury from a stone; but others by composition, as a house. Others again are generated by a change in quality, as things which are varied according to their matter. But it is evident that all such particulars as are thus generated, are generated from subjects. So that from what has been said it is manifest, that every thing generated is always a composite. And there is something, indeed, which is generated, but there is also something which this thing becomes. And this which is generated is twofold: for it is either the subject, or the opposite. I mean, that what is void of music is opposed, but that man is the subject. I also call the privation of figure, form, or order, that which is opposed; but the brass, the stone, or the gold, the subject. It is evident, therefore, if those things are the causes and principles of things subsisting from nature, from which primarily they derive their being, and are generated not from accident, but what each is said to be according to
K essence:

essence: it is evident, if this be the case, that every thing is generated from subject and form: for a musical man is composed, after a certain manner, from man and musician: for you dissolve reasons (definitions) into the reasons of them. It is evident, therefore, that things generated are generated from these.

The subject, however, is one in number, but two in species: for man and gold, and in short matter, are numerable: for it is more this particular thing, and that which is generated, is not generated from it according to accident. But privation and contrariety are accidents. Form, however, is one principle, as, for instance, order, or music, or some one of other things which are thus predicated⁶. Hence the principles may be said to be two, and they may also be said to be three. They are also partly contraries, as if some one should speak of that which is musical, and that which is void of music, or of the hot and the cold, or the harmonized, and that which is deprived of harmony. They are likewise partly not contraries: for it is impossible for contraries to be passive to each other. This, however, is solved because the subject is different: for this is not contrary. So that principles after a manner are neither more than contraries, but two, as I may say, in number. Nor again are they entirely two, because their essence is different, but three: for the essence of man is different from the essence of that which is void of music, and also the essence of that which is void of figure is different from that of brass. What

⁶ Aristotle here, as Simplicius well observes, accords with what Plato says in the *Timæus*, concerning matter: for the words of Plato are as follow: "That in which each of these (sensible particulars) appears to be ingenerated, and again to be dissolved, we should alone distinguish by the appellation of *this* or *that*." And shortly after he adds, "For if any one, fashioning all possible figures from gold, should without ceasing transform each figure into all; and if, during this operation, some one who is present should, pointing to one of these figures, inquire what it is; it might most safely, with respect to truth, be replied, that it was gold." But since the words *ταῦτα τῆ*, *this particular thing*, at one time appear to be asserted according to that which abides, and may be indicated, and at another according to that which is in itself, and is neither in another, nor dependent on another, and such is a composite, hence Aristotle accords here with Plato, by using the term *this particular thing*, for that which abides. But shortly after, using this expression, according to the perfect and composite, he denies it of matter.

the

the number, therefore, is of the principles of natural things which are conversant with generation, and after what manner they are so many, has been declared. It is also evident that it is necessary something should subsist as a subject to contraries, and that the contraries should be two; but that after a certain manner this is not necessary; for the other of the contraries will be sufficient, by its absence and presence, to the production of change⁷.

But

⁷ Aristotle, says Alexander, by these words, "For the other of the contraries will be sufficient, by its absence and presence, to the production of change," indicates that *privation* is not a certain nature and form, but the absence of that which is naturally adapted to be formed, which absence is not in the nature of the subject. For, universally, nothing is capable of becoming any particular thing, unless it is able to possess the privation of that thing in its own proper nature.

Simplicius adds, that this assertion of Aristotle perfectly agrees with the doctrine of Plato, because Plato also makes the subject not to be two things, but one thing, though he calls it by opposite appellations, viz. the great and the small; not being willing to survey privation in a certain subsistence, through the aptitude of matter to opposites. But it is evident that Aristotle also does not give a principal subsistence to privation, since he calls it the absence of form in that which is naturally adapted to receive form. He separates it, however, by definition from matter, though not in number, through generation being effected from opposites; Plato assigning natural adaptation to matter, according to its nature, and calling and denominating it the universal recipient, the place, receptacle, and seat of all generated natures: for he says in the *Timæus*, "But there is a certain invisible species, and a formless universal recipient." And again, "But the third genus is that of place, which never receives corruption, but affords a seat to all generated natures;" this being sufficient, through the presence of form, to generation and corruption. Hence Plato establishes two elementary principles, matter and material form; for from these, being inherent, he says, conformable to Aristotle, that what is composite is generated; except that Plato, indeed, delivers elements, properly so called, and these are things from which being inherent generated natures are produced, such as are matter and form; but Aristotle also adds an element according to accident, which is privation. Thus too with respect to the producing cause, Plato delivers that which is properly producing, the demiurgic intellect; but Aristotle besides this adds nature, which Plato ranks among organic causes, as being moved by a cause, but moving other things. To these causes Aristotle also adds fortune and chance, which are causes according to accident. Plato, indeed, also adds whence form proceeds into matter, viz. that it proceeds from the paradigm through the producing cause. He says, therefore, in the *Timæus*, "At present it is requisite dianoeically to conceive three genera, one, that which is generated, another, that in which generation is accomplished, and a third, that whence what is generated proceeds. It is likewise fit to assimilate that which receives, to a mother; that whence it proceeds, to a father; and the nature which is between these, to an offspring. And

But the subject nature may be scientifically known according to analogy : for as is the brass to the statue, or the wood to the bed, or matter

Aristotle, indeed, introduces matter, from generated natures being produced from contraries ; but contraries are not able to act upon, nor to suffer from each other by themselves : for it is necessary that what suffers should abide while it suffers, but contraries do not abide, when they are mutually present. He also introduces matter, from contraries not being sufficient for the purpose of a principle, since they are accidents and not essences : for there is not contrariety in essence ; but accidents require a certain subject in order to their existence. Plato also introduces matter from the mutation of generated natures, which ought entirely to take place about a certain common subject, and which is the subject to mutation : for of things which are changed, nothing remains. He also calls the things which are changed, contraries : for having said that each of the things which are generated, such, for instance, as fire or water, cannot be said to be fire or water, more than any thing else which is generated from them ; that they cannot be distinguished by any word, such as we are accustomed to employ, when endeavouring to show that any particular is either this thing or that : and that they fly away, incapable of sustaining all such appellations as would evince them to be something permanent and real," he adds, " But we should alone distinguish, by the appellation of this, or that, the subject in which each of these appears to be generated, and again to suffer a dissolution. This subject, however, is by no means to be denominated *such-like*, as, for instance, hot or white, or any quality belonging to contraries, or any thing which contraries compose." You see, therefore, that Plato also says that generation is from contraries, that contraries do not abide, and that on this account they require an abiding subject. Plato also adds another most proper cause, why it is necessary that there should be a certain subject to generated forms : for having previously shown that intelligible form, which is archetypal and paradigmatic, and itself subsisting by itself, is one thing, and that sensible form, which has the nature of an image, is another, he very properly adds that this resemblance is in a subject different from that to which it is assimilated : for assimilation and resemblance do not subsist by themselves, but in that which is assimilated, and made to resemble, which is the subject. But it will, perhaps, be better to hear the all-beautiful words of Plato : " Such, then, being the case, we must confess that the form which subsists according to *same*, is unbegotten and without decay ; neither receiving any thing into itself externally, nor itself proceeding into any other nature. That it is invisible, and imperceptible by sense ; and that this is the proper object of intellectual speculation. But the form which is synonymous and similar to this, must be considered as sensible, generated, always in agitation, and generated in a certain place, from which it again recedes, hastening to dissolution ; and which is apprehended by opinion in conjunction with sense. But the third nature is that of place ; which never receives corruption, but affords a seat to all generated forms. This, indeed, is tangible without tangent perception ; and is scarcely by a certain spurious reasoning the object of belief. Besides, when we attempt to behold this nature, we perceive nothing but the delusions of dreams, and assert that every being must necessarily be somewhere,

and

matter and that which is deprived of form to any thing else which possesses form, before it receives form ; so is this subject nature to essence, to this particular individual thing, and to being. This, therefore, is one principle, though it is not one, nor being in such a manner as this particular individual thing. Another principle is form ; and farther still, the contrary to this, privation. But with respect to these, how they are two, and how they are more than two, has been declared above. In the first place, therefore, it has been said, that principles are contraries only ; and in the next place, that it is necessary something else should be admitted as a subject, and that there should be three principles⁸. But, from what has been now said, it is evident

and be situated in a certain place : and we by no means think that any thing can exist, which is neither in the earth, nor comprehended by the heavens. All these, and all such opinions as are the sisters of these, we are not able to separate from our cogitation of that which subsists about a vigilant and true nature : and this because we cannot rouse ourselves from this fallacious and dreaming energy, and perceive that in reality it is proper for an image to subsist in something different from itself ; since that in which it is generated has no proper resemblance of its own, but perpetually exhibits the phantasm of something else ; and can only participate of essence in a certain imperfect degree, or it would become in every respect a perfect non-entity. But to true being, true reason bears an assisting testimony, through the accuracy of its decisions ; affirming, that as long as two things are different from each other, each can never become so situated in either, as to produce, at the same time, one thing, and two things essentially the same." Simplicius adds, it is worth while to observe, that, according to this account of matter, the celestial forms also are in a certain respect material, since they also are resemblances of the intelligible paradigms. So that in assertions about the elements, Plato and Aristotle scarcely appear to be in any respect discordant, except that Plato adds another cause why it is entirely necessary that there should be a certain subject.

⁸ As the paradigms of matter here proposed, says Simplicius, as, for instance, man and seed, and any thing else of this kind, although they have the relation of matter to things which are generated, yet are themselves also certain forms, every one will be desirous to learn what the subject matter itself to forms will be by itself : for, let seed be the matter of man ; blood, if it should so happen, of seed ; of blood, meat and drink ; and of these, the four elements. But since these also change into each other, according to contrary qualities, they are entirely indigent of a certain common subject, which has no quality in its own nature : for qualities are forms, and opposite forms. If, therefore, all knowledge which subsists according to affirmation, is of things circumscribed, which possess a certain character, and become definite through quality and form,

evident what the difference of the contraries is, how the principles are related to each other, and what is their subject⁹. It is not, however,

form, but the subject to forms and qualities ought to be entirely void of quality, and formless,—if this be the case, a thing of this kind will be, says Aristotle, known in a certain respect by analogy to other things: for as brass is to a statue, or wood to a bed, or that which is formless, before it receives form, to any thing else artificial which possesses form, so in physical things is the first matter to essence and being. But Aristotle very properly takes his paradigm from things artificial; since in these also the formless precedes according to time, and is of itself visible. Essences also or substances are the subjects of other things, but matter is the subject of substance; and hence likewise matter is the subject to all other things. It is, however, essentially the subject to substance, and the composite, but to other things according to accident. Hence also Aristotle says, “Thus it subsists with respect to substance and this particular individual thing, viz. to the composite, and that which is properly substance; because matter is not yet this particular individual thing, though it is more so than privation. It is also worth while to observe, that Plato, surveying matter according to its permanency, rather assigns to it *τὸδε τι*, *this particular individual thing*, as he evinces in the formation of golden vessels: and also when he says, “In which each of these appears to be ingenerated.” And again, “that alone can be denominated, whence they perish:” for in these passages, he uses the appellations *this*, and *this particular thing*. But Aristotle, surveying this particular individual thing according to form, imparts the term *it* to forms; but after the term *this particular individual thing*, he adds, “And to being also,” that is, to all things; of which some are essences, but others accidents; and some are precedaneously *this particular individual thing*, but others through this very term itself.

Plato calls this knowledge, according to analogy, spurious reasoning, because it is produced, not according to the affirmation of form, but according to the denudation and negation of forms; and the reasoning power sees matter, as it were, with shut eyes; so that the intellectual perception of it is not intelligence, but rather ignorance. Hence the phantasm of it will be spurious, and not genuine: for as we know things above the first form, not according to formal affirmation; but learning from the nature of forms, which is separate, and ought to have, prior to itself, the united and the one, that they are not the first forms, we know that which is above form by a negation of forms, negation not simply hurling us to its indefinite nature, but to the cause of form, and to that which is established above formal boundary: thus also surveying ultimate forms, which are images, which change into each other, and on this account require a subject capable of receiving the opposites in succession, we arrive at the conception of matter, by a negation of forms, which leads us into the receptacle of forms. But if, while investigating matter, we admit it to be some particular thing, definitely differing from other things, we shall fall upon something else, and not on matter: for matter has not any relative difference, since all formal difference is quality: so that the knowledge of matter is rather ignorance, since the things which are changed about it, being the last of forms, receive the last sensible knowledge. Hence

Plato

however, yet manifest, whether form, or the subject, is the essence of a thing; but that the principles are three, and how they are three, and

Plato says that matter is tangible with insensibility, signifying by this its resistance not according to affirmation; that he might show that as it is apprehended by a spurious reasoning, so likewise by a spurious sense.

But Aristotle derived the term, *according to analogy*, from the Pythagoric Timæus; as did also Plato the expression, *apprehended by a spurious reasoning*: for Timæus, in his book on the *Soul of the World, and Nature*, says, "That matter is conceived by a spurious reasoning, and not yet by a direct process, but according to analogy."

Since, however, some, and those not ignoble philosophers, say that body void of quality is the first matter, both according to Aristotle and Plato, as among the ancients, the Stoics, and among the moderns, Pericles the Lydian, it will be well to consider this opinion: for Aristotle and Plato, first introducing matter from the mutation of things which are changed, were of opinion that the qualities of the elements are the hot and the cold, the moist and the dry; but these having a common subject body, are changed about it, so that the first matter will be body. Farther still: if there were any other subject to body, since generations are from contraries, it would be necessary that there should be some subject to body, in order that opposites may be changed about the common subject. Again, that which abides in all mutation we say is matter; but body void of quality abides; for there is not any thing into which body can be corrupted. But that Plato says that matter is the proximate subject to the qualities of the four elements, and this is body void of quality, is evident from the following words: "The nurse of generation moist and fiery, and receiving the forms of earth and air." And again, "When the demiurgus began to adorn the universe, he first of all figured with forms and numbers, fire and earth, water and air, which possessed, indeed, certain traces of the true elements, but were in every respect so constituted as it becomes any thing to be from which Deity is absent." If, therefore, the demiurgus has inserted, in matter, the first forms of the elements, and the common subject of these is body without quality, matter will be this. According to Aristotle, also, matter appears to be body without quality, and the first subject: for if body, like some one of other forms, accedes to, and departs from matter, certainly prior to its acceding, and after its departing from matter, there will be a privation of body about matter, which is the incorporeal; and there will be a certain physical incorporeal essence, which was not the opinion of Aristotle, who everywhere clearly asserts, that physical things are bodies, and that they subsist about bodies.

That Plato, however, was not of opinion that body is the first subject which we call matter, will be evident from this, that superficies according to him are preassumed as the elements of body, which superficies have a more principal subsistence than bodies. He thus writes, therefore, in the *Timæus*: "In the first place, that fire and water, air and earth, are bodies, is evident to every one; but every form of body also possesses depth; and there is every necessity that superficies should by nature comprehend depth." In the next place, body, according to Plato, possesses a triple interval; for this is signified by its possessing depth. But a thing of this kind

and what the mode is of their subsistence, is evident. Hence, how many principles there are, and what they are, may be from these things surveyed ¹.

CHAP.

kind has number co-essentialized with it, and figures, and especially if all body is finite, as it appeared to be both to Plato and Aristotle. Matter, however, says he, has of itself none of these; but when it participates of forms, then it is figured with forms and numbers. That Aristotle, also, was not of opinion that the first subject is body, he clearly evinces, when he says, "There is the same matter of a large and a small body:" for the matter of body will not be body; and that which is the same subject both to the great and the small, will neither be great, nor small. But body, and especially that which is finite, is of a certain dimension; and the same body will not be of itself, at the same time, great and small. In short, body is comprehended by reason, and is affirmatively known; but matter, according to Plato, is comprehended by a spurious reason, and according to Aristotle, and prior to him the Pythagoric Timæus, by analogy alone. It is not possible, therefore, for the first matter to be body. Again, in the fourth book of these Physics, Aristotle is of opinion that matter is a certain indefinite interval of magnitude, bounded by formal magnitude. He says, therefore, "So that place may appear to be the species and form of every thing, by which magnitude, and the matter of magnitude, are bounded:" for after having mentioned magnitude, since magnitude also is formal, he adds, by way of explanation, "and the matter of magnitude."

Again: to him also who considers the problem by itself, it will appear to be impossible that the first matter should be body void of quality, as also Plotinus has shown: for if no physical form is essentially inherent in matter, which is the subject to all physical forms, it is evident that neither figure nor magnitude will be inherent in it; for these are forms. And it will be invested with figure and magnitude, if it is body; so that it will no longer be any thing simple, but a composite from matter and form. Matter, however, is simple. So that you may syllogize as follows: matter neither possesses of itself magnitude, nor figure, nor number. Body possesses of itself magnitude, figure, and number. Matter, therefore, is not body. Again, matter is not a composite from matter and form; body is a composite from matter and form. Matter, therefore, is not body. Further still: if matter is body, it will have a certain proper magnitude; and the demiurgus will no longer have produced all forms from himself, according to his own will; nor nature, according to demiurgic reasons, in herself, but she will necessarily be subservient to the magnitude of matter. Again, if matter has magnitude it will also have figure in the definition of it. This, therefore, is not only absurd, because figure is form and quality, but because matter will be unadapted to receive every figure, in consequence of being vanquished by one certain definite figure. Further still: the form which proceeds into matter, brings with it every thing appropriate; so that it also brings with it magnitude: for there is one magnitude of a man, and another of a bird, and of such a particular bird. Neither magnitude, therefore, nor quantity, will be the property of matter: and, hence, matter will not be body. Again, if matter is body, it will be a certain quantum,

CHAPTER IX.

But that the doubt of the ancients can only be thus solved, we shall in the next place show: for the first philosophers, in investigating

quantum, and endued with magnitude; but a quantum is one thing, and quantity another; and that which is endued with magnitude is different from magnitude itself: and incorporeal forms are simple, but the participants of these are composites. If, therefore, matter is body, it will be something composite, and not simple, nor an element. But if these things are absurd, we must say, that quantity, being received by matter, imparts magnitude, which, prior to this, was not inherent in matter; just as quality, being participated, makes that to be *quale*, which before was void of quality. Farther still: body consists from genus and differences; for it is an essence with a triple interval; but a thing of this kind is form and not matter. Again, body is divided contrary to incorporeal qualities; but matter subsists similarly with respect to all things. Body also is defined by certain intervals; but matter is perfectly indefinite.

Such, then, being the arguments on both sides, it is manifest that the subject to forms ought not to be form; on which account, if body is form, it will not be body. However, that the nature which subsists in common in all things physical and sensible, so far as they are such, ought to be matter, is, I think, among things manifest. But it is common to all these, to be extended into bulk and interval. Hence the science concerning nature, as Aristotle says, is conversant with bodies and magnitudes, and the properties of these. May we not, therefore, admit that body is twofold, one kind, as subsisting according to form and reason, and as defined by certain intervals; but another as characterized by intensions and remissions, and an indefiniteness of an incorporeal, impartible, and intelligible nature; this not being formally defined by three intervals, but entirely remitted and dissipated, and on all sides flowing from being into non-being. Such an interval as this, we must, perhaps, admit matter to be, and not corporeal form, which now measures and bounds the infinite and indefinite nature of such an interval as this, and which stops it in its flight from being. But it is worth while to know, that it is proper matter should be that by which things material differ from such as are immaterial. But they differ by bulk, interval, division, and things of this kind, and not by things which are defined according to measure, but by things void of measure and indefinite, and which are capable of being bounded by formal measures. The Pythagoreans appear to have been the first of the Greeks that had this suspicion* concerning matter; but after them Plato, as Moderatus also informs us; for he,

* Simplicius here, in speaking of matter, very properly uses the word *incerta*, suspicion; for our knowledge of matter is a *spurious* knowledge.

gating the truth and nature of things, wandered, as if led by ignorance, into a certain other path. Hence, they say that no being is either
generated

conformably to the Pythagoreans, evinced that the first one is above being, and all essence; but he says that forms are the second one, which is true being and the intelligible; and that the third one, which is psychical, or belonging to soul, participates of the one, and of forms. He adds, that the last nature from this, and which is the nature of sensibles, does not participate, but is adorned according to a representation of them, matter which is in them being the shadow of the non-being which is primarily in quantity, or rather depending on and proceeding from it. Porphyry also, in his second book 'On Matter,' after adding the opinion of Moderatus, observes, "That unical reason being willing, as Plato somewhere says, to give subsistence to the generation of things from itself, separated quantity according to a privation of itself, depriving it of all the reasons and forms which it contains in itself. This quantity he calls formless, indivisible, and unfigured, but receiving form, figure, division, quantity, and every thing of this kind. Plato, too, says Porphyry, seems to have predicated many names of this quantity, calling it the universal recipient, formless, invisible, that it receives an efflux of the intelligible, and is scarcely to be apprehended by a spurious reason. Porphyry adds, that quantity itself, and this form which is conceived according to a privation of unical reason, comprehending in itself the productive principles of every thing in the universe, are the paradigms of the matter of bodies, which, says he, the Pythagoreans and Plato call *quantum*, not quantum as form, but as subsisting according to privation, dissolution, extension, and separation, and through a mutation from being. Hence, also, matter appears to be evil, as flying from *the good*. It is, however, comprehended by the good, and is not permitted to depart from its boundaries, extension receiving the reason of formal magnitude, and being defined by it, but divulsion becoming specifically distinguished by arithmetical separation. According to this reasoning, therefore, matter is nothing else than the mutation of sensibles, with respect to intelligibles, deviating from thence, and carried downwards to non-being: for, that the proper bulk of sensibles is one thing, formal magnitude another, the divulsion of sensible forms another, and arithmetical separation another, is evident from these being reasons, and forms without interval and impartible: for the reason of tricubital magnitude, and also that of the triad, are without interval, impartible, and incorporeal. Those things, indeed, which are the properties of sensibles are, irrational, corporeal, distributed into parts, and passing into bulk and divulsion, through an ultimate progression into generation, that is to say, into matter; for matter is always truly the last sediment: on which account also the Egyptians call the dregs of the first life, which they symbolically denominate water, matter, being as it were a certain mire. And matter is, as it were, the receptacle of generated and sensible natures, not subsisting as any definite form, but as the state or condition of subsistence; just as the impartible, the immaterial, true being, and things of this kind, are the constitution of an intelligible nature: all forms, indeed, subsisting both here and there; but here, indeed, materially, and there immaterially; viz. there impartibly and truly, but here partibly and shadowy. Hence, every form is here distributed according to material interval.

But

generated or corrupted, because it is necessary that what is generated should be generated either from being or non-being : but both these are

But how do these things accord with Aristotle and Plato, who are of opinion that matter is a certain subject to contrariety? Or may we not say that the assertions of others, concerning matter, tend in reality to an ultimate body : for there is not any thing opposed to body, and thus it will be unbegotten and incorruptible, not only body celestial, but also that which is sublunary. But the conception just now mentioned, preserves also the corporeal interval of sublunary natures, together with extended form ; as, for instance, with that of man or horse. Or shall we say that when what is generated is essence, mutation also is produced about material vicissitude, which always remains? For accidents are changed about essences ; but essences about the *quantum*, above mentioned, of the Pythagoreans ; either according to privation, or about the mutation from being, viz. about interval and material bulk : for air is generated from water, the qualities not only being changed, but also formal magnitude ; since the magnitude on each side is different. Nor is the less a part of the greater, but each is a definite form, although material interval remains in both : for both are similarly material ; and are similarly divisible, sensible, and without difference according to matter : for differences are surveyed according to forms. But that Aristotle had such a conception concerning matter, according to interval, and an indefinite quantum, is evident from what he says in the 4th book of this work : for he there says, " That by which place appears to be the interval of magnitude, by this it appears to be matter : " for this is different from magnitude ; and this is comprehended by form, and is bounded ; as it were, by superficies and end. But matter and the indefinite are of this kind. Those, however, who think fit to conceive of matter according to being, which is worse than forms, or according to the one which is the ultimate echo of the first one, do not in my opinion conceive rightly : for being, when it is surveyed as nothing else than one and being, is properly and primarily that which it is said to be. But matter is the last thing, and is a departure from being, and much more from the one, and subsists in a mutation and deviation from being ; since, through the prolific power of being, it is necessary that a representation of being should have a subsistence.

From all that has been said it is evident, as Simplicius well observes, that privation is not a certain nature, according to Aristotle, but absence in the subject which is naturally adapted to receive form. Hence, when privation is said to be an accident to matter, it is not so said as if it were form, but just as it happens to any one not to be in the forum.

In the book of the ten categories, says Simplicius, Aristotle divides essence or substance into first and second, viz. into an individual, and the specific and generic ; but Archytas divides it into matter, form, and the composite from both these ; which division also Aristotle following in his Metaphysics, appears more accurately to give a threefold distribution : for he says, " The composite from matter and form, appears to be especially essence, in generated natures ; but in the second place, matter and form, from which the composite consists. " But of these, he says, that according to the perpetual, and ranking as a subject, matter rather appears to be essence ; but that so far as the being to every thing is according to form, through which also it differs from other things

are impossible; for neither can being be generated, since it already is; and from nothing, nothing can be generated, because it is necessary that something should exist as a subject. And thus increasing that which consequently happened, they said that there were not many things, but that being itself alone had a subsistence. They, therefore, entertained this opinion for the above-mentioned reasons. We, however, say that for a thing to be generated from being or non-being, or for non-being or being to do or suffer any thing, or for this particular individual thing to become any thing whatever, in one way does not in any respect differ from asserting that a physician does or suffers any thing, or that any thing is, or is generated from a physician. So that, since this is predicated in a twofold respect, it is evident that this will also be the case with the assertion, that from being, being will either be an agent or patient. A physician, therefore, builds, not so far as he is a physician, but so far as he is a builder; and he becomes white, not so far as he is a physician, but so far as he is black. But he heals, and becomes deprived of medical skill, so far as he is a physician. Since, however, we say with the greatest propriety, that a physician does or suffers any thing, or is generated from a physician, when he suffers or does these things so far as he is a physician, it is also evident that to assert a thing is generated from non-being, signifies this, so far as it is non-being: which, indeed, the ancient philosophers not distinguishing, deviated from the right path; and through this ignorance added so much to their want of knowledge, as to fancy that nothing else was generated or had a being; but they subverted all generation.

We ourselves, indeed, say that nothing is simply generated from non-being, but that at the same time it may be generated from non-being, as it were, according to accident; for a thing may be generated from privation, which is non-being *per se*, since it is not inherent in

in its own proper nature, according to this form rather appears to him to be essence. Aristotle now indicates this comparison, being content, in a discourse about physical principles, to show how many, and what the principles are.

the

the thing which is generated. But this is admirable, and it seems impossible that any thing should be thus generated from non-being. In like manner, we say that neither is any thing generated from being, nor is being generated, except according to accident. We likewise assert that this takes place after the same manner, as if animal should be generated from animal, and a certain animal from a certain animal; as, for instance, a dog from a horse; for the dog would be generated not only from a certain animal, but also from animal; though not so far as it is animal, because it is this already. But if it should come to pass that any thing should be generated an animal not from accident, it will not be from animal. And if any thing is generated being, it will not be generated from being, nor from non-being: for we have observed that the expression *from non-being* signifies, *so far as it is non-being*. We likewise do not subvert the assertion, that every thing is, or is not. This, therefore, is one mode of solving the doubt. Another mode is this: that the same things may be predicated according to capacity, and according to energy. This, however, in other treatises* we have more accurately discussed, so that, as we have said, the doubts are solved, through which the ancients were compelled to subvert some of the above-mentioned particulars: for on this account they so much wandered from the way which leads to generation and corruption, and, in short, to mutation; since this nature, if they had perceived it, would have dissolved all this their ignorance.

* Viz. in the 9th book of the Metaphysics.

CHAPTER X.

CERTAIN other philosophers, indeed, have mentioned this nature, but not sufficiently: for, in the first place, they acknowledge that something may be simply generated from non-being, so far as they confess that Parmenides is right in what he asserts². In the next place, it appeared to them, that if this³ nature is one in number, it is also only one in capacity. There is, however, in this case a great difference; for we say that matter and privation are different: and of these, matter, indeed, is non-being according to accident; but privation is non-being *per se*. Matter likewise is near, and is in a certain respect essence; but this is by no means the case with privation. Others, again, assert that the great and the small are similarly non-being, either both together, or each separate from the other; so that this mode of the triad entirely differs from that: for, thus far they proceeded, so as to conclude that there must necessarily be a certain nature as a subject; and this they made to be one. For, though a certain person introduces the dual, asserting that this subject nature is the great and the small, nevertheless he makes it to be the same; because he neglects the other principle, viz. privation⁴. Matter, indeed,

² Aristotle now apparently opposes what is said by Plato in the Parmenides, where Plato seems to admire Parmenides admitting and demonstrating the subsistence of the one being. But it is evident that he there shows the one being to be many, surveying it according to its subsistence in different orders.

³ By *this nature*, Aristotle means that subject nature from which generation is produced, and which is matter together with privation.

⁴ Aristotle, says Simplicius, explaining the difference between his own opinion and that of Plato, concerning matter and privation, says, We assert that matter and privation are different in definition; and that of these, matter is non-being according to accident, because privation happens to it; but that privation is non-being *per se*. And again, we assert that matter is in a certain respect near to essence; but that privation is in no respect essence. And this because
a com-

indeed, remaining, is a concause, together with form, of generated natures, having the relation of a mother; but the other nature, privation,

a composite is properly and primarily essence, and this is also the case with the parts of it. So that matter, since it is an inherent part of essence, will be near to essence *per se*, because it gives completion to that which is properly essence. But privation being absence alone, is remote from essence. Again, if a composite is primarily and properly essence, but form secondarily, and matter is the recipient of this, matter will be nearer to essence; but privation, being the absence of form, according to this also will be remote from essence. Farther still: essence is predicated by Aristotle, from its being a subject; but matter also is in a certain respect a subject, although it should be considered as a part of both, which does not belong to that which is properly a subject. Matter, therefore, is nearer to essence. Again, if the definition of essence is this, essence is that which, remaining one and the same in number, is the recipient of contraries—this also will belong to matter so far as it is near to essence; for of itself it does not possess the one in number. Likewise, that which is shown to be the peculiarity of essence, viz. the having nothing contrary to it, since it is assigned the appellation of essence or substance, from ranking as a *subject*, this also will belong to matter, as being itself a subject. And without doubt, indeed, matter becomes non-being according to accident, from its participation of privation; but privation is being according to accident, from its being in matter. And this is the opinion of Aristotle, concerning matter and privation.

But Plato does not call that which is not yet being, and which is in generation or becoming to be, matter and privation, but he denominates it the great and the small, whether both are considered as subsisting together at once, or whether each is predicated of *the not yet non-being* separately. However this may be, matter, according to Plato, is not the great, and privation the small, or *vice versa*, but matter is both; so that the mode is entirely different of Aristotle's triad of the elements, who calls form and privation the contraries, and says that matter is the subject common to both; and of that of Plato, who says that form is one element, but the subject two, the great and the small. So that many accord with us, that there is a certain subject nature from which generation is produced. And some, indeed, call it by one name, but others by two, which two are ascribed to one and the same thing. But they are discordant with us, because they do not distinguish privation from the subject by definition: for though some one should employ two names in speaking of the subject, as he who calls it the great and the small, yet he employs them as belonging to one thing, matter, overlooking the nature of privation; so that he does the same with those who call the subject by one name, and in a similar manner omits privation.

Since, however, Aristotle makes mention of Plato, in many places, as calling matter the great and the small, it must be observed, says Simplicius, that Porphyry relates that Dercyllides, in the 11th book of the Philosophy of Plato, where he discourses concerning matter, transcribes the words of Hermodorus, the associate of Plato, from his treatise concerning Plato; from which it is evident that Plato, conceiving matter to subsist according to the infinite and indefinite, manifests its nature from those things which receive the more and the less, among which are the great and the

the

tion, which is a part of contrariety, may often seem to him, who directs his dianoetic power to its noxious nature, to have no subsistence whatever⁵: for, since there is something divine, good, and desirable, we say

the small: for having said that of things some have an essential subsistence, as man and horse, but others have a relative subsistence, and that of these some subsist as with reference to contraries, as good to evil, and that of these some are as definite, but others as indefinite; he adds, and all such things as are said to subsist, as the small with reference to the great, have the more and the less: for it is possible for the more to be increased, and the less to be diminished to infinity. In like manner also with respect to the broader and the narrower, the heavier and the lighter, and every thing which may be thus predicated to infinity. But things which are predicated, as the equal, the abiding, and the harmonized, have not the more and the less; but this belongs to the contraries of these: for one unequal is more than another, one thing which is moved than another, and one thing unharmonized than another; so that all things, except one element, partake of both these conjugations, which one element is unstable, infinite, formless, and may be called non-being, according to a negation of being. But to a thing of this kind, neither the appellation of principle nor essence pertains, but it belongs to it to be rashly born along; for it manifests that as cause, so likewise principle, is properly and in a surpassing manner that which makes. But matter is not a principle. Hence it is said by the followers of Plato, that there is one principle. We shall shortly, however, show that matter is not a principle, according to Plato. But in what manner Plato calls matter great and small, and non-being, is, I think, evident from what has been said.

⁵ Aristotle having already mentioned many differences between matter and privation, now adds another difference, and says that matter remaining together with form, is the cause of generated natures in the same manner as a mother: for matter exhibits herself to that which is generated, like a mother, and is the receptacle of form ingenerated in her from the father of the universe. Hence, Plato at one time calls her mother, and at another, a receptacle. But you may say that matter is analogous to a mother, so far as she gives interval and separation to forms, just as mothers do to the paternal seeds, and to infants, nourishing and increasing them to a greater bulk. Hence, Plato calls her a nurse. And such a cause of being is matter. But privation, which he calls the other part of contrariety, will not, in short, appear to be any thing to him who looks to its evil-producing and corruptive nature, since it is the absence of form, through which every thing derives its being and good: for what else can the absence of being be, except the corruption of being and existence? Hence, neither does it remain in the composite, though matter remains: for, form being present, how can the absence of it continue? Alexander also says that this is the cause of evil: for though matter appears to be the cause of evil, yet it is so through privation, which is not able to receive the beautiful arrangement of perpetual natures. However, though privation may be said to be evil, yet matter, together with privation, is not evil in such a manner as if it possessed an evil essence, nor in such a way as those assert who oppose to the good an unbegotten principle of evil: for matter and privation itself proceed from divinity, and

say that there is one thing contrary to it, and another which is naturally adapted to desire and extend itself towards it. But, from the assertions of some, it happens that what is contrary desires the corruption of itself; though neither is it possible that form can desire itself, because it is not indigent of itself, nor that which is contrary to itself, for contraries are corruptive of each other. But this which desires is matter; just as the female desires the male, and the deformed the beautiful. The deformed, however, does not essentially desire the beautiful, nor the female the male; but the desire of both is according to accident⁶. Matter, however, is partly corrupted and generated,

and derive their subsistence from the good, and are of great use in the fabrication of things. They are also good, possessing the last portion among things good. But ultimate goods are not evils, but such things as are called by philosophers necessary; which, indeed, are not precedaneously desirable, but yet subsist through a certain good, which without them would not be effected, just as bleeding, and burning, in medicine: for no one would choose these on their own account, since they are not precedaneous goods, nor yet are they evil, since they are adopted on account of health, which is good, and afford so much advantage to such kind of goods, that they are not able to subsist without them. Thus also matter and privation were produced by the demiurgus, not as evils, but as necessities, contributing to the perfection of the universe: for matter and privation proximately contribute to the subsistence of generated and corruptible natures, the former as a subject to mutation, but the latter as the cause of mutation itself. But generated and corruptible natures are parts of the sublunary world, which not subsisting, the universe would be imperfect: for, as Plato says, if these were not, heaven would be imperfect, alone possessing things first and middle; so that the most divine natures in the world would be unprolific, which is unworthy the divine goodness; since this ought to produce not only first and middle goods, but also such things as are last, and which tend to good.

⁶ Form, says Simplicius, is divine, good, and desirable, and this, matter naturally desires; but privation is the contrary, and is not desired. And if Aristotle calls the first separate form, divine, good, and desirable, which he denominates intellect and the first cause, in reality every thing which subsists, according to nature, desires this, being so disposed by nature herself, which is divine and a cause, that every thing, according to the power which it possesses, aspires after a similitude to this form. But similitude to this form is, to every thing which has a natural subsistence, its proper perfection; and perfection to composite natures is permanency according to form; but to matter, the participation of form, to which it verges, and to the reception of which it possesses an aptitude. Or, perhaps, we may say it is unadapted, being a certain mutation and perversion with respect to form, but is at the same time suspended from it, and preserved by a shadowy subsistence with reference to it. Hence, matter may be said to aspire after form: for what *orexis*

generated; and, partly not; for, so far as it is *that in which**, it is essentially corrupted; since that which is corrupted, viz. privation, is in

is in animated, that *epheis* † is in physical inanimate natures. If, therefore, matter tends to form, but privation is contrary to form, both will much differ from each other. But how is privation contrary to the first form, if nothing is contrary to it (for a multitude of rulers is not good, says Aristotle); and if all things whatever tend to it; and privation, if there be any such thing, aspires after it? But there is no privation of the first form, since privation is the absence of that which is naturally adapted to be present, and is alone beheld about mutable forms. Or may we not say that privation is contrary to the first form, so far as it is contrary to the form which is ingenerated through the tendency to the first form? Or it may be said that Aristotle calls the form which accedes to matter, divine and good, and desirable, as being the progeny of a divine portion: for, according to this, matter tends to the first form; and this it is which matter possesses in capacity, and to the reception of which it is naturally adapted. To this form also privation is contrary. If, therefore, any one separates matter from privation, as well in definition as in number, he will clearly find that matter is that which tends to form, and that the contrary is privation. But if any one considers matter and privation as the same, he must assert that matter tends to its own corruption, by aspiring after the presence of form: for the presence of a contrary is the corruption of every contrary. But nothing wishes to tend to its own corruption. Neither, therefore, does one contrary tend to another, which would take place if matter were the same with privation, nor does form tend to itself; for every thing tends to and desires that of which it is indigent: but nothing is indigent of itself. If, therefore, neither does any thing tend to that which it possesses, being unindigent of this, nor to that which is contrary to itself, because that which is contrary is corruptive, certainly that which tends to form is neither form nor privation, but is matter, which is different from each of the contraries, and which tends to form, just as the female to the male, that is, as the indigent and the indefinite to the sufficient and definite: for those who call matter a mother, and a nurse, have the same conception about it. Tendency, therefore, subsists according to something domestic, and not as to a contrary, which would be the case, if matter were privation, or were the same with privation. But matter tends to form as the base to the beautiful, and does not as yet tend to it as to a contrary: for it does not tend to the beautiful as baseness or deformity, and that which is essentially base or deformed; for thus it would tend to its own corruption; but deformity is as an accident to matter, and which is a privation of the beautiful, but subsists with an aptitude towards it: so that if matter were a

* Matter, as Simplicius well observes, is incorruptible of itself, though it is corrupted according to accident, because that which is an accident to it, i. e. privation, is of itself corrupted. And this also is a certain difference between matter and privation, that matter is corrupted accidentally, but privation essentially. But Aristotle calls that which is an accident to matter, *that in which*, instead of *that which is in matter*: for this is the nature of accident to be in something; and the term *in which* properly denotes a subject.

† *Epheis*, (*epheis*) therefore, is the tendency of inanimate natures to their proper good.

privation

in matter. But so far as it subsists according to capacity, it is not essentially generated and corrupted, but it is necessary that it should be incorruptible and unbegotten; for if it were generated, it is necessary that something which ranks as a first nature should subsist as the subject of it, from which, being inherent, it is generated. But this is its nature; so that it will be before it is generated: for, I call matter the first subject of every thing from which a thing is generated, when it is not accidentally inherent. And if any thing is corrupted, it will ultimately arrive at this; so that matter will be corrupted before it is corrupted.⁷ Concerning the principle, however, which subsists accord-

ing privation of the beautiful, it would not tend to the beautiful; and if matter were the same with privation, it would not be preserved in receiving some particular form. But if some one should say that privation is always co-essentialized with matter, because though it partakes of some other form, yet it is entirely deprived of some other, it is necessary to understand that no privation whatever is co-essentialized with it, since it is naturally adapted to participate of every form. And, in short, if it should be said that some one privation is co-essentialized with it, this must likewise be asserted of all privations; so that whatever form is present to matter, its essence will be corrupted, if it is also privation. But if some one should say that, in the participation of form, the privation of that form is also co-essentialized with matter, because the very being of matter is in the formless, he who says this does not preserve that which is signified by privation; for difference is one thing, according to which also form is immaterial, and the absence of form is another thing, which cannot be con-subsistent with the presence of form. But that neither privation nor forms tend to form, is shown elsewhere; and also that the subject which is naturally adapted to receive form, and to be adorned by it, is that which tends to form. From hence, therefore, it may be concluded that privation is different from matter; yet privation must not, on this account, be numbered among elementary principles; for an element is an inherent principle, and not that which produces something by its absence. But how is matter feminine according to accident, if, by the definition of it, it is indigent of form, which it aspires after, and receives, and which is the cause to it, of interval and extension? May we not say that it is indigent of, and aspires after, form, through the absence of form? So that if it always participated of form, as is the case with celestial natures, it would neither be indigent, nor desire; but there would always be one nature co-essentialized from both.

⁷ Matter, as has been already shown, is the common digression of mutation from being, and a falling into non-being; and this mutation from being is unbegotten and incorruptible. But such a particular kind of mutation, and such a particular kind of matter which is comprehended by form, is corrupted, just in the same manner as an individual form. But it may be said: if

ing to form, whether it be one or many, and what it is, or what they are, it is the business of the first philosophy accurately to determine: so that it must be deferred till that time. We shall however speak, in what will be hereafter demonstrated, concerning natural and corruptible forms⁸. That there are principles, therefore, and what they

matter is unbegotten and incorruptible, is it not a certain principle, and a first principle, in the same manner as divinity?—for if it were produced by divinity, it was not unbegotten. In answer to this, it must be observed, that Aristotle, by the term *unbegotten*, does not mean that which is not dependent on a cause, but that which is not generated from a temporal beginning. This is evident from what he says at the end of this treatise; for he there demonstrates that motion is *unbegotten* and incorruptible, though it is one of his positions, that every thing which is moved, is moved by something. In short, Aristotle considers matter as an elementary principle, which will not be contrary, either to the producing or final cause of the universe; since it aspires after ornament from thence, in the same manner as the female desires the male, and the deformed the beautiful.

⁸ Aristotle, says Simplicius, having spoken concerning the material principle, that it is necessary there should be a certain first subject, from which, being inherent essentially and not accidentally, sensibles are generated; and having also shown that matter is different from privation, and that it is unbegotten and incorruptible; it was requisite to speak in the next place concerning the principle which subsists according to form: for this is consequent to the assertion that there are three elementary principles, matter, privation, and form, the two former of which have been discussed. Matter, indeed, has here its first subsistence, and is the element of the whole of generation. But with respect to form, one kind is the first, and truly ranks as a principle, which in his *Metaphysics* he calls intellect, good, and the first cause, and which he says is both efficient and final: for he there shows that, after one first intellect, it is necessary that there should be a multitude of intellects through which the celestial orbs subsist. But another kind of form is physical and corruptible, and is the element and proximate cause of generable and corruptible natures. And, indeed, that which is properly a principle according to form, is that first and separate form from which the form that is here derives its being. Hence, concerning that principle which is properly formal, which is separate, intelligible, and immoveable, whether there is one, or many such, or, which is more true, both one and many; i. e. one first, and many proceeding from and subsisting in it, and what these are, viz. that they are immaterial, intelligible, and entirely perfect, being energies in essence, or energies essentially—to discuss these things with accuracy is the business of metaphysics, or the first philosophy. But, concerning physical and corruptible forms, and, in short, those which are beheld in motion and mutation, which are elementary principles, and which are the proximate formal causes of natural things, Aristotle says, we shall afterwards speak: for this is the form which is inherent in natural things

they are, and how many in number, let it be thus determined by us. Let us however again speak from another beginning.

as an element, and to which privation is opposed. From this also, and matter, all natural things consist; and the composite is dissolved into these; into matter which remains, and into form which does not remain. About a form of this kind, Aristotle immediately speaks in the following book, surveying it in a twofold respect; viz. according to nature, which he discusses as the proximate cause, and according to its being expanded over matter. And these two, again, he brings into one, according to the elementary form of natural things, which the present treatise investigates.

THE

THE PHYSICS.

B O O K II. ¹

CHAPTER I.

Of beings, some subsist from nature, but others through other causes : from nature, indeed, animals subsist and their parts, together with plants and simple bodies, such as earth and fire, air and water : for,
we

¹ Aristotle, in the preceding book, having discovered the first elementary principles of natural things, and having shown that generations are from contraries, the most common of which are form and privation ; and having also demonstrated concerning matter, that it is the subject to contraries, that it is inherent in the composite, is unbegotten and incorruptible, and such other particulars as it belongs to a physiologist to assert of it ; in the present book speaks concerning nature, since it was requisite that he should now discourse about the formal and producing cause : for, consequent to what had been said in the preceding book, it became necessary to speak concerning the elementary formal principle, and thus to pass on to the producing and final cause, since form subsists in the composite as an element, and is considered as a producing cause, both according to nature and definition.

In the second place, since some say that nature is form, and others that it is matter, and those speak more properly who assert that it is form, the speculation of nature is necessarily pre-assumed, in order to the distinction between form and matter. And in the third place, matter, since it is the subject both to things artificial and natural, possesses the same theory ; but with respect to form, the artificial has every principle of motion externally, but the natural internally.

Hence

we say that these, and things of this kind, subsist from nature. But all the things we have enumerated appear to differ from those which do not consist from nature: for, all such things as subsist from nature appear to contain in themselves a principle of motion and permanency²; some according to place, others according to increase and diminution; and others according to change in quality³. But a bed, a garment, and any thing else of this kind, so far as they obtain these

Hence it is necessary that he who intends to speak about natural form, should in the first place distinguish things which have a natural from those which have not a natural subsistence. Besides, a discourse concerning nature is appropriate in this place: for in the first book he investigates all the common principles of mutation. Hence, he also considers the exemplars of artificial mutations, viz. that which is musical, and that which is void of music; but here, separating things which subsist by nature from things which have not a natural subsistence, he speaks concerning natural things, and omits such as are artificial. Hence, he necessarily speaks concerning nature, and things which subsist by and according to nature; first separating them from things which do not subsist by nature: for, at the end of the first book, he announces that he shall next speak concerning natural and corruptible forms. In short, a knowledge of nature, of that which subsists by, according to, and possesses nature, what each of these is, and in what they differ from each other, is necessary to him who discourses on Physics. But a knowledge of nature precedes all these. Hence, he first teaches us concerning it; not thinking it worth while to investigate if it is, because its subsistence is clear; but he demonstrates what nature is, and, together with this, demonstrates also that it is. And since both the mathematician and the physician are conversant with things which are governed by nature, the physiologist also shows the difference of these with respect to each other, in the meantime unfolding things pertaining to causes, viz. in how many ways they are predicated, and adducing instances according to each signification. Since, also, some assert that chance and fortune are causes, as those who say that any thing is produced from these; and others contend that good and evil are principles, asserting at the same time, that their separation into contraries is from fortune or chance; hence, also, he distinctly treats of fortune and chance, elegantly confuting the opinions of those prior to him, because though they considered these as causes, yet they said nothing about them. Simplicius also well observes that Aristotle employs, in this book, a clearer doctrine, since it is easier to understand him, here, both in the order of the problems, and in his diction.

² The word used by Aristotle here is *στασις*, which I have translated *permanency*, and not *rest*; for the proper word for rest is *ἡρεμία*: and Simplicius observes that not every *στασις* is *ἡρεμία*, but that only which is after motion. This word is employed also by Plato, in the *Sophista*, to express one of the five genera of being, viz. essence, *permanency*, (*στασις*) *motion*, *sameness*, *difference*; in which place it evidently does not signify *rest*.

³ As water, when attenuated and heated,

appellations,

appellations, and so far as they are produced by art, have no innate impulse of mutation. So far, however, as it happens to them to be stony or earthy, or mingled from these, so far they possess this impulse; nature being as it were a certain principle and cause of motion and rest, to that in which it is primarily inherent, essentially, and not according to accident. I say, not according to accident, because a man may be the cause of health to himself, in consequence of being a physician; at the same time, however, he possesses medicine, not so far as he is made well; but it happens that the same person is a physician, and acquires health. Hence, these are sometimes separated from each other. In a similar manner every thing else, which is made, subsists; for none of them contains in itself the principle of making; but some of them have this principle in other things, and external to themselves, as a house, and every thing else which is made by the hand; and others have it in themselves, indeed, yet not essentially, viz. such things as are causes to themselves from accident⁴. Such, therefore,

⁴ Aristotle, says Simplicius, properly calls *ορμη*, here, an internal principle of motion; but some, says he, write *αρχη*, *principle*, instead of *ορμη*: for natural things have the cause of motion in themselves, but artificial things externally; since they neither contain in themselves the artist, nor art: for a clod of earth is carried downwards, without being externally moved; but a bed derives its form externally. In like manner, permanency to a clod of earth, when it has arrived at its wholeness, is internally derived; but permanency to the configuration of the bed, is derived externally from the artist. And both in things which subsist according to nature, and in those which subsist according to art, whence motion, thence permanency is derived: for of things which are naturally moved according to place, and also according to increase, and change in quality, some having arrived at their proper place, others at their proper magnitude, and others at their proper form, naturally stop. And neither are they changed to infinity, nor is the cause of their permanency external to them, but from themselves. A bed, however, a garment, and, in short, artificial things, so far as they are artificial, possess the principle of motion and permanency externally; nevertheless, so far as a natural body is the subject to each of these, and is either wood, or wool, or some other simple or mixed body, so far these also contain in themselves the principle of motion and permanency. If, therefore, all natural things possess this in themselves, but things artificial, so far as artificial, do not, but, so far as they are natural, also possess these, this will be the peculiarity of natural things, so far as natural, to possess in themselves the principle of motion. Hence, it is evident that nature is nothing else than the principle of motion

therefore, is nature. But those things possess nature, which contain a principle of this kind. And all these are essences or substances; for nature

motion and permanency, in that in which it is primarily inherent, essentially, and not according to accident.

But the words, *in which it is primarily inherent, essentially, and not according to accident*, are added very necessarily: for a bed has the principle of motion and rest in itself, and when unsupported is carried downwards; yet so far as a bed, it is not called natural, nor is it said to possess nature; because the principle of motion does not belong to the bed, but to the wood, and through it to the bed also. The addition, therefore, of the word *primarily* is necessary; and that the words *essentially*, and *not according to accident*, are necessarily assumed, Aristotle himself insinuates: for it is necessary, if that which is natural is to be, that it should contain in itself, so far as it is, the principle of motion; for instance, for earth, so far as earth, to have a tendency downward, is to have a nature. Nevertheless, if a physician, being diseased, should heal himself, he would be healed from himself, for he would possess in himself the principle of motion, yet not essentially but from accident: for a physician is not healed from himself so far as he is a physician, but so far as he is diseased; since he heals, indeed, so far as he is a physician, but is healed so far as he is diseased. And it is one thing to be a physician, and another to be diseased: hence, also, they are separated from each other; for neither is every physician diseased, nor is every one who is diseased a physician. So that the physician who is healed from himself, does not heal himself so far as he is diseased, but so far as he is a physician; and according to this, he has from himself the principle of motion: for if he had this principle, so far as he is diseased, every one who is diseased would heal himself; since he is healed, so far as he is diseased. But he possesses the principle of motion, and of being healed, from himself, not so far as he is diseased. But Aristotle beautifully renders the term, *according to accident*, manifest, by saying, "Hence they are sometimes separated from each other." For that which is essentially inherent in any thing is inseparable from that thing; but that which may be separated is not essentially, but accidentally inherent.

But the term *primarily* differs from the term *essentially*: for not every thing which is *essentially* is *primarily*, nor every thing which is *primarily* is *essentially*: for when one thing is essentially inherent in another, and that again in some other third thing, then the first is essentially inherent in the third, but not primarily. Thus, for instance, the equality of three angles to two right, is essentially inherent in a triangle, so far as it is a triangle. Triangle also is essentially inherent in the isosceles: and, hence, the possession of three angles equal to two right is essentially inherent in the isosceles; for so far as it is isosceles, it is a triangle; and so far as it is a triangle, it has angles equal to two right. The being a triangle also, and the possession of angles equal to two right, are inseparable from the isosceles; yet the having angles equal to two right, is not *primarily* in the isosceles, but is through triangle as a medium. Again, whiteness is primarily inherent in superficies, and virtue in the soul; for it is not through any other medium. These, however, are not inherent essentially; for they do not give completion to the essence of their subjects, nor are they assumed

in

nature is always a certain subject, and is in a subject. These things, too, are said to subsist according to nature, and such as are essentially inherent in these. Thus, for instance, fire tends upwards, according to nature; for this property is not nature, nor does it possess nature, but is by nature, and according to nature. What nature, therefore, is, has been said, and also what a subsistence is, by and according to nature⁵.

But

in the definition of them. Whiteness, too, may be separated from superficies, and virtue from the soul. But sometimes both these concur in the same thing, when they give completion to essence, and are inherent without a medium. Thus reason may be said to be inherent in man *essentially* and *primarily*; and the possession of angles equal to two right, in a triangle; and a triangle in isosceles. But if a ship has in itself that which moves it, viz. the pilot, yet it does not possess this essentially: for neither does the pilot give completion to its nature; since, if he did, every ship, immediately on being a ship, would not be in want of that which moves it *externally*, nor would the pilot be separate from it; since nothing which is essentially inherent in any thing, can, while that thing is preserved, be separated from it. And though the pilot in moving the ship moves himself, yet he does not move himself either essentially or primarily.

Simplicius adds, the great Syrianus observes that the definition of nature here given is nearly adapted to all the significations of nature, when appropriately assumed in each: for, as the word nature is homonymously predicated of matter and form, and of that which is as it were a germination; thus also the present definition must be directly understood of that which is properly called nature, but according to analogy, of other principles; for other natures are also principles of motion, but not after the same manner.

⁵ Every thing which possesses nature is essence or substance, because it possesses a certain subject, and is in a subject, i. e. nature; or, in other words, it is matter and form, which are properly sensible essence. But a subsistence according to nature is more extended than the possession of nature; for things which possess nature are said to be according to nature, as being characterized according to the nature which is in them, and being that which they are said to be. Not only, however, these things are said to be according to nature, but such also as are essentially inherent in these; for fire possesses nature in itself, having a principle and cause of motion upwards. But a tendency upwards is according to nature, and by nature to fire, which tendency upwards is no longer the possession of nature, nor is this nature: for, neither is it essence, but power and energy, subsisting in fire according to the reason of nature, and is thus said to be according to nature. The same also is said to be by nature: for, through its own nature, and being thus naturally adapted, it possesses such a power and energy. And to fire, indeed, a tendency upwards is both by nature and according to nature: yet *by* is not the same as *according to nature*, but the former is more extended than the latter; for we say that things *according to* are *by nature*, possessing their proper perfection. But there are some things *by*
N 2
nature,

But to attempt to demonstrate that nature is, would be ridiculous: for it is evident that there are many beings of this kind; and to demonstrate things apparent through such as are unapparent, is the province of one who is incapable of judging what is essentially, and what is not essentially known. That some, however, may be thus affected, is not immanifest: for one who was blind from his birth may reason about colours*. So that men of this kind must necessarily discourse about names, but understand nothing of the subject of their discourse. But to some, nature, and the essence of things which subsist from nature, appears to be that which is first inherent in every thing, and which is essentially destitute of order and ornament. Thus, for instance, wood is the nature of a bed, and brass of a statue; of which, according to Antiphon, this is a token, that if some one should bury a bed, and the rottenness should receive a germinating power, a bed would not be generated, but wood; as if the disposition, which is according to rhythm† and art, were inherent from accident, but the essence that which remains, and which to these things is continually passive. If also each of these is affected after the very same manner towards something else—as, for instance, brass and gold towards water, but bones and wood towards earth, and in like manner any thing else—these things, he says, are their nature and essence. Hence, by some, earth—by others, fire—by others, air—and by

nature, as things which are produced according to the energy of nature, and yet are not *according to nature*, such as mutilation from birth, and, in short, things which consist in privation: for these are such from natural adaptation; because privation is absence in that which is naturally adapted to receive. And a subsistence *by nature* may be asserted of every thing which is consequent and happens to a natural essence, so far as it is such; as to be coloured and to be diseased happen to body. But a subsistence *according to nature*, is alone asserted of that which happens according to the will of nature. Hence we say that to be well is *according to nature*, but that to be diseased is present *by nature*, being contrary to nature. When, therefore, Aristotle uses the terms *by* and *according to nature*, he does not say that these are the same, but that a tendency upwards is *by* and *according to nature*, to fire.

* Viz. From what he has heard about colours.

† It appears, from Simplicius, that in the more early editions of the *Physics*, $\rho\eta\theta\mu\sigma$, *law*, was written instead of $\rho\eta\theta\mu\sigma$, *rhythm*. He also observes that $\mu\omicron\rho\mu\sigma$, *form*, is called *rhythus*.

others,

others, water—is said to be the nature of things. And by others this is asserted of some, and by others again of all of these. For that which some one of these apprehends to be a thing of a certain quality, whether it be one or many, this, and so many, they say, is every essence: for all other things are the passions, habits, and dispositions of these. They also asserted that any one of these, whatever, is perpetual, because no change is produced in them from themselves; but that other things are infinitely generated and corrupted. According to one mode, therefore, nature is thus denominated, viz. the first subject matter to every thing which contains in itself the principle of motion and mutation. But after another mode it is denominated form, which subsists according to definition: for as art is called that which subsists according to art, and that which is artificial; so likewise nature is both called that which is according to nature, and that which is natural. Nor must we say that any thing, for instance, a bed, possesses a subsistence according to art; if it is a bed only in capacity, and has not yet the form of a bed; nor must we say that it is art. Neither in things which consist from nature must this be asserted; for that which is flesh or bone in capacity, does not yet possess its proper nature until it receives form according to definition; by defining which, we say what flesh is, or bone. Nor does it subsist *by nature*: so that the nature of things which contain in themselves a principle of motion, will be after another manner morphe and form, which are not separate, except according to definition⁶. But that

⁶ Aristotle having completed and dismissed the hypothesis which asserts that nature is the subject of things, passes on to that hypothesis which says that form is nature. But since nature communicates with art according to formal power, and differs from it so far as nature makes form according to the matter of art, of the bed according to wood, and of the statue according to brass, hence some, conceiving that matter is nature, argue from this difference, asserting that a bed, if it were buried in the ground, would appear to be nature according to the wood, and not according to the outward form. But others, who assert that form is nature, argue from the formal communion between nature and art: for, say they, as in things which are produced according to art, that which is so produced, and the artificial, are called art; for we say that the outward form of the statue is a wonderful art. Thus also in things which subsist by and through nature,

that which is composed from these is not nature, but consists from nature; as, for instance, man. And this is nature in a greater degree than matter: for every thing is then said to be, when it is form in energy, (*εντελεχεια*)⁷ *entelecheia*, rather than when it is incapacity.

nature, that which is according to nature, and is natural, will be nature: for we say, for instance, that the nature of the wood is admirable, according to its form; for as is art to that which is according to art, so is nature to that which is according to nature; and alternately, as geometri- cians say; since art is in that which is according to art, and nature in that which is according to nature. But in things which are according to art, they are not yet said to be according to art, until they have received form; but prior to this, they are only in capacity according to art. Hence, nei- ther is art in them; for art is in form: since the brass is not the art of the statue, but the form. Neither, therefore, in things which are produced by nature, is that which is only now in capacity, according to nature; nor does it possess nature: for neither flesh in capacity, nor bone in capacity, possesses the nature of flesh or bone, before it receives form. If therefore a thing, in receiving form, possesses nature, form will be nature. And you may syllogize as follows: That by whose presence things which are *by nature*, are *by nature*, that is nature. But things which are by nature, are so through the presence of form. Form, therefore, is nature. But since form is twofold, the one according to *morphe*, but the other according to *reason*, through which we define what every thing is, according to *morphe* alone we assign the figure, colour, and magnitude of superficies; but through the form, which subsists according to reason (*νοος*) we assign a subsistence according to the uniform type of an evolved definition; which also, as well as the name, concurs with the definition. This also comprehends *morphe*.

Aristotle, therefore, says that this form, which subsists according to reason, or that a *morphe* of such a kind, is nature. Hence he adds *morphe* to form, saying, "after another manner *morphe* and *form*:" and again, "*morphe* and *form*, which are not separate." In art also *morphe* and form are the same, after another manner, because the reason or definition of the artist is according to *morphe*. And this also shows that nature is form: for if the nature of every thing consists in its being, and the being of every thing is in form, according to reason and definition; hence, definitions being converted with the things defined, nature will be form. So that, according to the former arguments, matter will be nature to natural things; but according to what is now said, this must be asserted of form, which is inseparable from its subject, and is alone capable of being separated from it by definition. Simplicius adds, that those things are said to be *separate*, which, being separated from the things from which they are said to be sepa- rated, still retain their own nature. But such as, when separated, are corrupted, are not *separate*. And such is the form which is in matter: for being to natural things is according to this, and not according to separate form.

⁷ Simplicius informs us that the word *entelecheia* is said to be peculiar to Aristotle, and that it signifies form which is being in energy, so far as, according to this, it is an assumption of one end, or that it is an assumption of one perfect essence, or is a continuity of the perfect, i. e. a habit according to the perfect.

Farther

Farther still : man is generated from man, but a bed is not generated from a bed. Hence, they say that not the figure but the wood is nature ; because if it should germinate, it would not become a bed, but wood. If, therefore, this is art, form also is nature ; for man is generated from man. Again : nature, considered as generation, is a path to nature : for it does not subsist in the same manner as healing, which is said to be a path not to medicine but to health ; since it is necessary that healing should be procured from medicine, and not lead to medicine. Nature, however, does not thus subsist with respect to nature ; but that which is born proceeds or takes its beginning from something to something. To what, then, does it proceed ? Not to that from which, but to that to which. Form, therefore, is nature*. But form and nature are predicated in a twofold respect ; for, privation also is in a certain respect form. Whether, however, privation and something contrary, do or do not subsist about simple generation, will be considered hereafter.

* Aristotle adduces this third very appropriate argument, by which it may be shown that nature is form : for nature, which is so called as a germination and generation, is a way proceeding to the nature of that which is produced, and ending in it. As, therefore, in things artificial, every thing which is produced, is said to be produced that thing to which the progression tends, and not that from which it proceeds ; for, when a carpenter makes a chair from wood, the wood is not said to be generated, but the chair, by the carpenter. In like manner also in natural things : for when water is changed into air, we do not say that water is generated, but air. So likewise with respect to that which germinates ; when it has arrived at its nature, it is said to have germinated, but it is not said that it has proceeded from nature. But it arrives at form. Form, therefore, is nature. The reasoning, therefore, is as follows : Nature is that to which that which germinates, and is generating, or becoming to be, tends. But a thing of this kind tends to form, and not to matter. Nature, therefore, is form.

CHAP.

CHAPTER II.

SINCE, then, we have defined in how many ways⁹ nature is predicated, let us after this consider in what a mathematician¹ differs from a natural

⁹ Since this appears to be the end of what is said by Aristotle concerning nature, let us with Simplicius recapitulate the account that has been given of it, and investigate what nature is according to Aristotle, and what power it possesses among beings: for he very properly makes the discovery of it to arise from the difference between things which subsist by, and those which do not subsist by nature. Thus also Plato, in the *Phædrus*, discovers what soul is, from the difference between things animate and inanimate: "For every body, says he, which derives its motion externally, is inanimate, but that which possesses motion internally from itself, is animated, as if this were the very nature of soul." And in the *Laws*, "we assert, says he, that what is moved inwardly lives, and by this, that which is animated differs from that which is inanimate." Aristotle also, in his second book 'On the Soul,' says nearly the same thing in the same words: for, he says, "Beginning our speculation, we assert that what is animated differs from the inanimate by life."

But things which do not subsist by nature are twofold: for some of them are above nature, as things immaterial, incorporeal, separate from bodies, and established in pure forms. But others are worse than natural things, such as are the productions of human art; as, for instance, a bed, a garment, and such like material bodies. It is common, however, both to things which are above, and to things which are posterior to nature, to be immoveable and immutable from themselves; though to the latter according to a worse, and to the former according to a more excellent mode of subsistence. Natural things, therefore, being in the middle of both, through falling below every immaterial and incorporeal essence, are material and corporeal; but, through not being produced by human art, but springing up and blossoming as it were from themselves, the demiurgic cause of them being unapparent to sense, they are called natural. But, through the difference with respect to both these, they are said to possess the principle of motion and mutation in themselves. Very properly, therefore, does Aristotle assert this to be the character of nature and its essence, viz. that it is the principle of motion and mutation, and of rest, which is the boundary of this mutation.

But soul also is the principle of motion and mutation to animated bodies, both according to Plato and Aristotle. What, then, is the difference? The last soul, indeed, which is called the vegetable soul, is, according to Aristotle, different from nature, though this vegetable soul is frequently called nature, from being proximate to it. But every soul, and even the last, is called by

a natural philosopher: for natural bodies have superficies and solidities, lengths, and points, about which the mathematician speculates.

by Aristotle, in his books 'On the Soul,' the entelechia of a *natural* organic body. The vegetable soul, therefore, will be inherent in a body which possesses nature, and will consequently be different from nature. Not only organic bodies, however, possess nature, but those also which consist of similar parts, and the four elements. Again, we call those beings animated, which contain in themselves the cause of being nourished and increased, and of generating things similar to themselves. But things which are not of this kind are still natural, such as stones and metals, dead bodies, and simple bodies. Farther still: every body has nature: for the subject matter of things artificial is natural, such as the brass of a statue, and the wood of a bed. But not every body is animated, so that nature will not be soul. It is also evident that nature is inferior to the vegetable soul; since such a soul accedes to a natural body in the same manner as form does to matter. How, therefore, does Aristotle unfold the difference between nature and soul? To this it may be replied, that the term *in which*, is sufficient for this purpose: and afterwards he more clearly says that nature is in a subject: for every soul, since it properly possesses a motive power, is exempt from that which is moved. But if this should not be sufficient for those who think that the vegetable and irrational soul, is in body as in a subject, yet this consideration, that soul is the *most proper* principle of motion, is sufficient to the understanding what a *natural* subsistence is, and for the purpose of distinguishing nature from soul: for Aristotle does not say that nature is the principle of motion, in the same manner that Plato says soul is. Soul, indeed, is motive of bodies according to both these philosophers; but nature is a principle of motion, not according to *moving*, but according to *the being moved*; and of rest, not according to *imparting*, but *receiving* rest. Hence, natural things are not said to be moved by themselves; for they would be able, as Aristotle says, to stop themselves, if they were also able to move themselves. But *nature appears to be a certain aptitude to the being moved and adorned; germinating upwards, as it were, from beneath, and by its excellent habits calling forth adorning causes*: for if it were the principle of motion, as moving something, according to this, it would not differ from soul, which is a primarily moving cause. But since bodies are far distant from an impartible and unextended essence, and, according to the being of life which was once inherent in them, they become dead bodies, of themselves destitute of breath, and deprived of all life, they possess in themselves a certain ultimate form of life, according to that capacity and aptitude which we call nature; through which also dead bodies are capable of being moved and changed, of vegetating, and in a certain respect passively energizing on each other: for the energies of these are not genuine, but passive. Hence, all natural things move in consequence of being moved, though, as Aristotle says, that which is properly immoveable, moves. But that Aristotle defines nature to be a principle of motion, not of moving other things, but of being moved, is evident from his saying that nature is a certain principle of being moved, and of rest, and that nature is in a subject: for that which is in a subject, will not be a principle properly motive of its subject. In the last book, too, of this treatise, speaking of the four elements,

lates. We must also consider whether astrology (i. e. astronomy) is different from, or a part of physics; for if it is the business of a natural

he says, "That no one of these moves itself is evident, but it possesses a principle of motion, not of making nor moving, but of being moved." Hence, he investigates by what the elements are moved, as not being moved by themselves: for he is of opinion that this is the peculiarity of animals possessing a soul, which he defines to be a motive principle. And prior to this he says, "After the same manner, that is moveable by nature, which is in capacity *quale* or *quantum*, or where, when it has such a principle in itself;" certainly meaning by such a principle, nature. But in his second book 'On the Heaven,' he thus writes: "In no one of things inanimate do we see whence the principle of motion is derived: for some things are not moved at all; but other things are moved, indeed, but not every way similarly. Thus fire is alone moved upwards, and earth to the middle." If, then, the four elements are natural, and have not in themselves that whence the principle of motion is derived, i. e. the moving cause, certainly motive nature is not in this manner said to be the principle of motion, but as the principle of being moved. But if nature is a thing of such a kind, as to subsist in capacity, and to be an aptitude to be moved, how do we frequently say that nature is effective? Aristotle also, in this book, says that nature is analogous to art; and near the end of it shows that nature produces for the sake of the end. And, concluding his reasoning, he says, "That nature, therefore, is such a cause as to subsist for the sake of (the end) is evident." But in the first book 'Concerning the Heaven,' clearly conjoining the fabrication of nature to divine fabrication, he says "that God and Nature make nothing in vain." In answer to this it may be said, that every thing which is generated, is generated from a certain subject, which is in capacity, that which it is about to become, through the producing power of an efficient in energy. Both these also are necessary to the effect. Hence, nature, though it is the aptitude of a subject, is said to make, as contributing to the effect. When Aristotle likewise says that nature makes for the sake of something, he says this in consequence of the generation of natural things looking to a definite end, and not subsisting from fortune or chance, but as being naturally adapted to be generated, as they are generated. In this book, therefore, he says that in those things in which there is a certain end, one of them is performed for the sake of the end, &c. As it is performed, therefore, so is it naturally adapted to be performed. And as every thing is naturally adapted, so is it performed, unless there is some impediment. Is it not evident, therefore, that Aristotle calls this adaptation, that which is natural? Though he says, therefore, that God and Nature make nothing in vain, he says this in consequence of nature from beneath, imparting aptitude, looking, in so doing, to a beneficent end, but divinity from on high, illuminating a thing of this kind in energy. Aristotle, then, after this manner discovered the subsistence of nature, from the difference between things which are *by*, and those which are *not by* nature. But those more ancient than Aristotle, appear indeed to have had such a conception as this of nature, as being surveyed according to the aptitude of every thing to motion, through which natural things are characterized. Since, however, all natural things have matter and form, some of the ancients gave a power of this kind

natural philosopher to know what the sun or moon is, but not any of the essential accidents pertaining to these, an absurdity will ensue ;

kind to matter, calling nature that according to which natural things are adapted to be moved, perceiving at the same time, that they are especially changed according to matter, as a bed according to the wood from which it is composed. But others called nature that according to which natural things have their being ; and since form is the character of every thing, according to which every thing subsists, and is said to be what it is, on this account they said that nature is form : for through this conception of nature, viz. that it is *the character of every thing*, we employ the name of it in all things, and do not refuse to say, the *nature* of soul, of intellect, and even of divinity itself.

Aristotle, however, neither thinks fit to call matter by itself, nature, because matter is of itself an inefficacious subject ; nor does he think fit to call it form, for this is *natural*, and not *nature*. But he calls nature *the aptitude of matter to its appropriate motion and mutation, when it changes from this form into that* : for the rejection and resumption of form by matter is effected according to physical aptitude. Form, also, according to its own nature, is both generated from its opposite privation, and when generated is preserved. It is likewise moved, being at the same time both a patient and agent, or rather, passively energizing. Hence, matter and form are, indeed, natural things, but neither of them is nature. In like manner, neither is the composite from matter and form nature. But form is more entitled to the appellation of nature, than matter, through its character and power. The composite, also, is more allied to nature than matter, through form ; since, in short, a natural thing then becomes this or that, when it receives form : for matter is of itself indefinite. But nature, being an aptitude to the subsistence of form, very properly in a certain respect subsists prior to form, since it is in capacity in matter. It likewise previously exhibits in itself form, of which it is the nature, *being as it were a production and regeneration from matter*. Hence, those speak well who say that *nature is the last life* : for as the effervescence as it were of the first being into the separation of formal subsistence, and the departure from being to energy, is the first power and the first life*, subsisting according to the first motion of being, so the germination of material form from matter, and its motion to it, when considered according to the existence of form in capacity, is the last power and the last life. Hence, in the intelligible world being is above life ; and in the sensible world, matter is posterior to nature, because more elevated causes pervade farther than such as are subordinate. But nature being the life of form, is not only a germination from it, but the coherence and rising tendency of that which is generated, to do and suffer that which it is naturally adapted to do and suffer.

* A mathematician differs from a natural philosopher, in the first place, because the latter not only speaks about what is accidental to natural things, but also about matter, concerning which

* The intelligible triad, or the first procession from the ineffable principle of things, consists of *being, life, and intellect* ; or, in the language of the Chaldean theologians, of *father, power, and intellect*. See my Introduction to, and Notes on, the Parmenides of Plato.

ensue; especially because those, who discourse concerning nature, appear also to speak concerning the figure of the sun and moon, and to enquire whether the earth and the world are spherical or not. The mathematician, therefore, is also employed about these, yet not so far as each of them is the boundary of a natural body. Nor does

the mathematician is entirely silent. In the next place, they do not speak after the same manner concerning the accidents about which both of them are conversant: for the natural philosopher speaks of superficies, lines and points, as of the boundaries of a natural and moveable body; but the mathematician pays no attention to innate motion, nor does he assume these as the boundaries of physical body; since neither is a *natural* solid the subject of his consideration. Hence, he alone speculates that which has a triple interval, as if things of this kind had a subsistence by themselves: for mathematicians are conversant with things separable by intellection. Hence, they separate them without any consequent falsehood: for, separating them by intellection from natural bodies, and all motion, they thus consider what are the accidents to the subjects of their speculation. Hence, if the mathematician neither speaks about natural things, nor about their inherent properties, neither will the mathematician be a natural philosopher, nor will mathematics be a part of physics.

Neither is astrology a part of physics; for this also speculates things accidental to natural bodies, yet not so far as they happen to natural bodies: but it considers what kind of bodies those are that are figured and moved. So that though the astronomer speaks about things which are essentially inherent in natural bodies, yet he does not investigate them so far as such things are inherent in such bodies; nor does he demonstrate that to such a nature, such figures, magnitudes, and motions, are adapted. Thus, for instance, the natural philosopher shows that a celestial body is spherical, from this alone being the first, most simple, perfect, and uniform of solid figures: for right-lined figures are composed from many things, and are posterior, and on this account are not adapted to the first of bodies, as Aristotle demonstrates. But the astronomer shows this from a sphere being the most capacious of figures, among solids, that have equal perimeters. And thus Aristotle briefly shows the difference between physics, and mathematics, and astronomy.

With respect to the use of the names now employed by Aristotle, Simplicius adds, it is worth while to observe that Aristotle now appears to call the geometrician a mathematician, for he it is who has superficies, solids, lengths and points; though that which is properly the mathematical science, comprehends arithmetic, astrology or spherics, and astronomy or the canonic science. As to the word astrology, as the art of calculating nativities was not in Aristotle's time introduced into Greece, it was then used as equivalent to what is now called astronomy. But the more modern, Simplicius adds, dividing the name, call that astronomy which considers the motions of the heavenly bodies; but peculiarly denominate that astrology which is conversant with their effects.

he

he contemplate the accidents of these, so far as they happen to things of this kind; and on this account he separates them from their subjects: for they are separable, by intellection, from motion. This, however, is of no consequence; nor is falsehood produced by those who thus separate. But they do not perceive that they do this, who assert that there are ideas: for they separate natural things, which are less separable than such as are mathematical. And this will become manifest, if any one endeavours to unfold the definitions of each; that is to say, as well of things themselves as their accidents: for the odd and the even, the straight and the curved; and, still farther, number, line, and figure, are without motion; but this is not the case with flesh and bone, and man: for these are denominated in the same manner as a flat nose, and not in the same manner as that which is curved. This also is evident from the more physical of mathematical concerns, such as optics, music, and astrology; for in a certain respect they subsist contrary to geometry: for geometry speculates concerning a physical line, but not so far as it is physical; and optics considers, indeed, a mathematical line, yet not so far as it is mathematical, but so far as it is physical^a. Since, however,
nature

^a These things, as Simplicius well observes, are very properly said by Aristotle, against the vulgar conceptions of Plato's doctrine of ideas: for the multitude fancy that material forms, not perfectly divested of matter, presubst in the demiurgic intellect, and conceive that there are ideas of every thing in the sublunary region, and of whatever is surveyed in conjunction with matter, and with a sensible mode of subsistence. They likewise understand similitude, not as of images which are here to their paradigms in the demiurgic intellect, but as a sameness of the former with the latter; for if man in reality is that material being who uses sense and motion, who is corporeal, and whose frame is mortal, man will not be in the divine intellect of the fabricator of the universe. But if the natures which are here are generated, and that which is generated must necessarily be generated by a cause, and not by a common cause only, but by one that is definite, and productive of this particular thing, it is entirely necessary that specifically distinct causes of generated natures should presubst in the demiurgic intellect; just as in the builder of a house, there is one artificial reason (i. e. productive principle) of the wall, and another of the roof. But if, transferring names from thence hither, i. e. from the intelligible to the sensible world, we call ideas by the same names as sensible particulars, in consequence of considering them as the definite causes of these, and as having the same relation there, as their effects

nature is twofold, viz. form and matter, we should contemplate physical things as if we were considering, with respect to flatness of nose, what

effects have here, there is no absurdity in so doing: for Aristotle himself, in the 12th book of his *Metaphysics*, says that there is a twofold order, one in the world, and the other in the cause of the world, just as there is one order in an army, and another in the general. Indeed, if any one defines the order which is here as it subsists here, the world will certainly not accord with the order in intellect, as neither will the name of the one with that of the other; for, though one definition of the image of Socrates, as an image, will not accord with its paradigm, and though the definition should comprehend the similitude of the former to the latter, such as the flat nose, baldness, and prominent eyes, omitting also the subject matter, yet even then the definition will not accord with Socrates, but will nevertheless be similar to the definition of him: for the flatness of nose which is in the image, is not the same with that of Socrates, but is similar to and the image of it. But that there are presubstisting causes and productive principles of natural things, from which sensibles subsist, is not disputed by those who reverence the writings of Aristotle. Those, however, who admit that there are ideas, not only say that they are causes, but also the paradigms of sensibles; things here subsisting according to their similitude to ideas. Hence they call both these by the same names, which would not be reasonable, unless natural forms are separated by mental abstraction.

But it is worth while to observe that Aristotle knew that the composite from matter and form is one thing, and form itself another thing. He also says that one definition is every where to be assigned of matter, another of form, and another of the composite. In these books, likewise, he surveys form by itself, when he says that nature is form and morphe; for he does not then speak of the composite. And it is evident that the definition of this form is not assigned according to the composite, and that it does not take matter into consideration, but is framed by an ablation from the composite. Nor is there any absurdity in these things, to dissolve the reason, or definition of the composite, into the reasons or definitions of things simple, as he elsewhere observes. So that it is not only possible to separate mathematical forms by our conception*, but also such as are physical, if proper definitions may be assigned without matter. The form, however, which is mentally separated, is not the paradigm; but the definition, which is separated according to form, may be adapted to the paradigm, if it is considered as homonymous, and not as the same, and as an image assimilated to its paradigm: for Plato, in the *Timæus*, calls the paradigm of the sensible world, *animal*; and it is evident that this paradigm is not a natural animal, but the intelligible paradigm of the natural animal. Just as Socrates

* It is requisite, however, to notice here, as we have elsewhere observed, that the knowledge which subsists according to a slender conception of that which is known, and which is obtained by an abstraction from sensible particulars, is gross, confused, and fantastic; but that the knowledge which is contracted and united, and which comprehends particulars, is intellectual and simple. The former also derives its origin from sense, but the latter is the progeny of the essential reasons of the soul.

what it is. Hence, things of this kind are neither without matter, nor do they subsist according to matter: for some one also may doubt

is not the painted Socrates, but the paradigm of that which is painted, and properly Socrates; similitude in the image not subsisting according to the matter, but according to the form mentally separated from the matter.

That the definite causes, however, of the forms that are here, are also the paradigms of them, may be shown by employing the hypothesis of Aristotle: for we say that natural things are from matter and the participation of form; matter participating form, according to her inherent participation. But every participation is a medium between that which participates and that which is participated, and is imparted to the participant from the thing participated. The participation also is similar in species to that which is participated, as the heat and ignition from fire in the heated body, is similar in species to that which heats: for every thing gives to its participants that which it possesses. Hence, the form which is here, since it is a participation of separate form, is similar to separate form. But that which is similar to separate form, is generated with reference to it, and is the image of it, has separate form for its paradigm. Aristotle also calls causes forms, and if sensible are the participations of separate forms, they will entirely be similar in species to them. Perhaps, likewise, there is no absurdity that they should obtain the same appellation.

Some one, however, will not perhaps admit that the forms which are here are participations, but that they have a precdaneous subsistence: for he will say, neither is man nor horse in the demiurgic intellect, but the causes of these subsist in other forms, and are productive of these; so that man is produced from divinity, and that which is moved from that which is immoveable, yet not so as to be similar in species. But we ask those who are of this opinion, if they assert that there is nothing beautiful, nor good, and that there is neither essence, nor life, nor knowledge, energy, or number, nor any thing else of things thus venerable, in the demiurgic intellect? For that Aristotle admits that these things are there, is evident from his calling the supreme intellect the object of desire to all things, and from his asserting that intellect is energy in essence, and from considering as the same, essence, life, and intellect, ascribing to them the beautiful and the good, and asserting that immoveable causes are equal in number to the celestial bodies. But Aristotle is evidently indignant with such conceptions of ideas as, together with names that are here, attract definitions which comprehend the natural and material subsistence of sensibles. Hence, he rejects some names, but does not refuse to call the things that are there by purer appellations, such as beauty, good, essence, life, intellect, and energy. If, then, it should be said that these things, indeed, are there, yet not such as things that are here, this also we acknowledge. But we desire him to say the same of man, horse, and things of this kind: for neither do we think that man there is corporeal, since even man, considered as subsisting in the productive principle of seed, is incorporeal; but we say that there is a certain similitude of the corporeal to the incorporeal man, in the same manner as of corporeal to incorporeal beauty. In short, if the forms which are here are generated, and if every thing which is generated

is

doubt concerning this, since there are two natures, viz. which of these the natural philosopher makes the object of his contemplation, or whether

is necessarily generated by a cause, which, prior to the thing generated, comprehends the reason or producing principle of it, lest it should be generated irrationally, or there should be a procession to infinity, and if also that which is generated is assimilated to this producing principle; this principle will be the paradigm of the things generated.

Again: if, prior to things which are perpetually moved, it is necessary that there should be an immoveable cause of their never-failing motion, and not a common cause only, but a cause peculiarly limited to each of the perpetually moving natures, as Aristotle shows both in this treatise, and in his books 'On the Heaven,' and if each of the forms that are here has a perpetual mutation, according to individuals, certainly there will be a presubsisting immoveable definite cause of each; as, for instance, stable man, in order that he who is changed, may have a never-failing mutation. Farther still: in many places, Aristotle assimilates nature to art, as a little before, when he says, "For as art is said to be that which is according to art, and that which is artificial, so nature is both that which is according to nature, and that which is natural." If, therefore, art makes according to reasons, or producing principles, assimilating the things produced to artificial reasons, certainly nature also will make after the same manner. Hence, she makes nothing in vain. If, therefore, nature is not the first cause, but something else is the first cause of all things, in the same manner as nature is the cause of natural things, this first cause will evidently pre-assume in himself the reasons and causes of all generated natures, and will assimilate the things generated to those reasons. These, therefore, and many other arguments may be adduced, which show, according to the hypothesis of Aristotle, that there is a pre-subsisting paradigmatic cause of generated natures. But there are many other beautiful arguments* which demonstrate that every form, which has a separate subsistence, is a certain unbegotten and immoveable principle. And neither will the form which is in matter be the first, since it is a participation, and the passion of matter, or that of which matter is the passive recipient; nor that which is in nature, since this also subsists in a subject; nor will the form which is in soul be the first: for though this is separate, yet it is self-motive, has a certain duplicity, and is not more motive than moved, nor principle than that which proceeds from principle. It is necessary, therefore, that the principle should be immoveable, unbegotten, and productive only, but not also that which is produced. But such are the forms resident in intellect, which are primarily separate, immoveable, unbegotten, and properly beings, which also are said to be the causes of generated natures, and to which generated natures are assimilated. If, therefore, there are certain names which are not appellations of forms that are here, but of things composite, it is not proper to transfer the similitude of these to the forms resident in

* The philosophic reader will find in the Introduction and Notes to my translation of the Parmenides of Plato, and in the Notes to my translation of Aristotle's Metaphysics, the treasures of antiquity disclosed, on this most interesting subject of ideas.

intellect;

whether he considers that which consists from both these. But if that which consists from both, he also speculates each of these natures. Whether, therefore, is it the province of the same, or of a different science to know each of these? For if we look to the ancient philosophers, it would seem that matter alone should be regarded by the natural philosopher: for Empedocles and Democritus attended but in a small degree to form, and the very nature or essence of a thing. But if art imitates nature, and it is the province of the same science to know form and matter to a certain extent; (as, for instance, it is the province of a physician to know health, bile, and phlegm; and, in like manner, of an architect to know the form and matter of a house, viz. that the matter consists of tiles and wood, and similarly with respect to other things)—if this be the case, it is also the province of the physical science to have a knowledge of both natures.

Further still, it belongs to the same science to know that for the sake of which a thing subsists, the end, and such things as exist for the sake of these. But nature is an end, and that for the sake of

intellect: for the same characteristic properties, indeed, proceed from on high, as far as to the last of things, according to subjection; but the modes of subsistence of these forms, such as to be immoveable, or self-motive, or material, these remain in their proper places, and are not distributed into places of a different nature. If, therefore, there is a certain paradigm of the form which subsists in conjunction with matter, it is not requisite to investigate the paradigm of matter also; for there are paradigms of forms, but not of matter: for with respect to dimness of sight, which introduces together with itself, eye, since eye is a certain form, it is not wonderful that it should have a certain paradigm of things according to nature, but not a cause of dim eyes, according to passivity. But if a certain form is assumed in conjunction with matter, and the name and the conception according to the name, introduce matter together with the form, it is not fit to investigate the paradigm of this; for an attempt of this kind is what Aristotle appears especially to oppose. So that if the form of animal can be conceived itself by itself, separating the participated idiom from matter, there is no absurdity in admitting, even according to the doctrine of Aristotle, that there is a presubsisting cause of this form, which imparts to matter the similitude of itself. And with respect to man also, if man is a certain form participated by matter, nothing hinders our referring the similitude of it to a presubsisting cause in a divine intellect. But if this name and the thing alone subsisted in conjunction with matter, in the same manner as dimness of sight, he who endeavours to refer it to a form resident in intellect, must sustain the corrective arguments of Aristotle.

P

which

which a thing subsists : for of those things of the motion of which, since it is continued, there is a certain end, this end is the last, and that for the sake of which the motion subsists. Hence, the poet was ridiculously led to say,

An end it has, for which it was produc'd.

For not every thing which is last deserves the name of end, but that which is the best³. Since, however, the arts produce matter, some of them simply, but others accommodated to the work, and we use all these as if they subsisted for our sake ; (for we also in a certain respect are an end, since that for the sake of which a thing subsists is considered in a twofold respect, as we have observed in our books concerning Philosophy⁴)—this being the case, there are two arts which rule over and possess a knowledge of matter, viz. the art which uses it, and that which is architectonic of effective arts. Hence, also, that which uses matter is in a certain respect architectonic. They differ, however, so far as the one, viz. the architectonic, has a knowledge of form ; but the other is called architectonic as being productive of matter. For the pilot knows what form the rudder of a ship should have, and orders it to be made ; but another artist knows from what wood and what motions it will be made. In those productions, therefore, which are according to art, we make the matter for the sake of the work ; but in natural productions it already exists. Again, matter belongs to the class of relatives : for a different matter pertains to a different form. How far, therefore, ought a natural philosopher to know form and what a thing is ? Shall we say in the same manner as a physician ought to know a nerve, or a brazier brass, to a certain extent ? For every thing which is produced by nature is for the sake of something ; and natural philosophy is

³ Empedocles, says Simplicius, ranked among principles, strife and friendship, as formal causes ; but Democritus, figure, position, and order. And Empedocles seems to have defined form by the reason or productive principle, according to which it made every thing.

⁴ This division is made by Aristotle in his Nicomachean Ethics, which, says Simplicius, he calls Concerning Philosophy, more peculiarly denominating the whole business of Ethics, Philosophy.

conversant

conversant with those things which are separable, indeed, in form, but are in matter: for *man and the sun generate man*⁵. But how that which is separable subsists, and what it is, it is the business of the first philosophy to determine.

CHAPTER III.

THESE things being defined, let us consider, with respect to causes, what they are, and how many there are in number: for since this treatise is for the sake of knowing natural things, and we do not think that we know any thing, till we are in possession of the cause on account of which that thing subsists, (and this is to be in possession of the first cause) this also must be done by us in discoursing concerning generation and corruption, and all physical mutation; that knowing the principles of these, we may endeavour to refer to them each of the objects of investigation.

Cause, therefore, is after one manner said to be that, from which, being inherent, something is produced: as, for instance, brass is the cause of the statue, silver of the bowl, and the genera⁶ of these. But after another manner cause is form and paradigm (and this is the definition of the essence of a thing) and the genera of this. Thus,

⁵ That which proximately generates man is man, who is himself material; but above this the producing cause of every thing generated, which subsists according to nature, is the *apparent* sun, which is also itself a material form: for the unapparent, which is also the *true* sun, is that deity, of which the visible orb in the heavens is nothing more than a depending deified vehicle. It is well observed by Alexander Aphrodisiensis, that from what is here said, it is evident that, according to Aristotle, the generation of terrestrial natures is conjoined to a divine body, and is not separated from it. See my translation of the Emperor Julian's Oration to the Sovereign Sun.

⁶ Not only the proximate matter is the cause of that which is generated, but also the genera of this matter: for not only the brass is the cause of the statue, and the silver of the bowl, but brass *simply*, and silver *simply*. And if these metals were originally water, as all metals were, both according to Aristotle and Plato, water is the cause of these, and above this body.

for instance, the form of the diapason is two to one, and in short number, and the parts which are contained in the definition ⁷. Further, still, cause is that whence the first principle of mutation or rest is derived. Thus he who consults is a cause of this kind, and a father of his child, and, in short, the maker of that which is made, and that which changes of that which is changed. Again, cause is as the end; and this is that for the sake of which; as health of walking: for why does he walk? We say, that he may be in health; and having thus said, we think that we have assigned the cause. This cause also is seen in such things as are for the sake of the end, when something else moves which has an intermediate subsistence. Thus, leanness, or purgation, or medicines, or instruments, are for the sake of health: for all these are for the sake of the end. They differ, however, from each other, because some of them are works, and others instruments. Causes, therefore, are *nearly* predicated in so many ways ⁸.

But

⁷ As in the material cause Aristotle had said that not only proximate matter is a cause, but also the genera of this, so likewise in the formal cause: for since the symphony called the diapason is in a double ratio, the diapason is a certain species of the double, of which the double is the genus, and number is the genus of the double. These, therefore, he says, are formal causes, as being introduced together with form. In like manner, also, the parts comprehended in the definition of species will themselves likewise be formal causes, as giving completion to species or form: for if *animal, rational, mortal*, is the cause of man, as form, each also of the parts in the definition will be a concause, after the same manner of cause, according to which the whole is a cause, i. e. according to formal cause. But Aristotle very properly says, "the parts which are contained in the definition," and not the parts in the species; since each of the parts in the definition of a thing extend through the whole species.

⁸ Aristotle, says Simplicius, adds the word *nearly*, either because causes, *properly* so called, are predicated in so many ways, since there are also many causes according to accident, as he says; or he adds this word through reverence of Plato, who connumerates the *paradigmatic* cause with proper causes, viz. with the final, and the producing, but the instrumental cause with concauses, viz. the material and the formal. But if there is so great an order in causes, that some of them are first by nature, i. e. the efficient and the end, and are causes properly so called, but others are rather concauses, such as matter and form, causes are very properly said to rank among things which are multifariously predicated, but not among things which are distributed as from one genus. That there are, however, so many modes of causes, and neither more nor less, may perhaps be syllogistically collected from division, previous to which thus much must be observed, that

But it happens, since causes are multifariously predicated, that there are also many causes of the same thing, and this not from accident.

Thus

that those are causes through which being is such as it is, and that which is generated, and through which when interrogated, we assign *the why*. Natural things, therefore, being composites from matter and form, are that which they are, and are generated that which they are generated, either through the things which give completion to them, or through externals, in whatever manner they may communicate with them. But matter and form give completion to them; and on this account they are material and natural. If also it is inquired why sensibles are endued with interval, intelligibles being without interval, we reply, it is because sensibles are material. But why do the heavens possess such a facility of motion? Because being spherical, they proceed, according to Plato, on the smallest foot. And these are assignations of causes from matter, and from form, to all which, things that in an elementary manner give completion to the composite are referred. But since all natural things are generated, according to Aristotle, and every thing generated has a cause of its generation, it is necessary that there should be a cause that makes and fabricates generated natures, and from whence the first principle of motion is derived: for the principle of motion is twofold, the one being self-motive, the other immoveable: for that which is alter-motive, will evidently not be the principle of motion, but the self-motive nature will be the principle of motion, as possessing in itself that which is motive. This, however, is not properly the principle, because it is itself also moved. But the principle of motion, properly so called, is that which moves only, and not that which is also moved. So that the most proper producing cause of generated natures will be that which is immoveable, eternal, and which always subsists according to the same and after a similar manner. But much-honoured intellect is a thing of this kind, and next to it, soul: for though she is moved, yet she contains that which moves or is motive in herself. Hence Aristotle thinks fit to call her rather immoveable, considering those things as alone moved which are corporeally changed. But since those natural things that are generated and corrupted are proximately produced by circulating and perpetual bodies, for man and the sun generate man, that which properly makes will not make by an immediate proximity to things generated and corrupted, but through perpetual natures as media. And thus the instrumental cause becomes manifest to us, which is indeed moved by another, but moves something else, and is clearly seen in artificial productions. For an axe is a concause, because it moves being moved. Such also is nature, both whole and partial, as Alexander Aphrodisiensis likewise acknowledges, well observing, that a producing cause properly so called, ought to be separate and exempt.

Again: since natural and generated form is a participation of form in matter, but all participation is a resemblance of that which is participated, it is entirely necessary that there should be a paradigmatic cause of material natures. But that which makes, either makes rashly and by chance, or has some purpose in view, and establishes an end of its production, for the sake of which the maker makes, and that which is generated, is generated. But if that which makes primarily and properly makes rashly and by chance, what will there be among makers which will

Thus the statuary's art and the brass are causes of the statue, not according to any thing else, but so far as it is a statue; yet not after the same manner; but the one is a cause, as matter, and the other as that whence motion is derived. Some things also are the causes of each other. Thus labour is the cause of a good habit of body, and a good habit of body, of labour; though not after the same manner; but the one as the end; and the other as the principle of motion. Again, the same thing is the cause of contraries: for that which when present is the cause of this effect, is sometimes, when absent, said by us to be the cause of a contrary effect. Thus we say that the absence of the pilot is the cause of the loss of the ship, the presence of whom

will make for the sake of good? It is necessary, therefore, that the first maker should make for the sake of something, and should have for his end that for the sake of which he makes. And thus also the final cause will become apparent to us from the first maker, who is established as the object of desire to the other producing causes. And that these, indeed, are the causes of generated natures, is evident. But that there are only these, may be seen from division: for that which is generated, which we call natural and a composite, is a certain subject, is in a subject, and is nothing else. It is likewise either self-subsistent, or derives its being from some other. If, therefore, it is self-subsistent, it is impossible that it should be generated in a part of time, and that it should be corporeal and divisible. Hence, it must have some other producing cause beside itself; and this must either be moved, or immoveable. And if moved, it must either be moved by itself, or by another. But that which is moved by another does not primarily move. And that which is moved by itself, either in one part moves, and in another is moved, or it moves and is moved according to the whole of itself, as is the soul, according to Plato. But this is the principle of motion and generation. It does not, however, impart the never-failing, so far as it is moved, nor is it perfectly the primary leader of motion, so far as it has a certain duplicity of that which moves and that which is moved. The immoveable, therefore, is the first principle of motion, subsisting as a *properly* producing principle, and as eternally motive. But that which at some particular time is generated and moved, cannot proximately be generated and moved by an eternal and immoveable principle: for such a principle is productive, and motive of things eternal. But that which is eternally moved by it, according to the different conditions of itself, is the cause, as an instrument, of things which are generated and moved at some particular time, because it moves being moved. And if every material form is either the first, or from the first, and with reference to the first, but nothing material is the first, being a participation,—there is something first to which it is assimilated. And if that which properly makes, either makes rashly and casually, or looking to a definite scope, and if it is impossible it should make casually, it is necessary that there should always be a certain end, and that for the sake of which a thing energizes or subsists.

is

is the cause of its safety. But all the causes which we have now enumerated fall into four most manifest modes: for letters are the causes of syllables; matter is the cause of things which consist from workmanship; fire, and things of this kind, are the causes of body; parts of the whole, and hypotheses of the conclusion; all which are causes as that from which a thing proceeds. Of these causes, however, some are as a subject, as, for instance, parts; but others as essences, viz. whole, composition, and form. But seed, a physician, he who consults, and, in short, he who makes, are all of them causes, as that whence the principle of mutation, or permanency, or motion is derived. Others again are causes as the end, and the good of other things: for that for the sake of which a thing subsists, ranks as that which is best, and the end of other things. It makes, however, no difference whether we say the end is good itself, or apparent good. Such, therefore, and so many are the species of causes.

The modes of causes, however, are many in number, but they will be fewer when collected into a sum: for causes are multifariously predicated; and of those which are of a similar species, one is prior and posterior to another. Thus the physician and the artist are the causes of health; the double and number, of the diapason; and always things which contain are thus related with respect to particulars. Causes also are predicated as accidents, and the genera of these. Thus⁹ Polycletus is in one way the cause of the statue, and in another way the statuary, because it happens to the statuary to be Polycletus. Those things, likewise, which contain accident are called causes; as if man, or, in short, animal should be the cause of a statue. Of accidents, also, some are more remote and proximate than others; as if, for instance, something white and a musician should be said to be the cause of a statue. But, besides all these causes, and those which are denominated according to accident, some things are called

⁹ This Polycletus, says Simplicius, is the statuary mentioned by Galen, and who made a statue, the members of which possessed every symmetry, both in themselves, and with reference to each other, so that on this account Polycletus was called *the rule*.

causes

causes from the power which they possess, and others from the energy which they exert. Thus the builder is the cause of the house being built, or the builder when building¹. The like also may be said in those things of which the causes are such as we have above enumerated. Thus, for instance, there is a cause of this particular statue, or of statue, or, in short, of image. There is also a cause of this brass, or of brass, or, in short, of matter; and in a similar manner with respect to accidents. These too and those are denominated connectedly; for instance, not Polycletus nor a statuary, but Polycletus the statuary. At the same time, however, all these are in multitude six; but they are predicated in a twofold respect: for they are predicated either as particulars, or as genus, or as subsisting according to accident, or as the genus of accident; and either as these connectedly, or simply considered. All these, too, subsist either energizing, or according to capacity. They so far, however, differ, that the energizers of particulars at the same time exist and cease to be with the things of which they are the causes. Thus this man who heals is contemporary with him who is healed, and this builder with the building. But causes which are denominated according to capacity, do not always subsist together: for the house and the builder do not perish at one and the same time. It is, however, necessary always to investigate the supreme cause² of every thing, as in our investigations of

¹ Aristotle introduces a certain common difference to the above-mentioned causes, viz. to the essential and accidental, and also to the simple and complex,—a difference according to a subsistence in capacity and energy, so that the differences being six, and these being doubled, by a subsistence in capacity and energy, all of them will be twelve. These, also, Aristotle himself clearly enumerates when he says, “But at the same time all these are in multitude six, but are predicated in a twofold respect.” He also adds what the six are. For it is either as a particular thing essentially, or as the genus of it. And again, it is either as accident particular, or as the genus of accident: and these are either as complex, or as simple. But all of them are predicated in a twofold respect, either as energizing, as in capacity: for the producing cause of a house being built, is in *capacity*, indeed, the builder, though he should not build, but in *energy* the builder building.

² Aristotle calls the supreme cause that which is denominated the most principal, and which others denominate the connective. But he renders it obscure through the instance which he adduces;

of other things. Thus, for instance, a man builds because he is a builder; but he is a builder according to the building art. This, therefore, is the prior cause; and so in every thing. Further, still, it is necessary to investigate the genera of genera; and particulars of particulars: as a statuary is the cause of a statue; but this statuary is the cause of this statue. We should also explore the capacities of capabilities, and the energizers of things effected by energy. How many causes, therefore, there are, and after what manner they are causes, let it be considered as sufficiently defined by us.

CHAPTER IV.

FORTUNE, also, and chance, are said to be in the number of causes; and many things are said both to be, and to be produced through fortune and chance. Let us consider, therefore, after what manner fortune and chance subsist in these causes, and whether the former of these is the same with or different from the latter, and, in short, what each of them is: for with some it is dubious whether these things have a subsistence or not. For, say they, nothing is produced from fortune, but

adduces: for asking why a man builds, we are told, because he is a builder. But why is he a builder? Because according to the building art. And here the investigation of the why ceases. Hence Aristotle calls this the supreme cause, because having ascended as far as to this we stop: for the most proper cause of building is the building art. But it is necessary, as in every thing else, we understand the term *properly*, as asserted according to the name, so likewise in causes: for we understand by a dram that which is properly a dram, and not one that is adulterated; and by a man that which is properly a man, and not a dead body. Thus also cause must be considered as that which is properly cause. He, however, who admits this, will not consider nature as *properly* the producing cause of bodies: for though nature moves bodies, yet she moves these being herself moved. There is, therefore, something which also moves her. And if this something is moved, we must also investigate that which is motive of it; because every thing which is moved is moved by a mover, as Aristotle demonstrates in the 8th book of his treatise. But if this something is immoveable, this will be the supreme and proper cause of motion.

Q

there

there is a certain definite cause of all such things as we say are produced from chance or fortune. Thus, for instance, the cause of a man fortuitously coming into the forum, and there finding what he wished indeed to find, but did not think he should, is the wish of buying something when he came into the forum. In like manner, in other things which are said to originate from fortune, some cause may always be assigned, and not fortune. For if fortune were any thing, it would truly appear to be absurd; and some one might doubt why no one of the ancient wise men, when assigning the causes of generation and corruption, has ever defined any thing concerning fortune. As it seems, however, they did not think that any thing is produced from fortune. But this is wonderful. For many things are produced, and have a subsistence, from fortune and chance; and though they were not ignorant that each of these may be referred to a certain cause of things which are generated, according to the ancient assertion which subverts fortune², yet at the same time they all say that some of these are from fortune, and others not. Hence, some mention should have been made by them of fortune. They did not, however, think that fortune was any thing belonging either to friendship or strife, or fire, or intellect, or any thing else of things of this kind. They are chargeable, therefore, with absurdity, whether they did not conceive that it had a subsistence, or whether fancying that it had, they omitted it; especially since it was sometimes employed by them. Thus Empedocles says that the air is not always separated in the highest place, but just as it may *happen*: for in his *Cosmopoeia* he says:

Thus it then chanc'd to run, tho' varying off.

² This appears to be said, Simplicius observes, against Democritus: for he, though in his treatise on the Fabrication of the World he seems to use fortune, yet in things of a more partial nature, he says that fortune is not the cause of any thing, referring to other causes. Thus, for instance, he refers the discovery of a treasure, or the plantation of an olive tree to digging; but the breaking the skull of one who is bald, to an eagle throwing down a tortoise, in order that it may break its shell: for thus Eudemus relates this affair.

He

He also says that the greater part of the members of animals were generated from fortune. But there are some who assign chance as the cause of this heaven, and of all mundane natures: for they say that the revolution and motion which distinguishes and establishes the universe in this order, are from chance. And this indeed is well worthy of admiration⁴, that they should say, that animals and plants neither subsist nor are produced from fortune, but either nature, or intellect, or something else of this kind, is the cause of them (for not any thing casual is produced from each seed, but from that an olive, and from this a man), but that the heavens, and the more divine of things apparent, should be produced from chance, and that of these there should be no such cause, as they acknowledge there is of plants and animals. Indeed, if it were so, this very thing will be worthy of consideration, and it will be well to say something concerning it. For beside the absurdity of what is said, the assertion is still more absurd, when we see that nothing in the heavens is produced from chance, and that, in things which do not originate from fortune, many things happen fortuitously, though it is reasonable to suppose that the very contrary should take place. There are some, however, to whom fortune appears to be a cause, but immanifest to human conception, as being something divine⁵, and more dæmoniacal. So that we must consider

⁴ Aristotle shows the falshood of the before mentioned opinion from this, that it is very absurd that a celestial body, and things which among visible natures are transcendently excellent, and are more stable and divine, should be the effect of chance, but that other things in which fortuitous events are often seen, should be produced from causes that are established in an invariable order. This very argument is also employed by Aristotle in his first book *On the Parts of Animals*, chap. I. Wherefore, says he, I should say it is more probable that the heavens should be produced by nature, intellect, or something else of this kind, and that they more subsist through such a cause, than that frail and mortal animals were produced by it. For order, and a firm and certain condition of being, are far more obvious in celestial natures than in us; but an uncertain, inconstant, and fortuitous condition, is rather the property of the mortal race.

⁵ Some, says Simplicius, though they do not clearly assert that fortune has a subsistence, yet, from what they say, are compelled to acknowledge its existence. But others readily admit that there is such a thing as fortune, and assert that it is a cause, but are not able to say what it is, conceiving

consider what each of these is, and whether chance and fortune are the same with or different from each other, and how they fall into definite causes.

CHAPTER V.

IN the first place, therefore, since we see that some things are always generated after the same manner, but others for the most part, it is evident that neither fortune, nor that which proceeds from fortune, can be said to be the cause of either of these, either of that which is from necessity, and always, or of that which is for the most part. But since there are certain things which are generated, and have a subsistence beside these, and all men acknowledge that these originate from fortune, it is evident that fortune and chance are each of them

conceiving it to be immanifest to human conception, as being something divine and daemoniacal, and on this account transcending human knowledge, as the Stoics appear to say. And that many indeed are of this opinion, is evident from their adoring Fortune as a goddess, from their building temples to her, and singing hymns in her praise. The opinion, indeed, that fortune is something divine, appears to have been entertained by the Greeks prior to Aristotle, and not to have been first introduced by the Stoics, as some fancy it was. But that Fortune is honoured in certain cities, and that temples are built to her, appears to have been the consequence of conceptions posterior to the time of Aristotle: for we have not any account from the ancients of that period, of temples raised to, or festivals in honor of, the Fortunes of Cities; though we know that the name of Fortune was venerated by the ancients: for at Delphi, previous to interrogating the oracle, it was usual to say, O Fortune and Apollo! may you predict to this particular person. Fortune also is mentioned by Orpheus*. If, therefore, some suspend from Fortune the cause of the more divine bodies in the universe, though they do not subjoin any thing about it, as if it had a subsistence, but others mention its name, though they do not discourse about it, and others conceive it to be something divine, from all these circumstances it is evident that there is such a thing as fortune. And it is worth while to investigate what fortune and chance are; if they are different from each other; and how they fall into definite causes; viz. whether they are among the number of material or formal causes, or rather belong to producing or final causes; and whether they rank among essential or accidental causes.

* See my Translation of the Orphic Hymns, among which there is a Hymn to Fortune.

a certain

a certain thing: for we know that things of this kind are from fortune, and that what originates from fortune is a thing of this kind. But of things which are generated, some are generated for the sake of something, but others not. And of these some are produced from deliberate choice, and others not. But both these rank among things which are produced for the sake of something. Hence it is evident that both in things which neither subsist from necessity, nor for the most part, there are some in which a subsistence for the sake of something may take place. But such things subsist for the sake of something as are accomplished by the dianoetic power, and also such as are produced by nature. Things of this kind⁵, however, when they are produced from accident, are said by us to subsist from fortune: for as, with respect to being, one kind has an essential, but another an accidental subsistence, the like also may take place with respect to cause. Thus that which is capable of building is the essential cause of the house, but that which is white or musical from accident. Essential cause, therefore, is definite; but cause, according to accident, indefinite: for an infinite number of things may happen to one thing. As we have said, therefore, when this takes place in things which are produced for the sake of something, then they are said to be from chance and from fortune. We shall, however, afterward explain in what these differ from each other; but at present this will be evident that both these rank among things which subsist for the sake of something. Thus, for instance, a man would have come for the sake of receiving silver, in order that he might take back with him money, if he had known that he could; he did not, however, come for the sake of this; but it happened that he came, and did this, for the sake of taking back the money: and this, not in consequence of coming for

⁵ Aristotle here particularly explains what those things are in which fortune or chance intervene; and teaches us, according to the interpretation of Themistius and Simplicius, that they are those things which are done for the sake of something, whether by the dianoetic power, or by nature, if they are causes from accident; that is, when something follows from these different from that for the sake of which it was done, then that which follows, is said to be fortuitous.

the.

the most part, or necessarily, to that place. The end, however, i. e. the taking back the money, is not in the number of causes which are in the thing itself, but ranks among things which proceed from deliberate choice, and the dianoetic power, and then it is said to have proceeded from fortune. But if from previous choice, and for the sake of this, he had either always come, or for the most part, taking back with him the money, in this case his coming would not have been from fortune. It is evident, therefore, that fortune is a cause from accident in things which rarely happen, according to the deliberate choice of those things which subsist for the sake of something. Hence the dianoetic power and fortune are conversant with the same thing: for deliberate choice is not without the dianoetic power. It is necessary, therefore, that those causes should be indefinite, from which that may be produced which is from fortune. Whence fortune appears to belong to the indefinite, and to be immanifest to man. In a certain respect also it may seem that nothing is produced from fortune: for all these things are rightly because they are reasonably asserted. For in a certain respect a thing is produced from fortune, viz. from accident: and fortune is a cause, as accident: but, simply considered, it is not the cause of any thing. Thus a builder is the cause of a house, but a piper from accident; and of a man coming into the forum, and taking back with him money, when he did not come for this purpose, the causes are infinite in multitude; for the causes might be, the wish to see, pursue, inspect, or avoid some one. It is rightly said, therefore, that fortune is something contrary to reason: for reason is either of things which always are, or of those which frequently subsist; but fortune belongs to things which are contrary to these. Hence, since things which are thus causes are indefinite, fortune also is indefinite. At the same time, however, some one may doubt whether any thing casual can become the cause of fortune; as, for instance, whether wind or heat is the cause of health; and not the head having been shaved⁶: for of causes according to accident, some are

⁶ Aristotle having said that fortune is an indefinite cause, adds, that it deserves to be doubted whether things casual can become the causes of fortune, i. e. of what proceeds from fortune, and not

are more proximate than others. But good fortune is then said to take place when something good, and bad fortune when something bad happens. Prosperous and adverse fortune, too, are then said to subsist when these are attended with magnitude. On this account, when we want but little of receiving a great evil or good, our fortune is then adverse or prosperous, because the dianoetic power asserts this as if it subsisted: for that which wants but little seems as if it wanted nothing. Besides, prosperous fortune is deservedly unstable: for fortune itself is unstable; since none of the things which proceed from it can either have a perpetual or a frequent subsistence.

CHAPTER VI.

BOTH fortune and chance, therefore, are, as has been said, causes according to accident; since they belong to things which can neither subsist simply, nor frequently, and also to such as may be produced for the sake of something. They differ, however, because chance has a more extended subsistence: for that which is from fortune is also from chance; but not every thing which is from chance is also from fortune.

not other things are the causes of others, as in other causes which are according to accident. For Polycletus is the more proximate cause of the statue, since he is a man; as also in essential causes the statuary is the more proximate cause of that which is artificial: for when some one being diseased is shaved, either wind accedes which has a power of removing the malady, by perspiration; or heat, that is the heat of the sun, and health is the consequence. Wind, therefore, or the heat of the sun, is similarly the cause of health, according to fortune, but not the being shaved; since also of causes according to accident, some are more proximate than others. For if this is not simply a cause from fortune, neither is fortune simply indefinite; since the more proximate cause is definite. Such then is the doubt, the solution of which Aristotle leaves us to investigate, and which is as follows: when we compare causes according to accident together, then the casual causes of things generated are not similarly from fortune, but rather such as are more proximate. But when we simply inquire what the cause is of things which proceed from fortune, then we cannot definitely say what this is, because such as are infinite and indefinite may be assumed.

For

For fortune, and that which proceeds from fortune, are in those things in which prosperity of fortune, and, in short, action, may subsist. Hence it is necessary that fortune should be conversant with things of a practical nature; of which this is a token, that prosperous fortune (*ευτυχία*) appears to be either the same with or near to felicity (*ευδαιμονία*). But felicity is a certain action; for it is good action (*ευπραξία*): so that such things as are incapable of acting cannot do any thing from fortune. And on this account, neither any thing inanimate, nor brute, nor infant, can do any thing from fortune, because they have not any deliberate choice: nor does either prosperous or adverse fortune pertain to these, except according to similitude. For thus Protagoras said, that the stones are fortunate from which altars are constructed, because they are honoured, though others are trampled on of a kindred nature. To suffer also from fortune belongs, in a certain respect, to these things, when he who does any thing pertaining to these does it from fortune: otherwise it does not belong to them.

But chance belongs to other animals, and to many inanimate things. Thus we say the horse came by chance, because when he came he was saved, though he did not come for the sake of being saved. We also say that the tripod fell by chance; for it stood for the sake of being sat on. It did not, however, fall for the sake of being sat upon. So that it is evident, that in things which are simply produced for the sake of something, when they are not produced for the sake of that which happens, and the cause of which is external, then we say they are produced from chance. But of these, those things are from fortune which are produced from the chance pertaining to objects of deliberate choice, by those endued with deliberate choice. This may be inferred from the word *ματην*, in vain; because a thing is then said to be done in vain, when that is not effected for the sake of which it was done, but something else; as, for instance, walking, if it is for the sake of evacuation; but if this does not happen to him who walks, we say that he has walked in vain, and that his walking is vain; as if this word signified

fied that which is naturally undertaken for the sake of something else, when it does not effect that for the sake of which it was undertaken, and for which it is naturally adapted : for if any one should say that he has washed in vain, because the sun is not set, he would be ridiculous ; since the former was not undertaken for the sake of the latter. Thus, therefore, chance (*το αυτοματον*) has a subsistence, according to its name, when a thing is done in vain : for a stone fell not for the sake of striking any one : it fell therefore by chance, because it might have fallen, being thrown by some one for the sake of striking. But that which subsists from fortune is especially separated from chance, in things which are produced by nature : for when any thing is made contrary to nature, we then do not say that it is made by fortune, but rather that it is produced from chance. This also is different : for the cause of that is external, but of this internal⁷. And thus we have shown what chance, and also what fortune is, and in what they differ from each other.

With respect, however, to what pertains to the mode of cause, each of these ranks among those causes whence the principle of motion is derived : for the cause of these always belongs to those things which are produced by nature, or by the dianoetic power ; and the multitude of these is indefinite. But since chance and fortune are the causes of those things of which intellect, or nature, might be the cause, viz. when any thing becomes from accident the cause of these very things ; and nothing which subsists from accident is prior to things essential ; it is evident that neither can cause, which is from accident, be prior to that which is essential. Chance and fortune, therefore, are posterior both to intellect and nature. Hence if chance were in an eminent degree the cause of the heavens, it would nevertheless be necessary that intellect and nature should be a prior cause, as well of many other things, as of this universe itself⁸.

CHAR.

⁷ That is to say, things produced by nature have an internal, but those from chance an external cause. But by nature here, as Simplicius observes, we must understand every irrational life.

⁸ If, says Simplicius, as in all other idioms, as, for instance, of beauty, health, victory, we conceive that there are certain divine pre-subsisting causes, from which participations are communicated

CHAPTER VII.

THAT there are causes, therefore, and that they are as many in number as we have said, is evident: for the inquiry why a thing is comprehends

communicated to participants, and if we presume to call causes by the names of the goods imparted by them, since to obtain extended good is something great, and worthy a divine gift, is it not necessary to call the cause of obtaining divine goodness, Fortune? And fortune, indeed, has well appeared to some to be a cause immanifest to human conception, as being something divine, and more demoniacal. But if we say that fortune is especially in those things, in which we see no other cause, which is known by itself, it is not on this account proper to think that it is the cause essentially of any thing. But when it becomes the cause of something else, according to accident, then the cause is to be called Fortune, and the effect that which proceeds from Fortune. Essential cause, however, is to be considered as the cause of that which is produced. Thus, for instance, to go into the forum for the sake of a friend, is the cause of being in the forum; but deliberate choice, and the going, are the concauses of meeting with a debtor; and the most proper cause is fortune, which on this account made him who went into the forum meet with his debtor; deliberate choice also then co-operating. Fortune, however, does not on this account appear to be the only cause of his going. And then, indeed, deliberate choice co-operated, in short, according to his going into the forum, but evidently required a cause directing it, since he did not go for the purpose of meeting his debtor.

This being the case, Aristotle, as being engaged in a physical discussion, leaves the unapparent cause to be unfolded by theologians, but denominates the known cause, when it obtains an end different from that which it proposed, fortune, and says that the end is from Fortune. But if we investigate in what particulars the dominion of Fortune is found, we shall find that it extends to all things that are in want of obtaining any thing. But those are in want who require the participation of any thing. And those things participate that are separated from each other. So that in the separation of intellectual forms there is need of Fortune, that the separated forms may obtain the participation of each other. And if that separation is indistinct*, and the participation not

* So void of all passivity is the communion of intellectual forms with each other, that it should rather be called consubistence, than participation; for at the same time that all these forms are in each, each preserves its own proper characteristic with the most unmingled purity. Hence at the same time that each is all the rest, through transcendent union with each other, they are perfectly distinct from each other through surpassing purity of essence. Their separation, however, from its causal subsistence may be said to be indistinct.

participation,

comprehends so many in number : for the question why a thing is, is either referred to essence, which is an extreme in things immoveable,
as

participation, but rather consubistence, the peculiarity of fortune also is certainly not apparent in them. But in the corporeal world, in which, in a certain respect, there is a perfect separation and divulsion, in this participation and acquisition are manifest, and Fortune more evidently exhibits her power : for through Fortune the sun and each of the planets obtain their situation in the zodiac. They also obtain configurations with respect to each other ; and the moon obtains the lunar light. All the stars, too, through this possess the jaculations of their rays in other things. In the heaven, however, through the necessity of the order which is there, again the power of Fortune is not so apparent. But in the sublunary region in which there is much danger of not obtaining what is wanted, through the concurrence of many and indefinite causes,—here especially Fortune exhibits her dominion, collecting together all causes, in order that every thing may not wander from, but may obtain that which accedes to it according to justice, that is to say, according to its desert : for the goddess of health is especially apparent in those things in which diseases are introduced, and still more in those in which more partial causes are not present. And we call, indeed, the cause of *distribution* according to desert, Justice ; but the cause of *obtaining* according to desert, Fortune ; which is then especially apparent when neither the dianoetic power, nor any other manifest cause, is seen : for there are, indeed, other things, in which other causes energize ; but Fortune is the cause of *obtaining*. And she is especially seen in those things, in which no other cause is known. But a thing is from chance, when there is no partial and apparent cause of it. Neither, therefore, is Fortune only in those things which rarely happen, since the children of the rich are for the most part rich and fortunate, nor is it a cause according to accident : for it is the most proper cause of the attainment of things which accede to every thing ; and employs, as its slaves, all mortal causes, both the essential and the accidental. But if it should be said that Fortune is in things deprived of order, and which rarely happen, this in a certain respect we do not admit. For sublunary affairs are not entirely disorderly, but participate of a certain order. Nor is Fortune in things only which happen rarely. But in a certain respect we say that the authors of this assertion speak well. For the dominion of Fortune especially adorns the sublunary part of the world, in which the nature of what is contingent is contained, and which being essentially disordered, Fortune, in conjunction with other primary causes, directs, places in order, and governs. Hence, she is represented guiding a rudder because she governs things sailing on the sea of generation. Her rudder, too, is fixed on a globe, because she directs that which is unstable in generation. In her other hand she holds the horn of Amalthea, because she is the cause of obtaining all divine fruits. And on this account we venerate the fortunes of cities and houses, and of each individual ; because being very remote from divine union, we are in danger of being deprived of its participation, and require, in order to obtain it, the assistance of the goddess Fortune, and of those natures superior to the human, (i. e. angels, dæmons, and heroes) who possess the characteristic of this divinity. Indeed, every fortune is good ; for every attainment respects something good, nor does any thing evil subsist

as in the mathematics⁹; since the question here is ultimately referred to the definition of a right line, or of the commensurate, or something else. Or it is referred to the first mover; as, for instance, why did they fight? Because they have robbed. Or, for the sake of what? That they might obtain dominion. Or, cause is, in things which are generated, matter. That these are causes, therefore, and that they are so many, is evident. But since causes are four in number, to know them all is the business of the natural philosopher, who also referring the cause *why* a thing is to all of them, viz. to matter, form, that which moves, and that for the sake of which a thing subsists, physically assigns a reason. Frequently, however, three of these causes pass into one: for the cause why a thing is, and that for the sake of which it is,

from divinity. But of things good, some are precedaneous, and others are of a punishing or revenging characteristic, which we are accustomed to call evils. Hence we speak of two Fortunes, one of which we denominate good, and is the cause of our obtaining precedaneous goods, and the other evil, which prepares us to receive punishment or vengeance. Plato, in the *Laws*, delivers the whole of this Fortune, co-ordinated with the demiurgus, when he says, "That divinity rules over all things, and, together with divinity, Fortune and opportunity, govern all human affairs."

⁹ The mathematical sciences were invented for the sake of enabling the soul to pass from sensibles to intelligibles. To mathematicians, however, so far as mathematicians, this their end is not known, as neither to physiologists is the utility arising from physiology to contemplative philosophy known. But mathematicians very properly refer the *why* to definition as the extreme: for definition is with them a principle; and it is not possible to proceed beyond the principle. Since, however, that which becomes something else, has its being through some other of the causes of itself, one thing through matter, another through form, another through the efficient, and another through the end; hence being asked the *why*, we refer to its proper cause. We often likewise assign different causes of the same thing. For why do I sit? Because my body has much of a terrestrial and fiery nature. Hence it lies, and rises up from matter. That my legs also are bent in such a particular manner, is from form. That my soul thus deliberately chose, is from the efficient cause; and that I thought it was better so to do, is from the end. If some one, therefore, is asked why flatness of nose is an image of Socrates, he will not refer it to any other cause than the paradigmatic: for he cannot refer it either to matter, or form, or any other of the four causes, or to any thing else than this, that Socrates had a flat nose. So that if we refer the *why* to a paradigm, there will also be the paradigmatic cause. Hence Plato refers the cause of the world being one to its paradigm. In short, if material forms are participations of primary forms, in consequence of being assimilated to them, they are images. Every image, therefore, is referred to its paradigm.

are

are one. But that whence¹ motion first originates, is in species the same with these: for man generates man; and, in short, such things as being moved, move. But such things as do not move, being moved, no longer pertain to physical inquiries: for they move, not in consequence of containing in themselves motion, or the principle of motion, but as being immoveable. Hence there are three treatises; one concerning that which is immoveable; another concerning that which is moved, indeed, but is incorruptible; and a third concerning corruptible natures. So that the cause why a thing is, is assigned by him who refers to matter, to essence, and to the first mover: for concerning generation, they especially consider causes after this manner, what is generated after what, and what a thing first did or suffered, and thus always in a consequent order. But there are two principles which are naturally motive; of which, one is not physical, because it does not contain in itself the principle of motion. And if there is any thing which moves without being moved, it is of this kind; as is that which is perfectly immoveable, that which is the first of all things, together with essence and form: for it is the end, and that for the sake of which a thing subsists. So that since nature is for the sake of something, it is also necessary to know this cause. The cause, too, why a thing subsists must be entirely assigned: for instance, it is necessary this thing should be produced from that; and this either simply or for the most part. It is also necessary to know if this particular thing will follow, as, for instance, the conclusion from the

¹ It is worth while to know, says Simplicius, how, according to Aristotle, the cause whence motion first originates, viz. the producing cause, is the same in species, but not in subject and number, as the final and the formal: for nature being a producing cause, he has before shown to be a formal cause. But, perhaps, to nature it belongs to be one in number together with form; but to all proximate producing causes it pertains to be the same in species. From these things, also, we may again perceive that Aristotle knew that the immoveable and first cause is not only a final but a producing cause: for that whence motion is first derived, i. e. the producing cause, he divides into the immoveable, and the moved; asserting that such things as being moved, move, belong to a physical discussion, but that such things as move being themselves immoveable, no longer pertain to physics;—in thus speaking, assuming the verb *to move* instead of the verb *to make*.

propositions:

propositions: also that this is the essence of a thing; and because it is thus better, not simply, but with reference to the essence of each particular.

CHAPTER VIII.

IN the first place, then, we must assign the reason why nature ranks among the number of causes which subsist for the sake of something; and in the next place we must show how necessity subsists in physical concerns: for all natural causes are referred to this cause. Thus because that which is hot is naturally a thing of this kind, also that which is cold, and all such particulars; hence these things necessarily are, and are generated, and possess natural aptitudes: for though they assign another cause, yet as they merely mention it, they dismiss it; one of these, indeed, assigning as causes friendship and strife, but another intellect. But it is dubious what should hinder nature from operating for the sake of something, and because it is better so to operate; and not in the same manner as Jupiter rains, not that the corn may be increased, but from necessity: for that which is elevated must necessarily be refrigerated; and that which is refrigerated when it becomes water must descend: but it happens that in consequence of this taking place the corn is increased. In like manner, if the corn on the ground of any one is destroyed, it does not rain for the sake of this, that it may be destroyed, but this is an accidental circumstance. What then hinders but that the parts in nature may thus subsist? For instance that the teeth should arise from necessity; those in front, indeed, sharp, and adapted to divide; but the grinders broad, and adapted to breaking the food in pieces: for it may be said that they were not made for the sake of this, but that it so happened: and in like manner with respect to the other parts of the body, to which a subsistence

subsistence for the sake of something appears to belong. Where, therefore, all things happened as if they were made for the sake of something, these were preserved, being aptly composed from chance; but such things as were not thus made, these were lost and still perish, according to what Empedocles says concerning the bull species with human heads. This, therefore, and a similar reason, if there be any such, may lead some one to doubt on this subject. It is, however, impossible that these things should subsist after this manner: for these, and every thing which is produced by nature, are either always, or for the most part thus produced; but this is not the case with any thing which is produced from fortune and chance: for neither does it appear to be from fortune or chance that it frequently rains in the winter, but if this should be the case when the sun is under the dog star, it might be said to be the effect of these two. Nor when there is heat under the dog star is it a casual event, but when this is the case in winter. If, therefore, these things appear to be either from chance, or for the sake of something; and if it is not possible that they can be from chance, they must be for the sake of something. All such things, however, subsist from nature, as is even acknowledged by those who make these assertions. There is, therefore, a subsistence for the sake of something in things which are produced by and exist from nature.

Again, in things in which there is a certain end, that which is prior and that which has a consequent subsistence are effected for the sake of this end. As, therefore, it is effected, so is it naturally adapted to be effected; and according to the natural aptitude of any thing, such also, unless there is some impediment, is it effected. But it is effected for the sake of something: and hence it is naturally adapted to be effected for the sake of this: for instance, if a house ranked in the class of things which are produced by nature, it would be produced by nature in such a manner as it is now by art. But if things which are the offspring of nature were not only produced by nature, but also by art, they would in a similar manner be produced according to their natural aptitude. The one, therefore,

fore, would be for the sake of the other; and, in short, art partly perfects what nature is incapable of bringing to perfection, and partly imitates nature. If, therefore, things artificial are produced for the sake of something, it is evident that this is also the case with things which have a natural subsistence. For things posterior with respect to prior are similarly affected towards each other, both in artificial and natural productions. This, however, is especially manifest in other animals, whose productions are neither the effect of art, nor investigation, nor consultation. Hence, it is doubted by some, whether spiders, and ants, and animals of this kind, operate from intellect, or something else. But to him who thus gradually proceeds, even in plants things which contribute to the end will be apparent; as, for instance, leaves are produced for the sake of covering the fruit. Hence if the swallow forms her nest, and the spider her web, naturally, and for the sake of something; and if plants produce leaves for the sake of the fruit, and the roots do not tend upward but downward, for the sake of nutriment; it is evident that a cause of this kind belongs to the class of things which are produced by and subsist from nature². Since, also, nature is twofold, one kind being as matter, but another as form, which last is an end, and the rest are for the sake of the end; this will be a cause for the sake of which natural productions subsist. Error also takes place in things artificial: for a grammarian

* Here again, says Simplicius, it is worth while to observe that Aristotle considers irrational animals and plants, as natural things, though they are animated and governed by soul; irrational animals employing phantasy, sense, and orexis, or appetite, in their proper energies. But if he had intended to perceive a subsistence for the sake of something, in things which properly and alone subsist by nature, he would have adduced the local motion of the elements which subsists for the sake of arriving at their proper wholeness, and the contest of contrary qualities, which is for the sake of preservation in their subject. He would also have adduced the modes in which the generation of each is effected; since the prior always subsists for the sake of the posterior. For fire is produced from water, through the medium of vapour and air. Perhaps, therefore, Aristotle calls *nature*, every thing belonging to soul which subsists about body. Hence his book, *On the Soul*, in which he treats of many things belonging to a soul of this kind, are thought to pertain to the physical theory.

has written incorrectly; and a physician has improperly administered the medicine. So that it is evident that this also happens in natural productions. If, therefore, there are certain artificial things, in which rectitude subsists for the sake of something; but in things erroneous, art is attempted for the sake of something, but deviates from the end, the like also takes place in the productions of nature; so that monsters will be the errors of that which operates for the sake of something. In the first constitution of things, therefore, the bull species with human heads, if there were such animals, must have been produced from the corruption of a certain principle, as things are now produced from the corruption of seed.

Further still, it is necessary that seed should have been first produced, and not immediately animals; and that soft mass which first subsisted was seed. In plants also there is that which subsists for the sake of something, but it is less distinct. Whether, therefore, or not, as there were the bull species with human heads, so also in plants there were the vine species with the anterior part resembling olives? This, indeed, is absurd, yet it would be necessary, since it also happened in animals. Again, it would be necessary that there should be a casual generation in the seeds of things. And, in short, he who asserts this subverts both that which subsists from nature, and nature itself: for those things subsist from nature, which being continually moved from a certain principle contained in themselves, arrive at a certain end. From each principle, however, neither the same thing is produced in each individual, nor that which is casual; but it always arrives at the same end unless something impedes. But that for the sake of which, and that which is for the sake of this, may subsist from fortune. Thus we say that a stranger came³ fortuitously, and having redeemed a certain person departed, when he so acted as if he came for the sake of this, and yet did not come on this account; and when he did this from accident. For

³ Simplicius informs us that one Demeas in Menander, thus came fortuitously, and redeemed the kingdom. He also adds, that some copies of Aristotle instead of *λῆψαμενος*, *having redeemed*, have *λουσαμενος*, *having washed*.

fortune

fortune belongs to causes which subsist according to accident, as we have before said. But when this happens either always or for the most part, then it is neither from accident, nor fortune. In natural productions, however, it is always so, unless something impedes. It is also absurd to fancy that things are not produced for the sake of any thing, unless that which moves is seen to have deliberated; though art also does not deliberate: for if the ship-building art were in the timber, it would make similar to nature. So that if there is a subsistence for the sake of something in art, there will also be this in nature. But this is especially evident when any one heals himself: for to this man nature is similar. That nature, therefore, is a cause, and in such a manner as to operate for the sake of something, is evident.



WITH respect to necessity, however, whether does it subsist from hypothesis, or simply? For now they fancy that a subsistence from necessity is in generation; just as if some one should think that an edifice was raised from necessity, because heavy things are naturally carried downward, and light things upward: and that on this account the stones and foundation of the building are beneath, but the earth above, on account of its levity, and the wood especially in the highest place, because it is most light. At the same time, however, the building is not made without these, and yet not through these; except as through matter; but it is made for the sake of concealing and preserving certain things. The like also takes place in every thing else in which there is a subsistence for the sake of something. For they are not, indeed, without these, which have a necessary nature, and yet they are not through or on account of these, except as matter; but they are for the sake of something. Thus, for instance, why is the saw such an instrument as it is? That it may be this thing, and for the sake

sake of this thing. But this subsistence for the sake of something could not be effected, unless it were made of iron. It is necessary, therefore, that it should be made of iron, if it is to be a saw, and the work of it is to have a subsistence. Hence the necessary is from hypothesis, and not as the end: for necessity⁴ is in matter; but a subsistence for the sake of something, in reason. But after a certain manner the necessary is similarly in the mathematical disciplines, and in things which are produced according to nature. For since this particular thing is rectilinear, (i. e. a triangle) it is necessary that a triangle should have angles equal to two right; but it does not follow that because it has angles equal to two right it is a triangle, though without the possession of this equality of angles, it is not a triangle. The contrary, however, takes place in things which are produced for the sake of something; for if the end will be, or is, that also which antecedes will be, or is. But if not, as there, when the conclusion is not, the principle will not be, so here likewise the end, and a subsistence for the sake of something, will not be: for this is a principle, not of action, but of reasoning. There, however, it is the principle of reasoning; for they are not actions. Hence if the house will be, it is necessary that these things should be made, or subsist, or be; or, in short, that matter itself should subsist for the sake of something; as, for instance, stones and tiles, if the house is to be. Yet

⁴ Generated natures are not produced without matter, and yet they are not produced through matter, as through a certain proper cause; but only as through matter and the material cause. For things which are from hypotheses are of a posterior nature, and are less causes. But that which is properly cause is the end, and that for the sake of which a thing subsists. Thus the proper cause of a house or a wall is not things heavy, and which are placed above, but the concealing and preserving the inhabitants, or supporting the roof. But matter possesses the necessary from hypothesis; for the end, and that for the sake of which, being supposed, the necessity of matter follows; so that this is that without which it is impossible for the effect to be produced. Thus, if the house is to be, it is requisite from necessity that there should be stones and wood; yet it does not follow that if there are those, there must necessarily be a house. Thus also in things produced by nature, that which is *thus* necessary is not to be placed in the end, but in the matter, not because utility follows for the sake of this, and from necessity, but because it cannot subsist without this.

the end is not on account of these things, except as matter. And, in short, unless these exist, neither the house, nor the saw will have a subsistence; not the former, unless there are stones, nor the latter, unless there is iron. For neither in the above mentioned instance are there principles, unless a triangle has angles equal to two right⁵. It is evident, therefore,

⁵ What kind of necessity that is which is from hypothesis Aristotle reminds us through the consequence in the mathematical disciplines: for in the mathematics also there is the necessary from hypothesis; except that it does not subsist similarly in these, and in things produced by nature. Hence he adds, "after a certain manner similarly." For in the mathematics, if there are hypotheses, there is also the conclusion collected from them. Thus, he says, since this particular thing is rectilinear, for instance, a triangle, it is necessary that the triangle should have angles equal to two right, and if it has not, this particular thing is not rectilinear. Nevertheless, if it has three angles equal to two right, it is not necessary that this particular thing should be rectilinear: for a quadrilateral figure may have three angles equal to two right, and not only the angles of a triangle. But this may be more clearly seen in numbers: for if there are five and five, ten will be produced; but if there is ten, there will not entirely be five and five: for nine and one, eight and two, seven and three, six and four, make ten. Nevertheless if there is not ten, neither will there be five and five. For, in short, in such like consequences, the position of what follows is consequent to the position of that which takes the lead; but the position of that which takes the lead, is not consequent to the position of what follows. The subversion, however, of that which takes the lead, is consequent to the subversion of what follows: for things prior are not demonstrated from things posterior, but are subverted from them. Thus also in physics, if there is, or will be a house, it is necessary that there should be such a particular matter; and unless there is such a particular matter, there will not be a house. Yet it does not follow that if there is such a particular matter, there will necessarily be a house. The necessary of hypothesis in mathematics and physics, appears to subsist according to this figure. It differs, however, in this, that in mathematics, the conjunction is, if things prior subsist, things posterior also subsist; for the propositions and hypotheses are prior to the conclusion; and if the posterior are not, neither will the prior be. But the contrary takes place in things generated: for if there is an end, it is necessary that there should also be things which refer to the end; yet it does not follow that if there are things which refer to the end, there should now also be the end. For if there is a house there are also stones, yet it does not follow that if there are stones there is also a house. But that which follows has a similitude, if the end is considered as that which is first to nature, because the matter also subsists for the sake of this. Aristotle, also, again confirms this from the arts. For he who immediately in the beginning, considers the use of a house, and the benefit it affords, and who previously describes the figure of it, will thus also add the matter. And the conception of the end is the beginning of his theory, but not of the action. For there is a twofold beginning or principle, the one of theory, the other of practice. And the beginning of the

therefore, that the necessity which is in natural things, is that which is denominated as matter, and the motions of this. And both causes, indeed, are to be considered by the natural philosopher; but in a greater degree that for the sake of which a thing subsists: for this is the cause of matter, but matter is not the cause of the end. The end also, that for the sake of which, and the principle, are assumed from definition and reason. Thus in things artificial, since a house is a thing of a certain description, it is requisite that these particulars should be produced and subsist from necessity; and since health is

the theory is the conception of the end. For since there is need of a covering, a roof must be made, and therefore there must be walls, and a foundation, and digging. But the end of the theory is the beginning of the action. In the mathematics, however, in which there is no action, there is one principle according to the theory, which is not the end, nor that for the sake of which, but things demonstrative of the conclusion. But Aristotle produces the similitude of things which subsist by nature to such as pertain to the mathematical disciplines, still nearer. For as in the mathematics the end being supposed, that is the conclusion, which was in the necessary propositions, the propositions which are certain principles in them, were not from necessity, because it is possible to demonstrate the same thing through other propositions, so neither in physics do principles according to definition follow the necessity of matter: for the end is not consequent to the matter: in both, therefore, principles according to definition do not follow a necessary supposition. But in the mathematics, principles according to definition are the propositions, but in physics they are the end; which principles being admitted, that which is posterior to these follows; in things generated, indeed, matter, but in mathematics the conclusion.

Since, however, the example of a triangle is introduced by Aristotle with obscurity, as he only indicates the demonstration of it, it is necessary to observe, that all the angles of every right-lined figure that has eight sides, are equal to four right angles*, and that all the angles, inward and outward of a triangle, are equal to six right. Since, therefore, a triangle, is a right-lined figure, which he calls this particular rectilinear thing, but the inward and outward angles of this are equal to six right angles, of which the external are equal to four, it remains that the inward are equal to two right. But if this were not true of the inward, neither would the outward be equal to four right, since all are six. Hence neither will this particular thing be right-lined. But if the three inward angles are equal to two right, it does not entirely follow that the figure is a triangle.

* This follows from the Scholium to the 32d Proposition of the 1st book of Euclid's Elements, in which it is demonstrated that all the inward and outward angles of every right-lined figure taken together, are twice as many, except four, as the number of the sides of that figure.

this

this particular thing, it is necessary that these things should be generated and exist. Thus too, if man is this particular thing, these particulars must exist; and if the latter is, the former also must have a subsistence. Perhaps also there is the necessary in definition. For the work of the saw, by him who defines it, will be said to be a certain division; but this will not be, unless it has teeth of a certain description; and it will not have these unless it be made of iron: for in definition there are certain parts, which are as it were the matter of the definition.

THE

THE PHYSICS.

B O O K III. ¹

CHAPTER I.

SINCE, however, nature is a principle of motion and mutation, and the method with us is concerning nature, it is necessary that we should not be ignorant what motion is: for this being unknown, nature also must

¹ Aristotle in the preceding book having discoursed about causes, and having said that nature is a producing cause, and defined it to be a principle of motion, very properly in the next place teaches concerning motion: for if nature has its essence in this, viz. in being the principle of motion, it is perfectly necessary that he who intends to know what nature is, should also know motion which is assumed in the definition of nature. Again, if the knowledge of relatives is simultaneous, but principle, and that of which it is the principle are relatives, and if nature is a principle of motion, it is impossible that he should have a knowledge of nature who is ignorant of motion. If, therefore, it is necessary that a physiologist should know what nature is, and he who intends to have a knowledge of nature must know what motion is, a discourse about motion is immediately necessary after the discourse about nature, since motion as we have observed is assumed in the definition of nature.

Since, too, motion is in that which is continued, and motion is something continued, and the continued is assumed in the definition of motion, it is also necessary to discourse concerning the continued.

must necessarily be unknown. And as we intend to define motion, we must also endeavour, after the same manner, to discuss those things which are consequent to this. But motion appears to belong to things continuous; and the infinite first presents itself to the view in that which is continuous. Hence it frequently happens that those who define the continuous, employ the nature of the infinite, as if that which is divisible to infinity is continuous. To which we may add, that it is impossible for motion to subsist without place, and void, and time. It is evident, therefore, that for these reasons, and because these

continued. For it is not possible to know that which is defined, while ignorant of each of the particulars assumed in the definition. Again, since in defining the continued, we employ the infinite, asserting that the continued is divisible to infinity, it is also necessary to discourse about the infinite, in order to a knowledge of motion, and of nature the principle of motion. But since every thing natural is corporeal, and every thing corporeal, and corporeal motion, which is the subject of inquiry, are produced in place and in time, a discourse about time and place are necessary to the physiologist, who is about to obtain a knowledge of motion and nature. But to some philosophers time appears to be the celestial motion, and according to others, it is a moveable image of eternity; so that time is entirely allied to motion. Since, however, some have apprehended that place is a vacuum, and have asserted that motion is entirely produced in a vacuum, as Democritus, it is also necessary to investigate concerning a vacuum, if it is, or not, and if things which are moved, are moved in a vacuum as in place. Hence, it is necessary that the physiologist should investigate concerning motion, the continued, place, time, the infinite, and a vacuum.

Again, since these are common to all natural things, and universally, are inherent in all things, and it is necessary that the discussion of things common to all should precede all other discussions, hence in this book Aristotle instructs us in things peculiarly pertaining to every thing, as preparatory to other discussions: for every natural body has motion, and is either finite or infinite. It is also moved in place, either according to the whole, or according to a part, as the inerratic sphere; and motion is measured by time. These things, therefore, are common. The discourse also concerning a vacuum is common, because some have apprehended that place is a vacuum, and that a vacuum is place deprived of body. These things, therefore, are considered by Aristotle in the very beginning of this book. But in this book he instructs us concerning motion and the infinite; and in the fourth concerning place, a vacuum and time. For he now omits the continued, because the consideration of the infinite is necessary to the natural philosopher, separate from the continued: for it is necessary that natural bodies, and natural motions, should be either infinite, or finite. Afterward, however, he discourses concerning the infinite.

things

things are common and universal to all things, we should in the first place make each of these the object of consideration : for the speculation of *peculiarities* is posterior to that of things *common*. But first, as we have said, we must direct our attention to motion. There is then something which is in energy only ; and there is something which is both in energy and capacity². One thing also is this particular thing ; another so much in quantity ; and another of a certain quality : and, in like manner, in the other categories of being. But of relatives, one is predicated according to excess and defect : another according to the effective and passive, and, in short, the motive, and that which may be moved : for the motive is motive of that which may be moved ;

² Being which is in energy alone, is, as Simplicius well observes, in the essences of things unbegotten, and their essential energies ; but that which is both in capacity and energy, according to all the predicaments, is in generated natures. And again, things simply in energy alone, are immaterial and first forms ; for these cannot become any thing else than what they were from the beginning. But things which subsist both in capacity and energy are the composites from matter and form ; for these are in energy, indeed, so far as they have now a certain form and disposition in energy, as, for instance, brass ; but they are in capacity, because they are capable of receiving another form, as brass that of a statue. But an ethereal body is essentially in energy alone ; for it will never be changed according to essence. It participates, however, in a certain respect of a subsistence in capacity, through local motion, and the participations differing from each other which are produced by it : for such a body is not every where at once, nor is the mixture of all things in it, always similar, as is evinced by the effects of different celestial figurations being different.

Simplicius further observes, that Aristotle does not divide being as a genus into a subsistence in energy, and a subsistence in capacity and energy, but as an anonymous word. And that a subsistence in capacity is one thing, and capacity another. Likewise that a subsistence in energy is opposed to a subsistence in capacity, and energy to capacity. He adds, and *capacity, indeed, is a perfect preparation of essence, and an unimpeded promptitude to energize, prolific of energy*. But a subsistence in capacity is an aptitude imperfect with respect to that which is said to be in capacity, receiving a subsistence in energy from another, and not deriving it from itself. But that is in energy which is now able to energize according to that which it is said to be : for a man is in energy, who now energizes according to the human form. But energy is opposed to power, and also energetic motion proceeding from power. The appellation, likewise, of a subsistence in capacity, is derived from capacity remaining within, unapparent, being surveyed in aptitude of essence alone, and being as it were the disposition of essence. But from energy the appellation of a subsistence in energy is derived, according to essence again surveyed as cooperating.

T

and

and that which may be moved, may be moved by that which is motive. Motion, however, has not a subsistence³ separate from things: for that

³ Since, says Simplicius, the philosopher from Lycia (i. e. Proclus) asserts that this one dogma alone, concerning motion, of Plato and Aristotle is discordant, since the latter asserts that motion is not separate from things, and subverts its subsistence as a genus, but the former says that motion is one of the genera of being, in the same manner as essence, sameness, and difference, it will be better to evince, if possible, the concord in this apparent dissonance. It may, therefore, be readily said, that Plato surveying what he calls the genera of being, in the intellectual order, as the first separate causes of beings, very properly unfolds motion and permanency, and the other genera, as subsisting in themselves. For as union is ineffable in them, so likewise is their purity unconfused. But Aristotle inquiring concerning natural and material motions very properly surveys a motion of this kind in things that are moved: for motion in these does not subsist by itself. Hence, he also adds, "For that which is changed, is changed either according to essence, or according to quantity, or according to quality, or according to place." But that mutations and the categories properly subsist in generated natures is manifest to those who have diligently considered them.

It may, however, be said in a way still more proximate and opposite to our purpose, that Aristotle surveyed the peculiarity of motion in a very admirable and profound manner. For considering it as subsisting in energy and passion, he very properly says that motion is not separate from things, that is, is not separate from the genera of being. Hence he adds, "that which is changed, is always changed either according to essence, or according to quantity, &c." For how is it possible to survey energy or passion by themselves, separate from that which energizes or suffers? Plato also knew a difference of this kind in beings, according to which some things have an essential subsistence, but others are beheld with, and in others. But, in the third place, it may be said that the thing proposed by Aristotle is to show that motion is not a genus, as neither did he conceive being to be a genus, because it is not similarly adapted to all beings, which also the friends of Plato acknowledge, since they likewise assert that being pervades to beings analogously, in the same manner as Aristotle. Hence this signification of genus is one thing, viz. which is divided into species equally participating of genus, which Aristotle denies of motion, because there are many motions, and which differ from each other in the degree of motion; but that signification of genus is another thing, according to which Plato denominates the genera of being which pervade through all things, though not equally, nor do they subsist in all following natures, according to the same peculiarity. It is not, therefore, at all wonderful, if Plato calls motion a genus, according to this signification of genus, but Aristotle denies it to be a genus, according to the other signification of the word; especially since genera with him do not subsist by themselves, neither are they separate from species, nor are species separate from individuals, since he surveys species and genera as the elements of individuals, and not as exempt causes. In the fourth place, those who philosophise should observe, that the motion is of one kind, which Plato considers as a genus of being, surveying it according to a different signification, and

that which is changed is always changed, either according to essence, or according to quantity, or according to quality, or according to place. But in these, as we have said, nothing common can be assumed which is neither this particular thing, nor a participant of quantity or quality, nor of any one of the other categories. Hence, there will not be either motion or mutation of any thing except the particulars we have mentioned. But each of the categories subsists in a twofold manner in all things. Thus with respect to this particular thing, one thing pertaining to it is form, and another privation. In quality, one thing is white, and another black. And in quantity, one thing is perfect, and another imperfect. In like manner also in lation, one thing is above, and another beneath; or one thing is light, and another heavy. So that the species of motion and mutation are as many as those of being. But since in every genus of things, there is that which is in entelecheia, and that which is in capacity; motion is the entelecheia of that which is in capacity, so far as it is in capacity. Thus change according to quality is the energy of that which may be so changed, so far as it is capable of this change: and increase and diminution are the energies of that which may be increased, and of its opposite, that which may be diminished; for there is no name common to both. Generation and corruption, also, are the energies of that which

and that the motion is of another kind, and has a different conception, about which Aristotle now instructs us: for that motion which Plato celebrates, signifies the first departure from being into vital and intellectual powers and energies, and is perfectly immutable, as is evident from what he says in the Sophista, from which motion appears to be discovered. Since, however, all things, as we have before observed, are there with unconfused union, and possess separation without divulsion, and self-perfect, on this account Plato surveyed there, motion subsisting by itself, and considered it as a genus of being. But the motion which is here investigated by Aristotle, is a mutation ever flowing, and the energy of that which is in capacity, while it remains in capacity. Hence it is measured by time, just as the former motion is measured by eternity, and flourishes in things that are moved, not having a subsistence by itself. Simplicius adds, that the cause of this difference of conception appears to him to be this, that Plato thinks fit to call the paradigmatic causes of sensibles, by the same names as sensibles, but Aristotle rejects such a sameness of appellation, as exciting in us a conception similar to the name.

may be generated, and of that which may be corrupted: and motion is the energy of that which may be locally moved. But that this is motion is hence evident: for when that which may be built so far as we say it is such, is in energy, it is then built, and this is building. In like manner with respect to discipline, healing, rolling, and leaping, and a progression to manhood and old age. However, though some things are the same both in capacity and energy, yet not at the same time, or not according to the same, but, for instance, a thing may be hot in capacity, but cold in energy: and many things act upon and are passive to each other; for each of these will be at the same time effective and passive. Hence that which naturally moves is also moveable; for every thing of this kind moves, since it is also that which is moved⁵. To some, therefore, it

⁴ Aristotle having previously assumed ~~lemmas~~ useful to the theory of motion, immediately employs the first assumption to the definition of motion; or rather he employs a certain part of it. For the division was that one thing is in entelecheia only, but another both in capacity and entelecheia, which was said to take place in each of the categories. Of this, therefore, which is both in capacity and energy, Aristotle says, motion is the energy, so far as it is in capacity. Thus in essence or substance, one thing is in capacity man, as, for instance, seed, but another in entelecheia, as Socrates. And in quantity something is a bicubit both in capacity and energy. Thus, too, something is white, both in capacity and energy, in quality: and in a similar manner in the remaining genera. But that Aristotle has in a wonderful manner defined motion we may learn from hence. For a thing being in energy that which it is said to be, as long as it thus subsists, cannot be said according to this to be moved. Thus, for instance, man, as long as he is man, will not be moved according to the human characteristic. But neither if he should be white in energy, as long as he is white, will he be moved according to whiteness. If, however, being a white man in energy, he should be black in capacity, as being capable of becoming black, when a departure happens to him from whiteness to blackness, so far as he is naturally adapted, that is, according to the ability which the energizer possesses of becoming black, then he is said to be moved to black. And again, when he is said to be black, there he stops in it, and is no longer moved according to the black, but is black in energy. Thus, therefore, nothing is moved, so far as it is in energy. Nor yet so far as it is in capacity, while remaining in capacity and in aptitude alone, can it be said to be moved. But when it is changed from capacity into energy, a subsistence in capacity still remaining in it, then it is said to be moved. Very properly, therefore, does Aristotle add, *so far as it is such*, that the energy of that which remains in capacity may be perfected: for a subsistence in capacity ceasing, there is no longer motion. For when a thing has acquired a subsistence in energy, so far as it is in energy, it is in stability and permanency,

it appears that every thing which moves is moved. Whether, however, this be true or not, will be manifest from some other of our writings ;

permanency, and not in motion. Nor yet if any thing is in capacity alone will it now be moved. That which is capable of being built, therefore, so long as it remains unenergetic, according to the capability of being built, is unmoved. But when so far as it may be built, according to this it energizes, still possessing, in the energizing the capability of being built, then it is moved, that is, when it is built. And building being then the energy of that which may be built, is motion : for as far as it is built, it may be built, and according to a subsistence in capacity, it energizes and is moved.

Simplicius adds, that Aristotle defining motion in the beginning, says that it is the energy of that which may be moved so far as it is such. But Alexander, Porphyry, Themistius, and other interpreters of the definition, perceiving that Aristotle shortly after calls motion the entelecheia, and finding it thus written in certain copies, i. e. " motion is the entelecheia of that which is in capacity, so far as it is such, assume in the definition of motion, the word *entelecheia*, as the same according to Aristotle with *energy*. But perhaps Aristotle uses the word entelecheia as significant of perfection. And if at any time he assumes it for energy, he does not assume it for any casual energy, but for that which is perfect, and because it possesses the perfect ; for every thing is then contained in its own perfection when it exerts its own energies according to nature. Hence Aristotle defines soul to be the entelecheia of a natural and organic body, and which possesses life in capacity. Not that soul is energy, but that its perfection subsists according to energy. And since motion is an imperfect thing, Aristotle does not in vain directly call it energy, and not entelecheia. Alexander also well observes, that if motion is called by Aristotle the entelecheia of that which is in capacity, it is called entelecheia, so far as the energy according to it is the perfection of that which is in capacity ; just as in habits, the perfection of habit is energy according to it. But in habits energy does not destroy habit, but renders it more perfect. But the energy of that which is in capacity according to its subsistence in capacity, when it ends in that which is energy, destroys that which is in capacity. Hence it will not properly be the entelecheia of that which is in capacity. For as we have said the name of entelecheia manifests the possession of perfection ; and when it is properly asserted of energy, is not asserted of casual energy, but of that which is perfect, and is established according to a subsistence in energy.

Hence that which is properly entelecheia is twofold, the one subsisting as a perfect quiescent form, in which sense the soul is said to be entelecheia ; but the other energy according to this. But if at any time energy should be called entelecheia, it is so called so far as any thing energizing exerts energies according to its own nature, whether its nature be imperfect or perfect. It must further be observed, also, that Aristotle now ascribes the name of energy in common both to the agent and patient : for motion is in common to both a rising tendency from a subsistence in capacity to a subsistence in energy. Aristotle, therefore, adduces the instance of that which may be built ; but it will also be true to say of that which builds, that motion is the energy of that which is in capacity : for a builder when he does not build, being in capacity, when he energizes,
is

writings ; for there is something which moves, and is itself immovable⁵. But motion is the entelecheia of that which is in capacity, when

is then moved according to the building power. And building is motion, being the energy of the builder, but the passion of the house. But Aristotle calls both by the common name of energy, so far as that which is in capacity on both sides is excited to that which is in energy. May it not, however, be said that which makes, when it is changed from a subsistence in capacity to a subsistence in energy, is moved as that which suffers, and not as that which makes. Hence all the examples which Aristotle adduces are passive : for the energy of that which makes so far as it makes, is perfect.

⁵ Aristotle having said that motion is the energy of that which is in capacity, so far as it is such, very properly adds that which is consequent to the definition : for since natural things are both in capacity and energy, though not according to the same, being, for instance, cold in capacity, but hot in energy, or if they are also according to the same both in capacity and energy, as, for instance, hot according to both, yet they are not so at once, but are now in capacity, and again in energy, or *vice versa*. Since, therefore, natural things thus subsist, on this account they are not moved only as matter, nor do they move only, as things incorporeal, but they are moved so far as they are in capacity, and they move so far as they are in energy. What Aristotle says, therefore, has this utility, for it assigns the cause not only of physical things being moved, but also of their being motive. It likewise properly solves a doubt urged against the definition of motion. But the doubt has an inquiry of the following kind in the first figure. Some things which are moved also move. All things which move are in capacity, and not in energy. Some things therefore which are moved are in energy, and not in capacity. So that not all motion is the energy of that which is in capacity, so far as it is such. The doubt, therefore, is solved through every thing which is moved being moved and suffering, so far as it is in capacity, but moving and making so far as it is in energy. For a subsistence in capacity is one thing to it, and a subsistence in energy, another. Hence the energy according to each of these is different, if not only to do but to suffer, is said to be in energy. For Aristotle being of opinion that motion is in that which is moved, says that it is the energy of that which may be moved, so far as it is such. But that a thing which is in capacity suffers and is moved, so far as it is in capacity, but acts and moves in energy, so far as it is in energy, is evident from the energy of each not being directed to the same ; but the energy of that which is in capacity, is directed not to that which it is, but to that which it is naturally adapted to be. For that which is cold is heated, because it is not hot but cold, but is naturally adapted to be heated. And that which is hot heats, so far as it is in energy, and not so far as it is not yet, but is naturally adapted to subsist in energy, as is the case with that which is passive. Hence such things as being moved, move, are moved through subsisting in capacity, but move through subsisting in energy. For that which is cold, is heated indeed, as being in capacity, but refrigerates as being in energy. And if it were not in capacity, but in energy alone, it would not be moved nor changed into any thing else, but would remain in that in which it was. For it would not be naturally adapted to any thing else, but

when being in entelecheia it energizes, not so far as it is that which it is, but so far as it is moveable. I say so far as it is moveable: for
brass

but would alone energize and act so far as it was, and would not suffer. But if any thing was in capacity alone, and had not any thing in energy, it would not energize, nor would it either do or move any thing. For it would not have any thing according to which it could act; or rather it would not in short have any subsistence: for that which every thing is, it is in energy. Hence, some are of opinion that neither has matter any subsistence, since it appears to be passive alone, and neither to make, nor energize. But that which does not energize, is not any thing in energy, according to which it was necessary it should energize. Such, therefore, is the use of what is now said by Aristotle.

But it is well said by Aristotle that *some* things are the same in capacity and entelecheia: for not all things are of this kind; since intellectual and divine natures have nothing in capacity, because they are essentially in energy, as Aristotle says. The celestial bodies, likewise, though they are bodies, yet have not in their essence a subsistence in capacity, since they are exempt from generation and corruption. According to local motion, however, not by changing from immobility to motion, but by not having all their parts every where at once, but different parts, in different places, they also possess a subsistence in capacity. Perhaps, too, as Simplicius well observes, they sustain a certain change in quality, according to their different habitudes and commixtures with each other, and are passive, according to something which is inherent in them in capacity. For they are disposed in one way from their conjunction, and in another from their trigonic, hexagonal, or tetragonic station, and again in another from their unfigured interval with reference to each other; as is evident from the different effects of such like differences. But though these being moved by first moving causes, move sublunary natures, yet they are not reciprocally moved by them, and according to this, they differ from sublunary natures. For these are reciprocally moved by the natures which they move, in consequence of being composed from the same elements, and from the same matter similarly adapted to the reception of contraries. Hence each is passive according to matter, through which it possesses a subsistence in capacity, but it operates according to form, through which it is in energy that which it is. For things which heat are in their turn refrigerated; and things which refrigerate are in their turn heated. This, too, perhaps, celestial natures suffer with respect to each other, operating on and being passive to each other.

⁶ Aristotle, says Simplicius, having asserted that some things are both in capacity and energy, and on this account are moved according to a subsistence in capacity, but move according to a subsistence in energy, and that all things are not of this kind, but that there are some things which are alone in energy and not in capacity, which things are certainly such as alone move and are not moved,—very properly adds, that to some it appears that there is not any thing which moves being immoveable, but that every thing which moves is moved, the contrary to which he demonstrates at the end of this treatise, to which place also he defers the investigation of this point. And it is evident that those of the ancient physiologists were of this opinion, who admitted that
there

brass is in capacity a statue ; yet, at the same time, motion is not the energy of the brass so far as it is brass ; since the essence of brass is not the

there was either one or many corporeal principles of this ; and also of the junior physiologists, the stoics. For the ancients said that generated natures were produced according to the separation, or commixture, or change in quality of the principles. Alexander says that this was the opinion of Plato. But that Plato says that *the one* and *the good*, and, in short, the First Cause, who moves all things to himself as the object of desire, is immoveable, is clearly evident from what is said in the first hypothesis of the Parmenides : for after taking away every motion from it, he adds, “ *the one*, therefore, is immoveable according to every motion.” And Alexander himself acknowledges that Plato asserts ideas to be immoveable. On which account he fancies that he can demonstrate a certain confusion in the words of Plato : for if, says he, to perceive intellectually is to be moved according to the Platonists, to be intellectually perceived, is to move. If, therefore, ideas are intellectually perceived, they will be motive. But if every thing which moves is also moved, ideas will be moved, though they are supposed to be immoveable. That intellectual perception, however, is not said by Plato to be moved according to any species of physical motions, but according to energizing, which Aristotle also testifies of intellect, asserting that it is in its essence energy, is perfectly evident : for in the Timæus, Plato says that all true being subsists always with invariable sameness. But nothing among things which are moved either according to essence, or quantity, or quality, or place, can subsist in this manner. So that when in the 10th book of the Laws, he assimilates intellect to a sphere revolving with invariable sameness, he does not ascribe a transitive motion to intellect, neither according to the whole, nor according to parts, but an energetic motion ; and, in short, a motion denominated according to a vital tendency from being to energy. Aristotle, therefore, might learn from Plato, that intellect is immoveable, according to physical motions. If, indeed, what is now said by Aristotle is directed against Plato, it seems to regard his opinion concerning soul. For Plato conceiving bodies to be alter-motive, as well as Aristotle, says that they are proximately moved by soul, which is self-motive. And, indeed, that all the celestial orbs are proximately moved by soul, Aristotle also acknowledges, since in the 2d book of his treatise On the Heaven, he clearly calls them animated. But Aristotle, indeed, says that soul is immoveable, denying of it all natural motions. And Plato demonstrates that it is self-motive, as being moved, indeed, by itself, but by its own motions moving bodies, which motions are not physical, but transitive energies of soul, and on this account they are also moved : for that Plato does not say that soul is moved according to physical motion, is evident from the following passage in the 10th book of his Laws : “ Soul, indeed, is the leader of every thing in the heavens by its motions, the names of which are, to will, to provide, to consider, to consult, to opine rightly or falsely.” So that soul is immoveable according to that motion which moves. And Aristotle, according with Plato, says, that that which primarily moves is immoveable, soul, indeed, being immoveable according to that motion which moves, but intellect, as being without transition in its energies : for since it is necessary that prior to that which

is

the same as something which is moveable in capacity: for if they were simply the same, and according to definition, motion would be the energy of the brass, so far as it is brass. They are, however, as we have said, not the same. And this is evident in contraries: for that which has the capacity of being well, and that which has the capacity of being diseased, differ from each other; (since otherwise to be diseased would be the same thing as to be well) but the subject, that which is well, and that which is diseased, whether it be humour or blood, are one and the same. But since that which is in capacity is not the same, according to definition, as that which is in energy, as neither is colour the same as that which is visible; it is evident that motion is the entelecheia of that which is in capacity, so far as it is in capacity. That there is this energy, therefore, and that a thing then happens to be moved, when this energy exists, and neither prior nor posterior to it, is manifest. For every thing is able at one time to energize, and at another not; as, for instance, that which is capable of being built, so far as it is capable. And the energy of that which is capable of being built, so far as it is thus capable, is building: for building is either this, the energy of that which is capable of being built, or it is the house. But when the house is, it will no longer be that which is

is alter-motive, or moved by another, the self-motive should be the proximate cause of the alter-motive; so, prior to that which is moved in any way whatever, that which is neither moved by another, nor by itself, or in other words the immoveable, must be the cause to the self-motive nature, both of being, and of being moved. Hence the self-motive nature possessing a duplicity, and unfolding the agent, together with the patient, is not sufficient to the condition of principle. But whether soul is that which first moves, it also is shown to be immoveable according to every motion which moves; or whether it be intellect, it is immoveable according to every transitive motion. Nor in these things is there any dissonance between Plato and Aristotle except in the word self-motive; because Plato calls *soul* self-motive, but Aristotle *the animal*, this being moved, indeed, by soul, which is immoveable according to that motion which moves, but is moved according to the body. And this, indeed, is consequent to the opinion of Aristotle, who does not think fit to denominate any other motion except that of natural things. Hence neither does he think fit to call the transitive energies of the soul motions. But Plato says, that the first species of motion (beginning downward) is the confused and disorderly, which belongs to a corporeal nature considered by itself; the second, that of natural things; the third, the transition in the energies of soul; and the fourth, that of intellect, which is, indeed, without transition, but is excited from being to energy.

U

capable

capable of being built. That however is built, which is capable of being built; and hence it is necessary that building should be the above-mentioned energy. But building is a certain motion. And the same reasoning will apply to other motions. That what we have asserted, too, is well said, is also evident from what others have said concerning motion, and from it not being easy to define it otherwise: for neither motion nor mutation can be placed in any other genus; nor have those who have advanced a different opinion concerning it spoken rightly. But this will be evident to those who consider the affair; for by some motion is said to be difference, inequality, and non-being; though it is not necessary that any one of these should be moved, neither if they be different, nor if they be unequal, nor if they be non-beings. Neither is mutation into these, nor from these, rather than from their opposites. But the reason why they referred motion to these things is this, that motion appears to be something indefinite; and the principles of the other co-ordination, are indefinite, because they are privative: for no one of them is this particular thing, nor of a particular quality, nor does it belong to any of the other categories.

⁷ Aristotle, having related his own opinion, passes on to the consideration of the opinions of those prior to him concerning motion. And hence, as Simplicius well observes, it is more benevolent to consider Aristotle in this place as confuting the more confused description of motion delivered by the ancients. But it is evident, from their conception, that motion is well defined by Aristotle: for they referred motion to inequality, difference, and non-being, because it appears to be something indefinite: for their being two co-ordinations of things with the Pythagoreans, to one of which motion belongs, which has privative and indefinite principles, among which are difference, inequality and non-being, motion very properly appeared to them as well as to Aristotle to be something indefinite; except that to them it appeared to be placed in the privative and indefinite co-ordination, through its opposition to the definite nature of permanency, but to Aristotle, through the impossibility of placing it either in a subsistence in capacity, or a subsistence in energy. For that which is in capacity only is not yet moved, and that which is in energy is no longer moved. If, therefore, motion is neither in capacity nor in energy, nor that which it especially appears to be, energy; for motion is imperfect energy, because that thing in capacity is imperfect of which motion is the energy,—if this be the case, motion deservedly appears to be indefinite. But Aristotle calls the principles of the other co-ordination of contraries, privative, viz. the ten which are enumerated in p. 13, because according to him form and privation are the principles of contraries; and the ten principles in the better co-ordination will be under form, but those in the worse under privation.

The

The cause, however, why motion appears to be indefinite, is because it can neither be simply referred to the capacity, nor to the energy of beings. For neither that which has the capacity of being a definite quantity is moved from necessity, nor that which is a definite quantity in energy. Motion, too, appears to be a certain energy, but imperfect; the cause of which is, that the capacity of that is imperfect, of which the energy is motion. On this account it is difficult to apprehend what motion is: for it is necessary to refer it either to privation, or to capacity, or to simple energy; but it does not appear that it can be any one of these. The above-mentioned mode, therefore, remains, viz. that it is a certain energy; but such an energy as we have said it is, difficult indeed to be perceived, but which may have a subsistence.

CHAPTER II.

BUT as we have said, every thing which moves is moved, being moveable in capacity, and of which the immobility is rest: since the immobility of that to which motion is present is rest. For to energize with respect to that which is moveable, so far as it is moveable, is to move. But it effects this by contact: so that at the same time also it suffers. Hence motion is the energy of that which is moveable, so far as it is moveable; and this happens from the contact of that which is motive; so that at the same time, it likewise suffers⁸. But that

⁸ It is well observed by Simplicius, that Aristotle appears by one argument to separate that which naturally moves, and is on the contrary moved in generation, from that which moves immoveably, as the first and an intellectual essence, and that which is always in motion, as the celestial orbs. For that which moves naturally, moves being moveable in capacity; and on this account, it is on the contrary moved, and is not only moveable in capacity, but also motive. But the first essence is perfectly purified from a subsistence in capacity, both according to the being moved, and moving; and is neither, in short, moveable, since it is entirely immoveable, nor motive in capacity: for it is exempt from all imperfection, and from every subsistence in capacity.

which moves always introduces a certain form, either this particular thing, or of such a quality, or of a definite quantity, which will be the principle and cause of the motion when it moves. Thus, man in energy makes man from man, which is in capacity. That also which is the subject of doubt is evident, viz. that motion is in the moveable thing: for it is the energy of this, and is derived from that which is motive. The energy likewise of that which is motive is not different. For it is necessary that both should be energy; since it is motive because it has the capacity of being so; and moving, because it energizes. But it is energetic of the moveable; so that in a similar manner there is one energy of both. Just as there is the same interval of one with respect to two, and of two with respect to one; and also between acclivity and declivity: for these are one, but the definition is not one. The like also takes place in the mover, and that which is moved. There is here, however, a logical doubt⁹: for, perhaps, it is necessary that there should be a certain energy different from that which is effective, and that which is passive; since the one is a producing or making, but the other is passion. But with respect to work and end, of this indeed it is effect, but of that passion. Since, therefore, both are motions, if they are different, in what will they be inherent? For either both are in that which suffers and is moved, or the making is in the maker, but the passion in the patient. But if it be necessary to call this also making, it will be homonymous. If, however, this be the case, motion will be in that which moves: for there is the same reason of that which moves, and of that which is moved. Hence either every thing which moves will be moved, or that which possesses motion will not be moved. But if both action and passion are in that which is moved and suffers, and also teaching and discipline, which are two, are in the learner, then in the first place, the energy of each thing will not be in each; and in the next place, it is absurd that two motions should be at once moved. For there will be

⁹ Aristotle, says Simplicius, calls this doubt logical, either as proceeding from probabilities, or as having the persuasive in reason alone, and not confirmed from things.

certain

certain mutations of quality, two of one subject, and to one form, which is impossible. Will there be one energy? But it is absurd that there should be one and the same energy of two things different in species. There will be, however, if discipline and teaching, action, and passion are the same. To teach also will be the same as to learn, and to act as to suffer; so that it will be necessary that every teacher should learn, and every agent suffer. Or shall we say that neither is it absurd that the energy of one thing should be in another? For teaching is the energy of the teacher; yet it is in something, and is not cut off, but is of this in this. Nor is it absurd that there should be one and the same energy of two things, not as if the essence were the same, as in an upper and an under garment; but as that which is in capacity to that which energizes. Nor is it necessary that the teacher should learn, not even if to suffer and to do were the same: since they would not be the same, as if there were one definition declaring the essence of the thing, as in an upper and an under garment; but they would be the same, just as the way from Thebes to Athens is the same as the way from Athens to Thebes, as was before observed. For not all the same things are inherent in things which are in any way whatever the same, but only in those of which the essence is the same. It does not follow, however, that if teaching is the same as discipline, to learn is the same as to teach; as neither if there is one distance of things which are distant, is it one and the same thing for this to be distant from that, and that from this. In short, neither is teaching properly the same as learning, nor acting as being passive; but the motion in which these are inherent is the same: for to be the energy of this in this, and of this from this, differ in definition.

CHAP.

CHAPTER III.

WHAT motion, therefore, is both universally and particularly, has been said ; since it is not immanifest how each of its species should be defined. For mutation according to quality, is the energy of that which may be so changed, so far as it possesses this capacity. Further, the energy of that which is effective and passive in capacity is more known so far as it is such ; and that simply : and again, in particulars, building or healing. After the same manner, also, we may speak concerning each of the other motions.



SINCE, however, the science concerning nature is conversant with magnitudes, motion and time, each of which must necessarily be either infinite or finite ; (although not every thing is either infinite or finite ; as, for instance, passive quality or a point ; for, perhaps, it is necessary that no one of things of this kind should be placed in either of these)—since this is the case, it is fit that he who engages in a discussion concerning nature should speculate the infinite, and consider whether it is or not ; and if it is what it is. But that the speculation concerning the infinite pertains to this science is indicated by this circumstance, that all those who appear to have touched on a philosophy of this kind in a manner which deserves to be mentioned, have discoursed about the infinite ; and all of them consider it as a certain principle of beings. Some, indeed, as the Pythagoreans and Plato, consider

consider it, *per se*, not as being an accident to any thing else, but as having an essential subsistence ; except that the Pythagoreans, indeed, consider the infinite as subsisting in sensibles ; for they do not make number to be separate ; and they assert that what is beyond the heavens is infinite ; but Plato says that beyond the heavens there is not any body, nor ideas, because these are no where : he affirms, however, that the infinite is both in sensibles, and in ideas¹. And the Pythagoreans,

¹ Aristotle, in the first place, says Simplicius, mentions the difference according to which some of the ancients contended that the infinite is a certain essence subsisting by itself, and not an accident to something else, as the Pythagoreans and Plato, who agreed in this particular with each other. But most of the natural philosophers considered the infinite as an accident to something, some supposing the infinite to be air, as Anaximenes and Diogenes, but others water, as Thales ; and others, that which subsists between, as Anaximander. And these, indeed, and such like philosophers, asserted that the infinite consisted in magnitude ; but the followers of Anaxagoras and Democritus said, that the infinite happened from the multitude of principles ; the former from the multitude of similar parts, and the latter from the multitude of atoms ; except that they also were compelled to assert that the infinite was in magnitude. But Plato and the Pythagoreans differ, says Aristotle, so far as the Pythagoreans considered the infinite as subsisting in sensibles, and not separate from them : for they say that the infinite is in numbers, but that numbers, and, in short, mathematical natures, may be intellectually conceived as subsisting by themselves, though they actually do not, but subsist in sensibles : for they celebrate another kind of number in the hymn which begins :

Father of gods and men, fam'd number, hear.

And also, when they speak of that number which Hippasus defined to be the first paradigm of the fabrication of the world. Aristotle also adds, that they placed the infinite beyond the heavens, but evidently not the sensible infinite, since Timæus himself says, that no body remains external to the world. They appear, therefore, to speak of a twofold number, and of the infinite in number, which they said is, the even, viz. the one sensible, and the other intelligible, the latter of which they asserted to be external to the heavens, as being superior to a corporeal nature. Plato, indeed, does not admit that there is any body beyond the world : for in the Timæus he clearly says, concerning the world, which the heavens externally invest, " Its Artificer composed it from all fire, water, air, and earth, leaving no part, nor power of any thing external to it." But neither does Plato say that ideas are beyond the heavens, because they are not any where, nor in short, are they in place. The infinite, however, he admits to be both in sensibles, and in ideas : for they say that Plato asserted the one, and the indefinite duad, to be the principles of sensibles ; and that placing the indefinite duad also in intelligibles, he called it the infinite. Considering
also

Pythagoreans, indeed, say that the infinite is the even in number; for this being comprehended and bounded by the odd, imparts infinity to beings. They add that this is indicated by what happens in numbers. For gnomons being placed about unity, and also being placed separately, sometimes another form is always produced, and at other times one and the same form remains. But Plato establishes two infinities, viz. the great and the small². All those, however, who dis-
course

also the great and the small as principles, he said they are infinite, in his treatise Concerning the Good, which falling into the hands of Aristotle, Heraclides, Hestæus, and other associates of Plato, they committed to writing what they there found, as being enigmatically delivered.

² Aristotle having said in what the infinite consists according to the Pythagoreans and Plato, now adds what each of them asserts the infinite to be, and in the first place speaks concerning the Pythagoreans. But they said that the infinite is the even number, because every even number, as the interpreters say, may be divided into equal parts, and that which may be divided into equal parts is infinite according to bisection. For the division into the equal and half proceeds to infinity; but the odd number being added bounds the even number; for it prevents its division into equal parts. Thus, therefore, says Simplicius, the interpreters refer the infinite to the even, according to a division into the equal. And it is evident, he adds, that they consider infinite division as subsisting not in numbers, but in magnitudes. For neither can all even numbers for the most part be continually divided into equal parts, and of those that can be so divided the section is stopped by unity. But in magnitudes nothing hinders that what remains may be always divided, though the division should not be into equal parts. In short, neither does Aristotle appear to have made division into equal parts to be the cause of the infinite. Shall we say, therefore, that in every section the even is the cause of all division? For every section being one divides that which is cut into two, i. e. either into equal or unequal parts. Since, therefore, a continual section into two parts makes a division to infinity, but the duad is the principle of the even, on this account, the infinite is said to subsist according to the even. In like manner the even is the cause of addition; for one is added to one. On this account, Aristotle says that the even bounded by the odd number, imparts infinity to beings: for every body is divisible to infinity, because it has the even number assumed, and as it were concealed in itself: for it possesses sections to infinity in capacity, and not in energy. And according to matter and the subject it is divisible, and through this is even and infinite; but according to its subsistence, as a certain individual thing, it is bounded and indivisible, and through this is an odd number.

But the Pythagoreans made that which happens in the addition of numbers to be a token that the odd number is of a formal and bounding nature, but the even of a material and infinite nature: for odd numbers being added in succession to a square number, preserve the square number, and the equally equal; but an even number being always added to a square number,
changea

course concerning nature³, always subject a certain other nature of those things which are called elements, to the infinite; as for instance, water, or air, or that which subsists between these. But no one of those who make the elements to be finite introduces infinity. Such, however, as make infinite elements, as Anaxagoras and Democritus, say that the infinite is continuous by contact, the former from similar parts, but the latter from the all-spermatic nature of figures. And the former, indeed, asserts that any part whatever is similarly mingled with the whole, because he saw that every thing is generated from every thing: for hence he seems to have said that all things once subsisted together; as this flesh, and this bone, and in like manner every thing else. All things therefore, thus subsisted, and consequently together: for the principle of separation is not only in each, but like-

changes the form of it, and makes it longer one way than another, causing it at different times to be increased, according to a different side: for let there be a series of numbers in succession from one to ten, viz. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. Of these, unity is evidently the first odd number, and the first square; for once one is one. But the odd numbers here after unity are 3, 5, 7, 9, and the even are 2, 4, 6, 8, 10. If, therefore, we add to the monad, which is the first square, 3, it will make 4, which is a square, having 2 for its side. And again, if to the square 4, we add the next odd number 5, it will make 9, which is also a square number. If to this we add 7, the square 16 will be produced; and if to this we add 9 it will make 25; all which are square numbers in succession, and equally equal. But if to the first square 1 we add 2, it will make 3 which is no longer a square number. And if to 4, which is a square, we add either 4 or 6, either 8 or 10 will be produced, which are numbers longer one way than the other: for the sides of these numbers are either twice four, or twice five. Hence it is evident that to preserve the same form, and to make the equally equal, is the province of *bound*: but not to preserve the same form, and to make that which is longer one way than the other, is the province of *infinity**. But the Pythagoreans called odd numbers gnomons, because being added to squares, they preserve the same figure, in the same manner as the gnomons in geometry. By the word *separately*, Aristotle appears to signify, that both in the circum-positions of gnomons, and again, apart from these, in arithmetical compositions of the even and the odd, we may see that the odd numbers preserve similar, but the even produce dissimilar forms.

³ Aristotle, says Simplicius, is accustomed to call those *φυσικοί*, *physici*, who are conversant with the natural part of philosophy, and among these, particularly those, who especially or only employ the material principle of things.

* *Bound* and *infinity* are the two highest causes of things, after the Ineffable Cause of all, concerning which, see my translations of Plato, and Proclus on Euclid.

wise of all : for since that which is generated is generated from such a body, and there is a generation of all things, though not together, it is also necessary that there should be a certain principle of generation ; but this is one, which he calls intellect. Intellect, however, operates from a certain principle by understanding ; so that it is necessary that all things should have once subsisted together, and once have begun to be moved ⁴. But Democritus says that none of the principles were produced one from the other ; though at the same time common body itself is the principle of all things, differing in magnitude and figure according to the parts. That this theory, therefore, pertains to physical concerns, is, from what has been said, evident. Rationally, too, do all philosophers consider the infinite as a principle ; for it cannot be in vain, nor can any other power be present with it than that of a principle : for all things are either the principle, or from the principle ; but of the infinite there is no principle, since otherwise it would have an end ⁵. Again, it is also unbegotten and incorruptible, as being a certain

⁴ That Aristotle, says Simplicius. relates what is apparent of the opinion of Anaxagoras, is evident. He adds, but Anaxagoras being a wise man, obscurely signified a twofold order of things, the one having a prior subsistence, as the united and intelligible ; for it is not temporal, but is a transcendency of essence and power ; but the other is separated from this, and is produced according to it by the demiurgic intellect, as has been observed in the notes on the first book. But very properly does every thing sensible communicate with all and participate of all : for as Hippocrates says, there is one conflux, one conspiracy, and all things sympathize with each other, (*ξυρροια γαρ μια, συμπνοια μια, παντα συμκαθια*) through the primary pre-subsisting principle of them in intelligibles : for sensibles, though separated, are not entirely divulsed from each other. Hence Anaxagoras says, “ Nor was it possible that all things should be separated ;” for separation is not an entire divulsion. On this account, it is not possible for walking, colour, or, in short, passive qualities and habits, to be separated from their subjects. But to seem to say that the principle of separation is temporal, was usual to the ancient physiologists and theologians, who stooped to the imbecility of our conceptions : for we are incapable of co-extending our intellectual perception with an eternal procession ; but we require a certain beginning as an hypothesis, in order to contemplate things consequent in succession.

⁵ It is well observed by Alexander, that in whatever way principle may be assumed, the infinite, if generated from a principle, must have an end according to magnitude, so that it will not be infinite : for whether it be generated from a temporal principle, it will not be an essence produced

certain principle : for that which is generated must necessarily receive an end ; and end is the corruption of every thing. Hence, as we have said, there is a principle of this, but this appears to be the principle of other things. It likewise appears to comprehend and govern all things, as those assert who do not introduce other causes beside the infinite, such as intellect or friendship. It would seem also that this is divine : for it is immortal and indestructible, as Anaximander says, and most of the physiologists.

CHAPTER V.

BUT a belief that there is something infinite is produced in those who consider it, from five arguments especially. From time ; for this

duced at once, but will be produced from a certain beginning according to magnitude ; as animals, as plants, as all artificial things are seen to be produced. But having a beginning according to magnitude, it will also have an end. If, too, it has a principle as that which is elementary, and is from this principle as from matter, if the infinite has matter in-itself as a finite principle, it will also be itself finite ; for if infinite, the principle will be infinite. The like consequence also will happen if the infinite has a principle according to form : for if form is the principle of a composite, if indeed form is infinite, the principle will be infinite ; but if finite, the infinite in the composite will be according to matter. But matter is a principle. According to this, therefore, the infinite also is a principle : for the composite of which form is the principle, is nothing else except matter and form. If, likewise, the infinite had for its producing principle body, it would also have a principle according to the thing from whence its generation began, which also will be an end. Beside, if it were generated, it would also have an end, into which generation would cease. But if infinite magnitude had a principle as the end, and that for the sake of which, in the first place, nothing hinders that which has a principle of this kind from being itself the principle : for principle as an end is the principle of that which produces, and of the elements : for Plato, in the *Timæus*, investigating the final principle of the production of the world, finds it to be the goodness of its Maker, when he says, " Let us relate through what cause He who fabricated the world constituted generation, and this universe. He was good, &c." In the next place, infinite magnitude being indefinite, how can it be reduced to any definite end. But if being magnitude it has any definite end, it is necessary that it also should be bounded as magnitude. But the boundary of magnitude is circumscription and figure.

is infinite. From the division in magnitudes; for mathematicians also use the infinite. Further still; from this, that thus generation and corruption will not fail if that is infinite, whence that which is generated is taken away. And again, because that which is finite is always bounded with reference to something; so that it is necessary that there should be no end, if it is always necessary that one thing should be bounded with reference to another. But that which especially produces credibility, and is the principal argument is what causes a common doubt in all men; for in consequence of intellection never failing, number also appears to be infinite, and mathematical magnitudes, and that which is beyond the heavens. And since that which is beyond is infinite, body also appears to be infinite, and it would seem that there are infinite worlds; for why is there rather void here than there? So that if there is bulk in one place, it is also necessary that it should be every where. If also there is a vacuum, and an infinite place, it is necessary that there should be an infinite body: for in things which have a perpetual subsistence, capacity differs nothing from being. The speculation of the infinite is, however, attended with doubt; for many impossibilities happen both to those who do not admit that it has a subsistence, and to those who do. Further still; in what manner does it subsist? Whether as essence, or as an essential accident to a certain nature, or does it subsist in neither of these modes, but is nevertheless infinite, or infinites in multitude. It is however especially the province of a natural philosopher to consider if there be sensible infinite magnitude.

CHAPTER VI.

IN the first place, therefore, we must define in how many modes the infinite may be said to subsist. According to one mode, then, that is called infinite which is not naturally adapted to be passed through;
just

just as voice is said to be invisible ⁶. But, according to another mode, that is infinite the passage through which is without an end ; or which has scarcely an end ; or which though naturally adapted to be passed through or to have an end, yet has not. Again, every thing which is infinite is so either by addition, or division, or according to both these modes. It is not possible, therefore, that the infinite, which is itself a certain infinite, should have a subsistence separate from sensibles : for if the infinite is neither magnitude nor multitude, but essence, and not accident, it will be indivisible : for that which is divisible will either be magnitude or multitude. But if it is indivisible, it will not be infinite, unless in the same manner as voice is invisible. Those, however, who say that there is the infinite, do not assert that it thus subsists, nor do we investigate it as a thing of this kind, but as that which cannot be passed through. But if the infinite subsists according to accident it will not be the element of beings, so far as it is infinite ; as neither is the invisible the element of speech, although voice is invisible. Further still: how is it possible that any thing should be the infinite itself? Since neither number nor magnitude can be so, of which the infinite is a certain essential passive quality : for it is still less necessary that there should be infinite, than that there should be number or magnitude. It is also evident that it is not possible for the infinite to be, as subsisting in energy, and as essence and a principle : for whatever part of it is assumed will be infinite, if it is partible : for the essence of infinite and the infinite are the same ; since the infinite is essence or substance, and is not predicated of a subject. Hence it is either indivisible, or divisible into infinites. But it is impossible that there can be many infinites in the same thing. As air, however, is a part of air, so likewise infinite is a part of infinite, if it is essence and a principle. It is, therefore, impartible and indivisible. But this is impossible, since it is infinite in energy ; for it is necessary that it should be a certain quantum. The infinite, therefore, subsists according to accident. But if

⁶ Voice is said to be invisible according to negation, as not being naturally adapted to be seen, because it has no colour.

this

this be the case, it has been said that it cannot be called a principle ; but this appellation must be given to that to which it is an accident, viz. air, or the even number. So that they pronounce absurdly who thus speak, as the Pythagoreans assert : for at the same time they make the infinite to be essence, and distribute it into parts.

CHAPTER VII.

PERHAPS, however, this inquiry is more universal, whether it be possible that the infinite can subsist in mathematical entities, in intelligibles, and in things which have no magnitude. But we consider with respect to sensibles, and those things which we make the subject of our discussion, whether body, infinite in augmentation, is in these or not⁷. To those, therefore, who consider the affair logically⁸, it may

⁷ Aristotle, says Simplicius, having mentioned the Pythagoreans, benevolently observes that *they* asserted bound and infinity to be common principles, in intelligibles and sensibles, and in dianoetical and mathematical natures which subsist between these, as the causes of union and separation ; but that *we* now physiologizing about sensibles, consider whether infinite body is in them or not, not *as* if divisible to infinity, for this also is the property of mathematical natures, but as increased to infinity, which can alone subsist in physical entities, if, in short, it has a subsistence. When Aristotle also says, “ in things which have no magnitude,” he speaks concerning intelligibles, through the word *no* signifying that which is neither physical, nor mathematical. But it has been before observed, that it is the peculiarity of science to frame arguments adapted to the proposed subjects. Alexander, however, says that this inquiry is universal, because it is possible for those who use it, not only to investigate in physics, but also in other things : for if the infinite in energy is in ideas, it will be either *as* essence, or *as* accident. It is necessary, however to observe, that such a division as this is not adapted to ideas ; since Plato clearly says that ideas are essences, and does not admit that things which are accidents here, such as justice, temperance, and science, subsist in the intelligible world, in any thing else : for he says in the Phædrus, “ that the soul when it has reascended to the intelligible, beholds justice and science, not those with which generation is present, nor which subsist in something different from themselves.” In short, Aristotle says that the inquiry is universal, not if the infinite is *as* essence or accident, but if it is possible for it to be in mathematical entities, and in intelligibles, according to the doctrine of the Pythagoreans.

secm

seem that there is not, from the following arguments: for if the definition of body is that which is bounded by superficies, there will not be an infinite body, neither intelligible, nor sensible. But neither will there be number, so as to be separate and infinite: for number, or that which possesses number is numerable. If, therefore, that which is numerable can be numbered, it will be possible for the infinite to be passed through. But to those who consider the affair more physically, it will be evident that there cannot be a body of infinite magnitude from the following arguments; for it can neither be composite, nor simple. An infinite body, therefore, will not be a composite, if the elements are finite in number: for it is necessary that contraries should always be more than one, and be equalized, and that one of them should not be infinite; for if the power in one body should be in any manner whatever surpassed by the power of another; as, for instance, if fire is finite, but air is infinite, and equal fire surpasses in power equal air, however much it may be multiplied, if it only possesses a certain number; yet at the same time it is manifest that the infinite will surpass and corrupt that which is finite. But it is impossible that each of the elements should be infinite. For that is body which has interval on all sides; and that is infinite which has extension without bound. So that an infinite body will be extended on all sides to infinity. Neither can an infinite body be one and simple; nor as some say, that which is beside the elements from which these are generated; nor in short can it have any subsistence: for there are some who make this infinite to be neither air nor water, lest other things should be destroyed by the infinity of these; since they possess contrariety to each other. Thus air is cold, but water is moist, and fire is hot: of which if there is one infinite, other things would have been already corrupted. But

³ The Dialectic of Aristotle, is a common method about every thing proposed, and which syllogizes from probabilities, as he says, in the beginning of his Topics: for it is usual with him to distinguish the logical as common, in opposition to that which is appropriate to, and according to the nature of a thing, and demonstrative: for that demonstration itself is in a certain respect more common, Aristotle manifests by saying, "there will not be an infinite body, neither intelligible nor sensible.

now

now they say that is different from which all these are produced. It is, however, impossible that there can be a thing of this kind, not because it is infinite (for concerning this something common must be said, which similarly accords with every body, viz. with air and water, and any other whatever), but because there is no such sensible body, beside those that are called the elements: for every thing is dissolved into that from which it is composed. So that here there would be something else beside air and fire, earth and water. But there does not appear to be any such thing. Neither fire, therefore, nor any other of the elements, can be infinite. For, in short, exclusively of some one of them being infinite, it is impossible that the universe, although it be finite, can either be or be generated some one of them; conformably to what Heraclitus⁹ says, that all things once were fire. There is also the same reason in the one body, which natural philosophers introduce beside the elements, for all things are changed from one contrary into another; as, for instance, from the hot into the cold. But it is necessary also from these things to consider respecting every body, whether it is possible or not, that there can be an infinite sensible body. In short, however, that it is impossible there can be a body sensible and infinite, is evident from hence, that every thing sensible is naturally adapted to be somewhere; that there is some place of every thing; and that there is the same place of the part and of the whole, as of the whole earth, and one clod, and of fire and a spark. So that if this infinite sensible body is of one form, it will either be immoveable, or always borne along; though this is impossible: for why should it rather be carried downward than upward, or any where else? I mean, for instance, if it is a clod of earth, where will it be moved? Or where will it abide? For the place is infinite of a body kindred to it. Whether, therefore, will it occupy the whole place? And in what manner? What likewise, and where will be its

⁹ Heraclitus said that all things are from finite fire, and that into this all things are resolved. The Stoics also were of this opinion: for their conflagration obscurely signified a thing of this kind; and they said that every body is finite.

permanency,

permanency, and its motion? Or will it be every where permanent? It will not, therefore, be moved. Or will it be every where moved? It will not therefore be at rest. But if the universe is dissimilar, places also will be dissimilar. And first, there will not be one body of the universe, except by contact. Secondly, these will either be finite, or infinite in species. And they cannot, indeed, be finite: for some will be infinite, and others not, if the universe be infinite; as for instance, water or fire. But a thing of this kind brings destruction to contraries, as we have before observed. Hence no one of the physiologists has made either fire or earth to be one and infinite, but water or air, or that which is a medium between these; because the place of each (viz. of fire and earth,) is evidently definite. And these verge to the upper and lower region. But if the parts are infinite and simple, the places also will be infinite, and there will be infinite elements. If, however, this is impossible, and places are finite, it is also necessary that the whole should be finite: For it is impossible that body and place should not be equal in dimensions; since neither is the whole place so great as not to be able to admit at the same time body, though at the same time neither will body be infinite; nor is body greater than place: for otherwise there will either be a vacuum, or a body which is naturally adapted to be no where¹.

Anaxagoras,

¹ Aristotle, says Simplicius, having at one time shown that it is impossible for any natural composite body to be infinite, and at another that a simple body cannot be infinite, now proposes simply to form a demonstration concerning every natural sublunary body, both simple and composite, whether it can, or cannot be infinite, dividing it into similar and dissimilar parts, as before he divided it into the simple and composite. But as before he framed his arguments from the essence and powers of natural things, so now he makes his inspection from natural places. He now, however, discourses concerning a body in generation and corruption, because he shows that such a body is not infinite: for he demonstrates in his books *On the Heaven*, that a divine and circular body is not infinite. He assumes, therefore, certain axioms, as it were, and first that every sensible body, which is generable and corruptible, is in place, in whatever manner place may be considered, whether as interval, or as it appeared to Aristotle, the boundary of that which comprehends: for if place is interval, every natural body also is in place; but if it is the boundary of that which comprehends, not every body is in place; for the inerratic sphere, which is not generable and corruptible, is not in place. Hence Aristotle discoursing
about

Anaxagoras, however, speaks absurdly concerning the permanency of the infinite: for he says that the infinite itself supports itself; and this because it is in itself: for nothing else contains it. As if where any thing is it is naturally there. But this is not true: for a thing may be situated in a certain place by force, and not where it is naturally adapted to be. If, therefore, the whole is by no means moved; for that which is established in itself, and is in itself, is necessarily immoveable; yet it should be said why it is not naturally adapted to be moved: for it is not just that he who thus speaks should be dismissed; since there may be any thing else which is not moved; but nothing hinders it from being naturally adapted to be moved: for earth also is not borne along; nor if it were infinite could it be locally moved, in consequence of being restrained by the middle. It would not, however, remain in the middle, because there is not any other place into which it could be moved, but because it is not natural to it so to be moved. Though, indeed, it might be said, that the earth supports itself. If, therefore, this is not the cause of the permanency of the earth if it were infinite, but its gravity is the cause; and that which is heavy abides in the middle, and the earth is in the middle: in like manner also, the infinite will abide in itself, through some other cause, and not because it is infinite, and will itself support itself. At the same time likewise, it is manifest, that it is necessary every part of it should abide: for as the infinite abides supported in itself; so likewise whatever part of it is assumed, will abide in itself: for the places of the whole and the part are of the same species; as of the whole earth and a clod, the place is downward; and of the whole of fire, and a spark, the place is upward. So that if the place of the infinite is in itself,

about a sublunary body, uses this axiom, That every sensible body is in place. But the second axiom is, That every natural body has a certain appropriate place. And the third axiom is, That in things of similar parts, there is the same place of the part and the whole; as, for instance, of the whole earth, and one clod, and of fire, and a spark. The place, however, is the same in species, and not in quantity: for to that place to which a clod of earth tends, to this also the whole earth would tend, if it moved. And in that place in which it abides, in this also its parts abide, according to nature.

there

there will be the same place also of a part of the infinite. It will abide therefore, in itself. And, in short, it is evident that it is impossible to say that there is an infinite body, and at the same time that there is a certain place for bodies, if every sensible body either possesses gravity or levity. And if it is heavy, it has a natural tendency to the middle; but if light, it naturally tends upward: for it is necessary that an infinite body should be such. But it is impossible that the whole should be passive in either way², or the half in both ways: for how will you divide? Or how will one part of the infinite be above, and another below? Or how will it have extremes or a middle? Further still; every sensible body is in place; but the species and differences of place are upward and downward, before and behind, to the right hand and to the left: and these things not only thus subsist with relation to us, and by position, but have a definite subsistence in the universe itself. But

² That if there is an infinite body it is impossible for it to have either gravity or levity, or to be either in the upper region, or beneath, Aristotle shows by saying, "It is impossible that the whole should be passive in either way, or the half in both ways." But of these two he does not add the absurdity consequent to the whole being passive in either way, as being evident: for if the whole is either upward or downward, since each of these is finite, if upward is that which subsists as far as to the extremity, and downward, that which subsists as far as to the middle,—this being admitted, an infinite body will be in a finite place, which is impossible. Further still, if the infinite is in either of these, both places taken together will be greater than the infinite, if it is equal to the other place in which it is. But nothing is greater than the infinite. These things, therefore, as evident, Aristotle omits to mention. But he adds the absurdity consequent to the half being passive in both ways, when he says, "For how will you divide? Or how will one part of the infinite be above, and another below?" For it is impossible to bisect the infinite? For either each half will be infinite, and so the whole will be greater than each, or each half will be finite, and so the whole will be finite, being composed from two finite parts. But how will one part of the infinite be above, and the other below? For in this case there will be two parts of the infinite in finite places; so that both they and the whole will be finite. But Aristotle shows the finite nature of that which is above and below, by asking "how it will have extremes or a middle:" for that which has extremes and a middle is finite. And the extremity of the infinite will be above, but the middle below. But if the region above is the extremity, and that beneath the middle, and each of these is bounded, and on this account it is impossible that the parts of the infinite can be in them, it will evidently follow by a much greater necessity that it is impossible for the whole infinite to be in either of them.

it is impossible that these things should be in the infinite: and, in short, it is impossible that there should be an infinite place. But every body is in place; and, therefore, it is also impossible that there should be an infinite body. That, likewise, which is somewhere, is in place; and that which is in place is somewhere. If, therefore, the infinite cannot be a quantum (for in this case it would be of some definite quantity, as, for instance, of two cubits, or three cubits, since these signify a definite quantity), so likewise with respect to that which is in place, because it is somewhere: but this is either upward or downward, or in some other of the six intervals, each of which is a certain boundary. From these things, therefore, it is evident that there is not an infinite body in energy.

CHAP. VIII.

THAT many absurdities, however, will happen if the infinite has not any subsistence whatever, is evident; for of time there will be some beginning and end; magnitudes also will not be divisible into magnitude; and number will not be infinite. But this being determined, since it does not appear that either of these consequences can be admitted, on this account it is evident that the infinite, in one respect, is, and in another respect is not. But one thing is said to have a subsistence in capacity, and another in energy. And the infinite partly subsists by addition, and partly by ablation. With respect to magnitude, however, that it is not infinite in energy, we have already said, but it is infinite by division: for it is not difficult to subvert the hypothesis of indivisible lines. It remains, therefore, that the infinite is in capacity*. That, however, which is infinite in capacity, is not to be assumed as that which will be infinite in energy, in the same

* Viz. In the division of magnitude; wherefore magnitude is divisible to infinity.

manner

manner as if this thing has the capacity of becoming a statue, it will be a statue. But since being is predicated in many ways, as a day *is*, and a contest *is*, because another and another is always becoming to be, so also is the infinite: for in these there is both capacity and energy: for the Olympic games³ are, both because a contest *may* be effected, and because it *is* becoming to be. But the infinite is manifest differently in time, in men, and in the division of magnitudes: for, in short, the infinite thus subsists, because another and another part may always be assumed; and that which is assumed is always finite, but there is always another and another part. So that the infinite must not be considered as this particular thing, as, for instance, a man or a house, but as a day and a contest are said to subsist, (the being of which is not generated, as a certain essence, but always consists in generation or corruption) which though they are finite, yet there is always another and another. This, however, happens in magnitudes that remaining which was assumed; but in men and time, these being corrupted so as not to fail⁴. But the infinite according to addition,
is

³ Aristotle, says Simplicius, more manifestly showing the nature of the infinite, gives a twofold division to a subsistence in capacity, according to the division of a subsistence in energy: for since a subsistence in capacity is predicated with reference to a subsistence in energy, the former is predicated in as many ways as the latter. But a subsistence in energy is twofold: for it is either as a whole, *subsisting* that which it is, as a man or a house, or as that which has its being in *becoming to be*, as a contest and day: for we say that these are in energy, when they *are*. A subsistence in capacity, therefore, is also twofold, the one subsisting at once, as with reference to the whole. Thus we say that the brass is in capacity a statue, because at some time or other it passes into an actual statue, the whole of which subsists at once. But the other division of a subsistence in capacity, is that which has its being in *becoming to be*. The infinite, therefore, which is in the division of magnitudes is in capacity; not that magnitudes will ever at any time be divided to infinity, but that they always possess the capacity of being divided: for the division to infinity has not the infinite in energy, but in capacity; since the infinite subsists in the capacity of always being cut, and in the section never failing: for that which is cut is always bounded, but because every part which is cut off, is capable of being again cut, on this account the division proceeds to infinity.

⁴ Aristotle having shown what the infinite is which subsists in the division of magnitudes, in the increase of numbers, and in the extension of time, and prior to these, in the never-failing
subsistence

is in a certain respect the same as that according to division: for in that which is finite according to addition, it takes place conversely; since so far as it is seen to be divisible to infinity, so far it appears to be added to that which is finite: for in a finite magnitude, if any one assuming a definite part, again assumes it in the same ratio, not taking the same part of the whole in that ratio, he will not arrive at the end of the finite magnitude. But if he so increases the ratio, as always to assume the same magnitude, he will arrive at the end, because every finite quantity is consumed by any finite quantity. The infinite, therefore, does not subsist in any other way than this: for it has its being in capacity, and in division and diminution⁵. It is also in energy, in

subsistence of generation, says, that it is common to all of them to have their being in becoming to be; that on this account they do not subsist at once, but in a succession of parts, and that what is assumed is always another and another, and on this account is finite. But he says that there is a difference in the division of magnitudes, and time, because in time the part which is always assumed, viz. the past is corrupted. But in the division of magnitude that which is assumed remains. Neither time, however, fails with respect to generation, nor magnitude with respect to division. But Aristotle having assigned one cause of the subsistence of the infinite, that it consists in another and another, being always assumed, and not the whole at once, now adds another: for if all things had their being in a subsistence of themselves at once, there would not be a procession to infinity in generation. But since certain things which have their being in becoming to be, subsist according to a part, as day, and a contest, another and another finite part is always assumed, which being never failing causes a procession to infinity. And though the division to infinity, which has its subsistence in becoming to be, remains, yet it does not subsist at once. But things which do not remain, not only have a procession to infinity in being generated, but also in being corrupted. But this which has its being in *generation*, or *becoming to be*, Aristotle opposes to that which *is*, which subsists as essence, as, for instance, man or a house.

⁵ Aristotle having before said that the infinite is according to addition, and that it is also according to division, and having delivered the manner in which the infinite subsists in division, says that the infinite, according to addition, is in a certain respect the same as that according to division, except that it is conversely. For as the finite quantity which is always assumed is divided, so also to the individual which is assumed and is finite, the sections of that which is divided are added, and so much is added as the other is divided. Simplicius adds, but the word *conversely* may be considered as signifying that addition is the converse of division. It may also signify, that addition takes place according to the other part which is not cut.

the

the same manner as we say a day and a contest are. It is likewise in capacity, in the same manner as matter: and it does not subsist *per se*, like that which is finite. Hence it is thus infinite in capacity according to addition; because we say it is after a certain manner the same as the infinite according to division: for it is always possible to assume something beyond it. It does not, however, on this account surpass every definite magnitude; as in division it surpasses every definite magnitude, and will be less. So that it is not possible for the infinite to surpass every magnitude by addition, even in capacity, unless the infinite should be in energy from accident, according to the assertion of those physiologists who introduce an infinite body beyond the world, the essence of which is air, or some other infinite of this kind. But if it is not possible that an infinite sensible body can thus subsist in energy, it is evident that neither can the infinite, according to addition, subsist in capacity, unless as we have said, in a manner, *vice versâ* to division: for Plato, also, on this account introduces two infinities, because both in increase and diminution there appears to be transcendency, and a progression to infinity. Though, however, he introduced two, he did not use them: for neither is there infinity in numbers by diminution or division; since unity is a minimum: nor by increase; for he extends number as far as to the decad⁶.

CHAP.

⁶ It is very much the endeavour of Aristotle, says Simplicius, to evince, if possible, that his assertions, even according to the apparent meaning, are conformable to those of illustrious men; but if this is not possible, he strives however to deliver them conformably to the conceptions of the ancients. He says therefore, that Plato being moved by the same conceptions, at one time makes the infinite to be the indefinite duad, obscurely signifying the indefiniteness, and procession to infinity of division and composition; but at another time he says it is *the great* and *the small*, manifesting division proceeding to infinity to the less, by *the small*, but a procession to the greater according to addition, by *the great*. But having mentioned the agreement of conceptions he afterward adds the alteration in the apparent assertion of Plato elsewhere, from the conception now mentioned: for Plato placing the infinite in the principles of things, and calling principles numbers, (since the principles of things are ideas, and ideas are numbers) was neither able to survey in them the infinite according to division; for the monad is indivisible, and division is terminated as far as to this; nor yet the infinite according to addition; for he made the increase of

CHAPTER IX.

THE infinite, however, happens to subsist in a way contrary to what it is asserted to be by others: for the infinite is not that beyond which there is nothing, but it is that of which there is always something beyond. The truth of this is evinced in rings, which are said to be infinite because they have not the part in which the seal is fixed, on which account, something beyond may always be assumed; though this is said according to a certain similitude, and not properly: for it is necessary that this property should be inherent, and that the same thing should never be assumed. But this is not the case in a circle,

of numbers to be as far as to the decad, in the same manner as the Pythagoreans, who called the decad a perfect number, and the whole of number: for after the decad, there is a circulation and as it were inflexion of the same numbers, which happens to no one of the numbers within the decad, nor yet to any one without it, but is from the decad alone: for 20, 30, 100, 1000, and in every other similar number, are compositions of decads. But the infinite, in diminution, will be magnitudes, though the infinite in increase and addition, is not simply in magnitudes; for neither is it possible to assume a magnitude greater than every assumed magnitude. But addition to infinity proceeds according to that method alone of adding the sections arising from a division to infinity. If therefore in numbers there is an increase to infinity, because it is possible to assume a greater than any proposed number, and yet number proceeds alone as far as to the decad,—if this be the case, neither is it possible in number to admit infinity according to addition. Thus therefore according to the apparent, the infinite seems to be taken away by those who contend that the principles of things are numbers, and who produce numbers as far as to the decad. If however Plato and the Pythagoreans, in asserting that the principles of things are numbers, consider the monad as bound, but the indefinite duad as the infinite, and these as having a primary causal subsistence, they evidently do not take away the infinite. In short, if they had not said that there is an increase of number after the decad, perhaps some one might say that they did not leave the infinite according to addition in number. But if they considered the different powers of ten as different monads, and knew the compositions of decads, and if Plato enumerates a thousand, three thousand, and ten thousand years, as the periods of souls, and venerates the twelve gods, it is evident that though he established numbers which have a primary causal subsistence as far as to the decad, he does not hinder the infinite increase of number by addition.

since

since that alone which is successive is always different. The infinite, therefore, is this; of which some quantity being taken, it is always possible to assume something beyond. But that pertaining to which there is nothing beyond is perfect and a whole. For thus we define the whole, that of which nothing is absent pertaining to the parts; as, for instance, the whole man, or the whole chest. But as we define particulars, so likewise that which has a proper and principal subsistence; as, for instance, the whole is that pertaining to which there is nothing beyond. But that pertaining to which something external is absent, that is not all, whatever it may be that is absent. With respect, however, to the whole and the perfect, they are either entirely the same or allied by nature⁷. But nothing is perfect which has not an end; and the end is a bound. On this account it is proper to think that Parmenides spoke better than Melissus: for the latter says that the infinite is a whole; but the former, that the whole is finite, and equally balanced from the middle: for to conjoin the infinite with the universe and the whole, is not to connect line with line.

⁷ It is well observed by Aristotle, with respect to whole and the perfect, that they are either entirely the same, or allied by nature: for they are the same in subject, but different in definition, and are allied to each other. Thus the perfect is that which has a beginning, middle and end, but whole is that which is beheld together with a continuity of these: for the whole is something continued. Hence, when there is any full discreet quantity, it is properly said to be *all*, and not a *whole*. Aristotle also previously assumes that the perfect has a certain distinction of beginning, middle, and end; but it becomes a whole when it has a more united subsistence, and connectedly contains its parts. Hence whole is prior to the perfect: for with respect to that which has parts, it is not yet evident whether it has a beginning, middle, and end. For what if it should be a whole consisting only of two parts? For the duad is a whole after a certain manner, and as the principle of all partible natures; but that which has a beginning, middle, and end, is first in the triad. As the duad, therefore, is prior to the triad, whole also is prior to the perfect. Hence the participation of the perfect is from whole. But if the whole and the perfect are finite, the assertion of Parmenides concerning being is better than that of Melissus: for Melissus, when he says that being is infinite, says also that it is a whole. But Parmenides, when he calls being a whole, says also that it is finite, as is evident, when he asserts of it, "that it is equally balanced from the middle." For that which has a middle, and is every way equally distant from it, has also an extremity. But the conclusion of Melissus is the opposite to this: for if the infinite is a whole, and whole is finite, the infinite will be finite. So that he who says that the infinite is a whole and all, connects things which are not naturally adapted to be connected: for to these the proverb of not connecting line with line is applied.

CHAPTER X.

HENCE also they assume those venerable conceptions of the infinite ; such as, that it comprehends all things, and that it contains the universe in itself, in consequence of possessing a certain similitude with the whole : for the infinite is the matter of the perfection of magnitude ; and is the whole in capacity, but not in energy. But it is divisible by diminution, and reciprocal addition. It is also a whole, and finite, not essentially, but through another. And it does not comprehend, but is comprehended, so far as it is infinite. Hence, also, it is unknown, so far as infinite : for matter has not form. So that it is evident that the infinite has rather the relation of a part than of a whole ; for matter is a part of the whole, just as brass is a part of a brazen statue. If, however, it comprehends both in sensibles and intelligibles, the great and the small, it is also necessary that it should comprehend intelligibles. But it is absurd and impossible that what is unknown and indefinite should comprehend and bound

CHAP.

* The paralogism, says Simplicius, mentioned by Aristotle, has perhaps a certain plausibility : for the infinite has a similitude to whole. But if it is not a whole, neither will it have the prerogatives of a whole. And how will the infinite be a whole, if the whole is that of or belonging to which there is nothing beyond, and the infinite is that of which something beyond may always be assumed ? But the infinite appears to be similar to whole, because, says Aristotle, it is the matter of the perfection of magnitude : for a perfect and whole magnitude, being a composite from matter and form, it possesses the infinite according to matter, but is bounded according to form. But because matter is in capacity that which the composite is, and has a certain similitude in capacity to a subsistence in energy, on this account the infinite is said to be in a certain respect similar to the whole, which is the composite. Hence things pertaining to whole are predicated of the infinite, such as, to comprehend all things, and to contain all things in itself. But matter is infinite, because according to its nature it is indefinite and without bound, since it is form that introduces limitation and bound ;

CHAPTER XI.

It happens, however, agreeably to reason that the infinite should not by addition appear so as to surpass every magnitude, but that this should

bound ; and because the division of magnitude, and its increase to infinity, arises from matter, form remaining the same. But if there is always some form beyond matter, according to this also matter is essentially infinite, but possesses the finite and the whole, according to form. So that the infinite, if it is surveyed according to matter, does not comprehend, but is rather comprehended : for that which bounds comprehends that which is bounded, and form comprehends matter. If, too, all knowledge, being a certain boundary and comprehension, subsists according to form, but matter in its very nature is neither form, nor possesses form, and is infinite, this being the case, the infinite is very properly said to be unknown : for in what has been said concerning matter, it was observed, that it is scarcely known according to analogy. But if the infinite is surveyed according to matter, but whole according to the composite, and matter is a part of the composite and the whole, in the same manner as the brass of a brazen statue, the infinite will evidently have the relation of a part, since it will be in a whole. Aristotle, therefore, having shown that the infinite is rather comprehended than comprehends, and that it is naturally unknown, confutes the superficial reception of the words of Plato : for Plato in his discourses CONCERNING THE GOOD, having called matter the great and the small, which he also denominated the infinite, and having likewise asserted that all sensible things are comprehended by the infinite, and are unknown, through possessing a material, infinite, and flowing nature, Aristotle says it seems to be consequent to a thing of this kind, that the infinite in intelligibles should be comprehended by the great and small which are there, and which are the indefinite duad, this also being together with *the one*, the principle of every number, and of all beings ; for these are numbers and ideas. He says, therefore, it follows that intelligibles, though they are naturally known and definite, as being forms, are comprehended by the infinite and unknown which subsists in intelligibles. And such is the apparent absurdity of the assertion. It is necessary, however, to observe that material natures are very properly said to be comprehended by matter and material infinity, not as bounding them, but as proceeding through and giving a specific distinction to all things. Material infinity, too, imparts the unknown to all sublunary natures. Intelligibles, also, being immaterial and pure forms, are comprehended by the immaterial infinity which is there, and which produces the separation of forms, according to the duad, and imparts the more and the less in excess and defect, through the order and never-failing power of the intelligible world. Intelligibles, however, will not through that transcendency be

should be effected by division * ; for as matter is comprehended within, so likewise the infinite. But form comprehends. It is also conformable to reason that in number the boundary should be in that which is least ; but that in a progression to a greater multitude every multitude should always be surpassed ; and that in magnitudes the contrary should take place : for in a progression to that which is least, every magnitude is surpassed ; but in a progression to that which is a greater there is not infinite magnitude. But this is because the one is indivisible, whatever one it may be. Thus man is one man, and not many men. But number is more than one, and is certain quantities ; so that it is necessary to stop at the indivisible : for two and three are paronymous names ; and, in like manner, every other number. But we may always conceive a progression to the more : for the bisections of magnitude are infinite : so that the infinite is in capacity, and not in energy, but always that which is assumed, surpasses every definite multitude. This number, however, is not separate from the bisection ; nor does the infinity remain, but is generated in the same manner as time, and the number of time⁹. But in magnitudes the contrary takes place : for
continued

unknown. But the infinite which is there being vanquished by unity and bound, is the wealth and fertility of forms. If, too, the effusion of the forms which are there into being and intelligible union, subsists according to intelligible infinity, it is by no means wonderful that forms, according to this, should surpass a nature that can be known : for that which may be known is rather referred to bound, but the unknown and arcane, to infinity.

⁹ Aristotle having assigned the difference in magnitude, according to infinity, through which by a procession to the lesser, it is always possible to surpass any assumed quantity, but not in a procession to the greater, now assigns the cause of the difference in the infinity of number and magnitude. In number, indeed, we cannot proceed to the lesser to infinity, for we end at the monad as a boundary ; but we may proceed to infinity in the more, because we may increase every proposed number. On the contrary, in magnitudes, in a procession to the less it is possible to surpass any assignable magnitude, but it is not possible in a procession to the greater. And, in the first place, he assigns the cause of the impossibility of proceeding to infinity in the division of number, and this is because number is composed from a multitude of unities : for that which is composed from unities is also divided into unity : and the one so far as one is indivisible. How, therefore, is it possible for the division in numbers to proceed to infinity ? For

* Viz. So as to fall short of every magnitude.

when

continued quantity is, indeed, divisible to infinity; but there is not an infinite progression to that which is greater: for as much as can be in capacity, so much also may be in energy. So that since no sensible magnitude is infinite, it is not possible that there should be a transcendency of every definite magnitude: for if this were possible, there would be something greater than the universe. The infinite, however, is not the same in motion, magnitude and time, as if it were one certain nature; but the posterior is denominated with relation to the prior. Thus motion is called infinite, because the magnitude is prior in which it is moved, or changed in quality, or increased. But time is infinite through motion. At present, therefore, we use these; but afterward we shall endeavour to say what each of them is, and why every magnitude may be divided into magnitudes. What we have said, however, does not subvert the theory of mathematicians, while it denies that the infinite subsists in such a manner as to be in energy with respect to increase, as that which cannot be passed through: for mathematicians do not now want nor do they use the infinite; but they only assume that such quantity as they wish to employ is finite. But any other magnitude whatever may be divided in the same manner as the greatest magnitude. It is of no consequence, therefore, with respect to the demonstration, if it should be made in a lesser line. But the infinite will be in those magnitudes which have a subsistence¹.

CHAP.

when we arrive at unities which are indivisible we stop. And that every thing is ultimately divided into the things from which it is composed has been already said, and is evident. Every number, too, according to its form, which is one, is indivisible; but it is divided according to its inherent unities, which have as it were the relation of matter in it. But unity or the monad, being without matter, and not being any thing else than form, is indivisible. In short, if unity could be divided, it would be divided into something, and entirely into half; and each of these halves would be one, and no less so than from the beginning.

But the infinite divisibility of magnitudes arises from the infinity of matter comprehended in them, which also is the cause of the infinite increase of numbers. Hence Aristotle adds, that this number is not separate; for it is material, and arises from matter and the infinity which it contains.

¹ It is the province of a scientific man, says Simplicius, not to subvert, by what he introduces, any thing which is honoured by the wise. Since, therefore, geometry is justly honoured, but
geometricians

CHAPTER XII.

SINCE, however, causes receive a fourfold division, it is evident that the infinite is a cause as matter; that the essence of it is privation; and that the continuous and the sensible are that which is an essential subject. But it is manifest that all others * use the infinite as matter. On which account also it is absurd to make the infinite that which comprehends, and not that which is comprehended.

geometricians exhibit theorems in it, as if there were an infinite magnitude which cannot be passed through in augmentation, since in their postulates they assume that a finite right line may be according to the continued produced straight forward—if this be admitted, it is possible to surpass every given right line; and thus it will necessarily follow that the infinite has a subsistence in energy, which the arguments already adduced have abundantly subverted; and beside this, they frequently suppose in their demonstrations infinite lines. To some, therefore, it may appear to be necessary, either that there should be a certain infinite magnitude in energy, or that geometry should be subverted. And it is evident that a wise man would rather concede to every thing than that geometry should be subverted; for beside other goods, it has this mighty advantage, as Plato says, that he who studies geometry is better adapted to receive all other disciplines, than he who does not. Aristotle, therefore, applying a remedy to this fear, says that the arguments which subvert the subsistence of the infinite in energy, do not subvert the theory of mathematicians: for mathematicians never use magnitude infinite in energy, but conclude all their demonstrations through finite lines and superficies. Hence in order that they may have as much quantity as they wish for, they suppose infinite lines. Though they desire it to be granted, therefore, that a right line may be produced infinitely straight forward, in order that they may not be disturbed, as if there were no longer a right line from which they may take away, or to which they may conjoin, or produce, yet in the other part of the conjoined superficies, or of the incident section, they always use a finite right line. If, therefore, the mathematical sciences do not require the infinite, he who subverts the infinite does not subvert any thing pertaining to mathematics. But that mathematicians do not require the infinite in their divisions and conjunctions, Aristotle not only shows by induction, reminding us that they every where use finite magnitudes, but he also demonstrates this geometrically: for if it is demonstrated that it is possible to cut a given uncut line, however small it may be in the same ratio with one that is cut, however great it may be, it is not necessary that the demonstration should be made in that line, which it is no longer possible to produce, since it makes no difference with respect to the demonstration of the thing proposed.

* i. e. All those who considered the infinite as a principle; some of whom said it was air, others water, and others a medium between these. They also generated other things from the infinite, not as an efficient, but as a material cause.

CHAPTER XIII.

It now remains that we enumerate the reasons through which the infinite appears not only to subsist in capacity, but as that which is definite : for some of these reasons are not necessary ; and against others certain other true objections may be urged : for neither is it necessary that there should be an infinite sensible body in energy, in order that generation may not fail ; since it is possible that the corruption of one thing may be the generation of another, since the universe is finite. Further still ; to touch and to be finite differ from each other : for the former is a relative, and pertains to a certain thing, (since whatever touches, touches something) and is an accident to something finite. But that which is finite is not a relative ; nor can any thing whatever touch any thing whatever. To believe, likewise, in the existence of infinite magnitude because it can be conceived, is absurd : for excess and defect are not in the thing, but in the conception of it : for any one may conceive each of us to be manifoldly greater than he is, by increasing him infinitely ; yet a man will not on this account surpass a city in dimensions, or be of such a magnitude as we possess, because some one has conceived him to be so, but because he does possess such a magnitude. This however, is accidental. But time, motion and intellection, are infinite, that which is assumed not remaining. But magnitude is neither infinite by diminution, nor by intellective increase. And thus concerning the infinite we have shown in what manner it is, and in what manner it is not, and what it is.

THE PHYSICS.

B O O K IV. ¹

CHAPTER I.

In like manner it is necessary that the natural philosopher should know concerning place, as well as concerning the infinite, whether it is or not,

¹ Aristotle, says Simplicius, having undertaken to discuss physical principles and causes, and whatever is consequent in common to all physical things, in the first book discoursed concerning those principles which subsist as elements, viz. matter, form, and privation which is consubsistent with these. In the second book he discoursed about the producing and final cause, and those causes which to some philosophers appeared to be producing, viz. chance and fortune, though they are not essentially, but only according to accident producing causes. But having shown that nature is a producing cause, and having defined it to be the principle of motion to bodies, since motion subsists in all natural things so far as they are natural, and since motion also has a power of constituting natural bodies, and is assumed in the definition of nature, he very properly in the beginning of the third book speaks concerning motion. Since, too, every natural body, and all motion, are necessarily either infinite or finite, and body and motion being continuous are divisible to infinity, and since, too, some natural philosophers said that the infinite is a principle, hence Aristotle very properly discourses about the infinite. Having likewise completed his discussion concerning the elements, and other causes, and things which

not, and in what manner it is, and what it is : for all men conceive that beings are somewhere ; since non-being is no where : for where is a herco-cervus *, or a sphinx ? And that which is the most common and principal motion, which we call lation †, subsists according to place. What place is, however, is attended with many doubts, for it does not appear to be the same to those who survey it from all its inherent properties. Beside, we have nothing transmitted to us by other philosophers, either as a doubt about place, or an explanation of its nature.

have the pretext of principles, in the next place he investigates those things which externally pertain to natural bodies, so far as they are such, as, for instance, place and time : for every natural body is in place, and is moved in, and rests in place ; and simple bodies receive their specific distinction, by their difference in their proper places. But since all motion is measured by time, it was also necessary to instruct us in time, since time is the number of every motion, as we shall shortly learn. Aristotle, however, very properly speaks first concerning place : for place not only precedes time, but also motion and body itself : for body is in place, and motion in body, and time in motion.

But since a natural essence is precedaneous^y a natural body, and other things are something belonging to this, one being a receptacle, another motion, and another the measure of motion, hence Aristotle with great propriety first delivers the elements of a natural body, viz. matter and form, and afterward assumes its producing and final cause, and also motion in the definition of nature ; and thus in things which have an external subsistence, he arranges place prior to time. But since a natural philosopher is conversant with things that are moved, in the same manner as the mathematician and the theologist with things immoveable, and place, as will be shown, belongs to things immoveable, how will the consideration of place pertain to the natural philosopher ? May we not say that though place is immoveable, yet it is the recipient of body, which is moved, in which also it is moved, though place is not moved of itself ? Since also some have ranked a vacuum among principles, asserting it to be place deprived of body, hence Aristotle having discussed the consideration of place, very properly discourses concerning a vacuum. And thus having solved the problems about time, he concludes the present book, and the consideration of whatever pertains in common to all natural things, which is an inquiry into physical principles.

* i. e. An animal composed of a buck-goat and a stag.

† i. e. Local motion.

CHAPTER II.

THAT there is such a thing, therefore, as place, appears to be evident from alternate mutation : for where water now is, here, on its departure, as from a vessel, air will again be contained ; but sometimes some other body will occupy this very place. But this appears to be different from the things which enter into it and are changed : for in the place in which air now is, in this water was before. So that it is evident that there was a certain place and receptacle different from both into which and from which they were changed. Again, the motions of natural and simple bodies, such as of fire, earth, and others of this kind, not only evince that there is a certain place, but also that it possesses a certain power : for each tends to its own place, unless it is impeded ; one body downward, and another upward. But these are the parts and species of place, viz. upward and downward, and the remaining six intervals. Things of this kind, however, do not only subsist with relation to us, viz. the right hand, and the left hand, upward and downward : for no one of these is always the same to us, but subsists according to position, as we happen to turn ourselves. Hence the same thing is frequently on the right and left hand, upward and downward, before and behind. But in nature each of these is separately defined. For not any thing casual is upward, but that to which fire and a light body tend. In like manner, with respect to that which is downward, this is not the place of any casual thing, but it is that to which heavy and terrestrial things tend ; as if these did not alone differ in position, but also in power. This also is manifested by mathematical entities : for these not being in place, yet at the same time according to position with reference to us they have the right hand and the left : so that the position of them is alone the object of intellection, in consequence

sequence of not possessing each of these from nature. Further still ; those who say that there is a vacuum, assert that there is place : for a vacuum will be a place deprived of body. That place, therefore, is something beside bodies ; and that every sensible body is in place, may through these things be concluded. Hesiod, also, may seem to speak rightly when he makes Chaos to be first. For he says,

Chaos of all things was the first produc'd,
And earth wide-bosom'd next.

As if it were requisite that there should first be a receptacle² for beings, because he thought with the many, that all things are somewhere and in place. But if it is a thing of this kind, the power of place will be wonderful, and prior to all things : for that without which no one of other things subsists, but which can itself subsist without others, is necessarily the first. For place is not destroyed, when the things which it contains are corrupted.

² This interpretation of the verses of Hesiod, as Simplicius well observes, is superficial ; since it considers Chaos as nothing more than a region or receptacle. It signifies, however, not a receptacle, but an infinite and manifold cause of the gods, which Orpheus calls

Χάσμα και μεγα χάσμα, πανταριον ενα και ενθα.
A mighty chasm every way immense.

For after the one principle of all things, which Orpheus celebrates as time, as being the measure of the fabulous generation of the Gods, he says that ether and an immense chasm came forth, the former being the cause of the bounded, and the latter of the infinite procession of the gods. He also says concerning it,

Ουδε τι περας ενν, ουδε πυθμην, ουδε τις εδρα.
Nor bound it was, nor bottom, nor a seat.

Though how could any one assert these things concerning place, which both bounds and affords a seat to other things. But Hesiod, indeed, venerating the First Cause of all things in silence, alone obscurely signifies its subsistence, by saying Chaos was generated : for it is necessary, as Plato says, that every thing which is generated should have its generation from some cause. Being desirous, however, to unfold the multiform procession of the gods, he produces the theogony, through a co-ordination characterized by the infinite, saying that Chaos was first generated, and after it earth. See more on this most interesting subject in the Introduction to my translation of Plato's Works, and particularly the Notes on the Parmenides.

CHAP.

CHAPTER III.

It is dubious, however, if place is what it is, whether it is a certain bulk of body, or some other nature : for in the first place its genus is to be investigated. It has, therefore, three intervals, length, breadth, and depth, by which every body is bounded. It is, however, impossible that place should be body : for if it were there would be two bodies in the same. Again, if there is a place and receptacle of body, it is evident that there is also of superficies, and of the remaining boundaries ; for the same reasoning applies to these : for where superficies of water were before, there will again be superficies of air. We have, however, no difference of a point, and the place of a point³. So that if place is here not different from the point, neither will it be different from any one of the others, nor is place any thing beside each of these. What then can we admit place to be ? For possessing a nature of this kind, it can neither be an element, nor composed from elements, either corporeal or incorporeal : for it possesses, indeed, magnitude, but is not any body. But the elements of sensible bodies are bodies ; and no magnitude is produced from intelligible elements⁴. Further still ; of
what

³ That there is not a place of a point, and that we cannot assign the difference between a point, and the place of a point, may be thus shown : If place is equal to that which is in place, and the place of a point is that of which there is no part, but that of which there is no part is a point, the place of a point will be a point. But two points if they are conjoined to each other become one point, and are no longer two ; so that a point is not one thing, and the place of a point another. In like manner neither will there be a place of a line, nor of a superficies.

⁴ Since all beings are either body, or incorporeal, and are either elements, or from elements, viz. are either simple, or composite, Aristotle having shown that place is neither body nor incorporeal, now also demonstrates the other member of the division, that it is neither an element, nor from elements, having such a nature as to possess magnitude, indeed, since it is equal to that which is in place, but not to be body, unless it were possible for two bodies to be in the same :
for

what can any one admit place to be the cause to beings? For no one of the four causes is present with it: for it is neither as the matter of beings; since nothing has its subsistence from it; nor is it as the form⁵ and reason of things, nor as the end, nor does it move beings. Again, if place is any being, where will it be? For the doubt⁶ of Zeno inves-

for in consequence of not being body, it will not be any thing sensible and corporeal, neither as that which is composed from elements, nor as an element: for the elements of composite bodies are also bodies: for fire and air, water and earth, which are the proximate elements of composite bodies, are either atoms, as Democritus, or consist of similar parts, as Anaxagoras asserts. But neither will place be any one of intelligibles, neither as composed from elements, nor as an element: for intelligible elements have not any magnitude, nor from intelligible elements, which are void of magnitude, will any magnitude be produced. If, therefore, place is magnitude, it will neither consist from intelligible elements, nor be an intelligible element; so that, in short, it will not have any subsistence, if every being is either an element, or from elements.

But it is worthy of remark how Aristotle says, that the elements of sensibles are bodies: for matter and form are the first elements of sensibles, and both these are incorporeal. Perhaps, however, he does not in vain say that the elements of sensibles are bodies, in order that he may show what kind of composites he assumes; that they are not such as proximately consist from matter and form, but those that are composed from the four simple corporeal elements, which are not of themselves sensible, nor, in short, do they subsist by themselves: for neither are the instruments of the senses simple, but composite; and earth itself, water, air, and fire are sensible, because they are not simple, but are denominated and are, according to that which has dominion in them. Simplicius very justly adds, that it appears to him, that Aristotle perceiving he had not made an ablation of all the elements, for he had not taken away matter and form, but only those that are corporeal, on this account adds the argument that follows, in which he shows that place is not a principle or element, neither as matter, nor as form.

⁵ Place is not form, because place is said to be different from that which is in place. Forms also in the transmutations of things are themselves transferred, but place remains. Neither is place a producing cause; for it is the recipient of that which is already produced, and is not productive of that which as yet is not. Besides, place neither moves nor changes that which is in it, but on the contrary causes it to be at rest: for that which has arrived at its proper place rests. Neither is place a cause as the end: for end, and *that for the sake of which*, do not subsist by themselves, but are the perfection of that of which they are said to be the end. Thus felicity, and an assimilation to divinity, are an end, as being inherent in him who is happy and assimilated, but not as subsisting by themselves, in the same manner as place is said to subsist *per se*. In short, if place so far as place is an end, and from whence water departs, there air enters, there will be the same end of different bodies.

⁶ i. e. It is necessary to solve the doubt of Zeno.

tigates

investigates a certain reason : for if every being is in place, it is evident that there will be a place of place, and this will proceed, to infinity. Further still; if as every body is in place so also in every place there is body, what shall we say of things which are increased? For from what has been said, it is necessary that the place of them should be at the same time increased⁷, if place is neither less nor greater than each of the things which it contains. Hence, therefore, it is necessary not only to doubt what place is, but also if it is.

CHAPTER IV.

BUT since one thing is predicated essentially⁸, and another according to something else; with respect to place also one is common in

⁷ If place is, and a vacuum is not, as will be shown, the consequence of every body being in place will be, that in every place there is body. If, therefore, this is true, it is necessary that place should be equal to that which is in place. As, therefore, it is necessary that place should be increased together with bodies that are increased, what will be the increase of place; or what and whence its generation? For things that are generated, are generated from contraries.

⁸ Aristotle, says Simplicius, uses the term *sub auto*, *per se*, or *essentially*, instead of that which subsists primarily: for properly the term *essentially* is opposed to the term *accidentally*. And the term *something else* is opposed to the term *primarily*. He adds, such things also are said to subsist *per se*, as are in the essence of those things, in which they are said to subsist. Thus number is *per se*, in the odd and the even. And, in short, genera subsist *per se* in species, because they give completion to essence, and subsist essentially in them. Species, also, subsist *per se* in genera, since they possess a power of dividing the essence of genera: for of number, one kind is odd, and another even. The term *primarily*, also, which is here used by Aristotle, signifies that which is proximate. And sometimes these concur, so that the same thing subsists both *per se*, and primarily, as animal in man. But sometimes they are dissociated, so that a thing is *per se*, but not *primarily*. Thus essence subsists *per se* in man, and quantity in the odd number; for genera are not only predicated *per se*, of species, but genera also of genera; yet they do not subsist primarily nor proximately, but through middle proximate genera. But superficies is primarily whitened, yet not *per se*, but accidentally.

which

which all bodies are contained, but another proper in which any thing primarily subsists. I mean for instance, you are now in the universe, because you are in the air, and this is in the universe. You are also in air, because you are in the earth; and in a similar manner you are in the earth because you are in this particular place, which comprehends nothing more than yourself. If, therefore, place is that which first comprehends each body, it will be a boundary. So that place would appear to be the form and morphe of each thing, by which magnitude is bounded, and the matter of magnitude: for this is the boundary of each. To those therefore who thus consider the affair, place is the form of each of the things which it contains. So far, however, as place appears to be the interval of magnitude, it is rather matter⁹. For this is different from

⁹ Aristotle, says Simplicius, having mentioned one of the things belonging to place, according to which place appears to be the form of bodies, now mentions another thing belonging to it, according to which it no longer appears to be form, but the matter of that which is in place: for if, says he, place appears to be the receptacle of magnitude; since magnitude which gives a specific distinction to forms is in place; and in magnitude, one thing is an indefinite interval, beheld according to an ablation of bound, and other accidents, of which it is privatively the recipient, but another thing, is bound and limit, defining and comprehending indefinite interval, and this is form, while that which remains after an ablation of this is nothing else than matter, viz. than interval;—if this be the case, and place is the interval of magnitude, but the interval of magnitude is matter, it is evident that place is matter.

But it is wonderful that Aristotle should assimilate matter to place according to interval, and not according to its being a recipient. Perhaps, however, he leaves this to Plato as we shall shortly learn, who rather beheld interval as a recipient. But if the interval of magnitude is a certain quantum, and is measured, and quantum is form, how can matter be said to be the interval of magnitude? May we not reply, that material interval is not a measured quantum, nor form, unless it participates of the form which subsists according to quantity and magnitude, but that it is an indefinite diffusion? It is also evident that Aristotle had such a conception as this about it, when he says, “Matter and the indefinite are a thing of this kind.” But he calls the interval of magnitude the indefinite subject, which he had before denominated infinite. He also says that interval is the matter of the perfection of magnitude. No one, therefore, should think that corporeal interval, which exists as magnitude, and a definite quantity, or that the separation of multitude, bound according to number, subsists in bodies from matter, but that the division, diffusion, and indefiniteness alone in these have matter for their source. And according to these material differ from immaterial forms.

magnitude,

magnitude, and this is that which is comprehended and bounded by form, as by a superficies and limit. But matter and the indefinite are of this kind. For when the boundary and the passive qualities of the sphere are taken away, nothing remains except matter. Hence, also, Plato in the *Timæus* says, that matter and a receptacle are the same thing. For that which is capable of receiving, and a receptacle, are one and the same thing. But though he there speaks of that which is capable of receiving in a different manner from what he says of it, in what are called his unwritten dogmas, yet at the same time he asserts place and a receptacle to be the same. For all philosophers affirm that place is something; but Plato alone has attempted to say what it is¹.

Hence

¹ Aristotle having said that so far as it belongs to place to be a certain interval, we are led to matter in investigating what place is, now mentions Plato, who in the *Timæus* calls matter the receptacle and place of material forms: for he there says that matter is the receptacle, being as it were the nurse of all generation; and farther on renders the meaning of what he asserts still more clear. But what Plato says on this subject is as follows: "Such, then being the case, we must confess that the form which subsists according to *same*, is unbegotten and without decay; neither receiving any thing into itself externally, nor itself proceeding into any other nature. That it is invisible, and imperceptible by sense; and that this is the proper object of intellectual speculation. But the form which is synonymous, and similar to this, must be considered as sensible, generated, always in agitation, and generated in a certain place, from which it again recedes, hastening to dissolution; and which is apprehended by opinion in conjunction with sense. The third nature is that of place, which never receives corruption, but affords a seat to all generated forms. This, indeed, is tangible without tangent perception; and is scarcely by a certain spurious reasoning the object of belief. Beside, when we attempt to behold this nature we perceive nothing but the delusions of dreams, and assert that every being must necessarily be somewhere, and be situated in a certain place: and we by no means think that any thing can exist which is neither in the earth, nor comprehended by the heavens. All these, and all such opinions as are the sisters of these, we are not able to separate from our conception of that which subsists about a vigilant and true nature: and this because we cannot rouse ourselves from this fallacious and dreaming energy, and perceive that in reality it is proper for an image to subsist in something different from itself; since that in which it is generated has no proper resemblance of its own, but perpetually exhibits the phantasm of something else; and can only participate of essence in a certain imperfect degree, or it would become in every respect a perfect non-entity. But to true being true reason bears an assisting testimony, through the accuracy of its decisions; affirming that as long as two things are different from each other, each can never become so situated in either, as to produce at the same time one thing, and two things essentially the same.

Hence from these things it may reasonably appear to be difficult, to those who consider the affair, to know what place is, if it is either of these,

This then is summarily my opinion :—that, prior to the generation of the universe, these three things subsisted in a triple respect, viz. being, place, and generation *".

Plato having asserted these and other similar things, Aristotle here looking to the apparent meaning of the words, says that Plato asserts matter and a receptacle to be the same just as those do who infer the same thing from interval. In things, too, in which Aristotle appears to accuse Plato needlessly, he does not accuse him for saying that matter is the place of forms : for he also knew that there is one signification of place which is the recipient of forms ; since he says in his books *On the Soul*, that those speak well who call the soul the place of forms, except that these forms are not in energy, but in capacity ; and that there is another signification of place which is the recipient of bodies, and is the subject of the present investigation. But thus much only Aristotle says against Plato, that if he calls matter place, and forms and number are according to him in matter, how is it that he says forms are not in place, on which account neither is there any place beyond the heavens, as Aristotle says in his discourse concerning the infinite. May we not, however, say that Aristotle does not assert this as accusing Plato, but indicating to those who are able to apprehend his meaning, that Plato does not call matter place, according to the signification of place, which is now investigated : for he would not have denied that forms and numbers are in place, when at the same time he was of opinion that matter is the receptacle of them. And thus much for Aristotle.

Simplicius further observes, that Alexander also acknowledges that Plato in the *Timæus* calls matter a receptacle, according to a different signification ; but Aristotle, he says, very properly blames Plato, because though it should be said that he metaphorically calls matter place, yet it is requisite that he who uses metaphors, should first define what place properly is. But if it appears that Plato has not any where spoken concerning place, it seems that Aristotle has deservedly reprov'd him, for using place metaphorically without having previously said any thing about place properly so called. That Plato, however, calls matter the place of forms, and not of bodies, is evident from the above passage extracted from his *Timæus*. And that such a use of the word place is not simply metaphorical, but is assumed, according to a common signification of place, as a recipient, according to which Aristotle also thinks fit to call the soul the place of forms, is also evident from what has been already said : for if that which receives any thing, and is bounded by it, contains that which it receives, and that which contains and is the receptacle of it, becomes its place, and if matter also receives forms, matter will be the place of forms, except that it will not be so as the place of bodies : for the place of bodies is different from the place of forms. Plato also appears to have known another signification of place more comprehensive than this, viz. a signification of it as bounding the proper order of a thing : for whether this subsists according to position, as in bodies, or according to participation as in

* See vol. ii. of my Translation of Plato's Works, p. 525.

things

these, viz. matter or form. To which it may be added, that these two are attended with the highest speculation, and separate from each other cannot easily be known². It is not, however, difficult to see that it is impossible for either of these to be place. For form and matter

things which are in capacity and energy, or according to the definition of order alone, still it is place; because order also appears to subsist according to a certain position: for that which is bounded in the order which is here, appears to be situated in it; and all things are situated in place. But according to this common signification of place, as that which gives bound to order, Plato also denominates the supercelestial place*. So that what is said by Plato of matter as of place, must be considered not as asserted of the place of bodies, but as of the receptacle of forms.

But if Plato appears to have said nothing about place, which is the recipient of bodies, how does Aristotle assert that Plato, alone, attempted to say what place is? May we not say that Plato, asserting of this place, which subsists according to matter, and which he appears to have called place as a receptacle, that it is perpetual, that it is the seat of generated forms, that it is tangible without tangent perception, is apprehended by spurious reasoning, &c. so far as he calls it place and a receptacle, says something about it, and so far speaks about place? Perhaps, also, Aristotle, who most of all men knew the depth of Plato's wisdom, well perceived that though Plato does not appear to have definitely investigated the nature of place, yet since place has its subsistence together with bodies, he surveyed it in conjunction with bodies. Hence he speaks in the *Timæus* about the power of place. Besides, all things change their places according to the same passive qualities: for in each genus of things the passive qualities are separated according to their peculiar place, through the motion of the recipient. But things which are perpetually dissimilar in themselves tend to the place to which they are similar. Aristotle adds, that Plato after one manner denominates matter in the *Timæus*, and after another in his unwritten dogmas: for in the *Timæus* he calls it a recipient; for it receives the infinity of the intelligible; but in his unwritten conferences he denominates it the great and the small. But that all men acknowledge there is place is evident from all men using the differences of place,

² Aristotle having said that some of the assertions concerning place persuade us to believe that it is form and morphe, but others that it is matter and a subject, collects from this that the disquisition of place is difficult. For the disquisition of matter is of itself most difficult; since, according to Aristotle, matter is so unknown as only to be known by analogy, and according to Plato it is scarcely the object of belief by a spurious reasoning. But the knowledge of form requires a purified life, and accurate knowledge. And he who desires to learn the nature of one form must have a knowledge of all forms, through the sameness and difference of forms with respect to each other. If, too, matter and form are principles, the *highest* speculation belongs to them. It is also impossible to know them separate from each other. On all these accounts, therefore, it is difficult to know what place is if it is matter or form, or both these.

* See my Translation of the *Phædrus* of Plato.

are

are not separated from the thing *; but place may be separated from it. For in that in which there was air, water, as we have said, again enters, water and air alternately succeeding each other, and in a similar manner with respect to other bodies. So that place is neither a part, nor a habit, but is separate from each particular thing³. For place appears to be a thing of such a kind as a vessel: since a vessel is a place which may be transferred; and a vessel is not any thing belonging to that which it contains. So far therefore as place is separate from the thing which it receives, so far it is not form; and so far as it comprehends, so far it is different from matter. But being always appears to be somewhere, and to be itself something; and it always seems that external to, there is something different from it. We must however ask Plato (if it be necessary to digress) why forms and numbers are not in place, if place is capable of participating, whether that which can participate is the great and the small, or whether it be matter, as he has written in the *Timæus* ⁴.

Again,

³ If place, being a part of a thing, were separated from it, it would no longer, when separated, be a part, nor would that remain a whole from which the part is separated. Nor yet can place be a separated habit: for habit when separated does not remain, but is corrupted; but place remains. Simplicius further observes that the word *part* here, may be understood of matter, but *habit* of form; in order that matter and passive quality, may be a part and habit. But habit is as it were perfection acceding such as form is. So that neither matter nor form is place. We may also more universally understand part as applicable to every thing which gives completion essentially; but habit as applicable to accidents: for neither passive quality, nor power, nor any thing else which is in place, is place. Is place, therefore, an accident of that which is in place? May we not say that to be in place happens to body which is inseparable from place, but place is not an accident to that which is in place? If it is an accident, therefore, it is so to that of which it is the boundary and superficies.

⁴ Aristotle in his investigation of the infinite had said that Plato is of opinion that there is no body beyond the heavens, nor ideas, because they are no where, but here he reminds us of Plato having called matter the participant of forms, place. He confutes, therefore, the apparent meaning of Plato's words: for if that which is the recipient of forms is place, why are not forms also, which Plato calls numbers, in place? But in his unwritten conferences concerning the good, he calls the participant of forms the great and the small; and in his *Timæus* he denominates it matter,

* i. e. From the composite of matter and form.

Again, how could a thing be carried to its own place if place were matter or form : for it is impossible that place should be that of which there is no motion, nor upward or downward. So that place must be investigated in things of this kind. But if place is in the thing itself, (for it is necessary that it should if it were form or matter) place will be in place : for it will be changed and moved together with the thing. Form, also, and the indefinite, are not always in the same place, but are there where the thing is. So that there will be a place of place. Further still ; when water is produced from air, place would perish : for the body which is generated is not in the same place. What then is the corruption ? And thus we have shown from what arguments it is necessary that place should be something, and, again, from what some one may doubt concerning its essence.

matter, a recipient, and place. And in these assertions indeed, there is an apparent contrariety, though they are not in reality contrary : for Plato calls matter the place of material forms, as being the receptacle of them ; but he says that forms separate from matter, i. e. ideas, are not in place. For neither are they in place, as material forms are in matter, nor as body in that which is the recipient of bodies. But the contrariety will be more conspicuous, by adducing to him who says that ideas are neither in place nor beyond the heavens, which is said by Plato in the *Phædrus*, which is as follows. "None of our poets has yet celebrated the supercelestial place, nor can any one celebrate it according to its desert : for being truly an uncoloured, unfigured, and intangible essence, it is alone beheld by contemplative intellect, the governor of the soul, and in this place the genus of true science resides." In this place too, he says, "the soul sees justice herself, temperance herself, and science herself, not those with which generation is present, and in which one thing resides in another, and which we now call real beings, but science dwelling in that which truly is : and in like manner it sees other real beings." Here we clearly see that Plato says the ideas of justice, temperance, and science, are in place ; for each of these is an idea. And he also says that this place is beyond the heavens. It is, however, evident that this supercelestial place is different from the place which is the receptacle of material forms, or that which is the receptacle of bodies. For the supercelestial place is that which defines the incorporeal order which there subsists.

CHAP.

CHAPTER V.

IN the next place let us consider in how many ways one thing is in another. In one way, then, as a finger in the hand, and in short, as a part in the whole. In another way, as the whole in the parts: for the whole is not without the parts. In another way, as man in animal, and in short, as a species in genus. In another way, as genus in a species, and, in short, as a part of species in the definition of species. Again, one thing is in another, as health in things hot and cold, and in short, as form in matter. Further still; as the affairs of Greece in the king, and, in short, as that which is in the first mover. Again, as in the good, and, in short, as in the end: but this is that for the sake of which a thing subsists. ~~But one~~ thing is in another in the most proper way of all, when it is ~~as in a vessel~~, and in short as in place⁵. It may, however,

⁵ The division here adopted by Aristotle is especially useful to the solution of the doubt of Zeno, that place is in place: for Zeno said, if every being is in place there will evidently be a place of place, and this will proceed to infinity. This assertion, therefore, is solved from one thing subsisting in another according to a manifold signification, which would not be the case, if whatever is in any thing is also in place. Aristotle therefore says that things are said to be in something according to eight or nine modes: for, one thing is in another, either as a part in the whole, as a finger in the hand, or in the whole body; in the hand indeed as a part, but in the whole body, as a part of a part, which in Greek is called *μοριον*, *morion*, a *particle*. Or it is as a whole in the parts; as the face, in the eyes, nostrils, and things of this kind: for the whole, says he, is not without the parts: for though the form of the whole is different from the form of the parts, according to which we say whole and parts, formally opposing them to each other, yet the subject is the same: for the whole is not divulsed from the parts. But after another manner one thing subsists in another, as a species in genus, as we say man is in animal; and after another manner as genus in a species, as animal in man, horse &c; because it is comprehended in the definition of every species of animals. Hence, he says, in a species, and not in species: for that one thing is in another, in one way as a part in a whole, and in another way as a species in genus, is evident from this, that the whole is no longer a whole when one part is taken away, but nothing hinders genus from remaining, though one species is taken away. Every, genus also, is synonymously predicated of all its species; but whole is alone predicated of similar parts, and of these not

however, be doubted whether one and the same thing can be in itself or nothing can, but all things are either no where, or in another. But this is twofold, viz. either essentially, or with reference to something else: for when both that in which a thing is inherent, and that which is inherent in this thing, are parts of the whole, then the whole is said to be in itself. For it is said to be so with reference to the parts. Thus a thing is white because the superficies is white; and man possesses scientific knowledge because the reasoning power is scientific. Neither the vessel, therefore, nor the wine, will be in itself; but the vessel will be the vessel of the wine: for both that which is inherent, and that in which it is inherent, are parts of the same. Thus, therefore, it may happen that the same thing may be in itself. Primarily, however, this is not possible. Thus, for instance, the white is in body; for superficies is in body: but science is in the soul. According to these however, being parts, the appellations are assumed; so that they are said to be in man. But the amphora and the wine being separate are not parts, but taken together they are parts. Hence, when they are parts the same thing will be in itself; as for instance, the white is in man, because it is in body; and in this, because it is in superficies; but it is in this no longer through another. And these are different in species;

not so far as a whole. Further still; the whole indeed, is in all its parts; but genus is even in one species. Hence Aristotle at one time says the whole in the parts, and at another, genus in a species. To which we may add, that genus is a part of the definition of species; and thus genus is in species: but the whole is not a part of the definition of a part: for genus is something common, which belongs to things equally separated in species; but whole is a connexion of things which are now separated with respect to each other.

The fifth signification of one thing subsisting in another, is that of form in matter, as health in things hot and cold; in which signification every thing appears to be contained which is in a subject. The sixth mode is that of the governed in the governor; as the affairs of Greece are said to be in the king; and in short, in that which moves and acts, as in authority, power, and administration. The seventh mode is as in the good, and in short, as things which are for the sake of the end, are in the end; as in the being rich or well those things are contained which are performed for the sake of these; or as the virtues are in felicity. The eighth mode is as that which is in a vessel; since a vessel is metaphorically said to be place. Hence Aristotle adds, "and in short as in place;" whether considering them as signifying one or two things.

and

and superficies and whiteness possess a different nature and power⁶. Neither, therefore, if we consider the affair by induction shall we see that any thing is in itself according to any definition. And reason indeed, shows that this is impossible: for it would be requisite that each should be both; as for instance, that the amphora should be the vessel and the wine; and the wine, the wine and the amphora; if it be possible for any thing to be in itself. So that if they were especially in each other, yet the amphora would receive the wine, not so far as it is the wine, but so far as it is the amphora. But the wine will be in the amphora, not so far as it is the amphora, but so far as that in which it is, is the amphora. That these, therefore, are different according to essence is manifest: for there is one definition of that in which a thing is, and another of that which is in this. Beside, neither is this

⁶ Aristotle having shown that it is possible for a thing to be in itself, according to something else, in the next place shows that it is impossible for it to be so primarily and essentially. But that the difference may be clear he first teaches what a subsistence *primarily* is, and what a subsistence *according to another*: for colour is indeed in body *according to another*, but in superficies *primarily*. And science is *primarily* in the reasoning power, but in the soul, or in man *according to another*. Since therefore the superficies is white, but the superficies is a part, and appellations are according to a part, the body also is called white, neither *primarily*, nor *essentially*, but *according to another*. A man also is said to be scientific. So that when the soul, or the reasoning power of the soul, is said to be scientific, but not in man, the predication is no longer according to a part, or *according to another*, but *essentially* and *primarily*. Hence also Aristotle adds, "So that they are said to be in man." Thus too, an amphora of wine is said to be in itself, according to another, because a part is in a part. Hence, when the wine is by itself, and the amphora by itself, the amphora of the wine is not said to be in itself; but when they come together, then it is said to be in itself; because these, when they are apart from each other, are no longer parts of one thing, and on this account there is not a predication according to the same. But when they become parts, because it has been shown that the whole is denominated according to the parts, the amphora of wine will be in itself according to another, in the same manner as whiteness is in body according to superficies. In the superficies, however, it is not according to another, but *primarily*. Though the superficies however is *primarily* white, yet the superficies and whiteness are not the same, so as that on this account any thing can be in itself properly. For there is one definition of a superficies, and another of whiteness; and the nature of each is different. So that for a thing to be *primarily* in any thing, is not for it to be in itself, but in another.

possible

possible according to accident: for two bodies would be at the same time in the same thing; since the amphora will be in itself, if that which is naturally a recipient can be in itself. And further still, that which it is capable of receiving will be in the same; as for instance, wine, if it is capable of receiving wine. That it is impossible, therefore, for any thing to be primarily in itself, is manifest. But the doubt of Zeno⁷, that if place is any thing, it will be in something, it is not difficult

⁷ The reasoning of Zeno, says Simplicius, appears to subvert place, and is as follows: If place is, it will be in something; for every being is in something. But that which is in something is also in place. Place therefore will be in place, and this will be the case to infinity. Hence place has no subsistence. Aristotle therefore, proceeding to the discovery of place, first solves this doubt, from the division of that which is in something, which he very reasonably previously assumed. But he very properly, previously demonstrated that nothing can be in itself, lest some one should fancy he might solve the argument of Zeno, by saying, that body indeed is in place, but that place is in itself, and thus stop the procession to infinity. He rather, therefore, solves the doubt from the difference of a thing being in something, as follows: if a subsistence in something were asserted of place, in one way only, the doubt of Zeno would be insoluble, admitting at the same time that every being, whether simply considered, or corporeal, is in something, as all the ancients, beside the Pythagoreans, Plato, and Aristotle, were of opinion it is, dreaming, as Plato says, about the subsistence of forms in matter. But since the being in something is predicated multifariously, nothing hinders but that place in which body is may be indeed itself in something, and yet not in place. For nothing hinders but that *this* may be in one thing, and *that* in another. Thus health is in things hot, but as a habit; and heat is in body, but as a passion; and body is in place. But habit differs from passion, (that is, passive quality) so far as the former is perfection and form, but the latter a disposition easily mutable, and not productive of essence: for such also passive qualities are called in the categories. This being the case, nothing hinders but that body may be in place, and place in something else, in the same manner as the end in that of which it is the end, and as superficies in body.

Simplicius further observes, that Eudemus relates the opinion of Zeno as follows: "To this also the doubt of Zeno appears to lead. For he conceived, that every being is somewhere. But if place is one among the number of beings it will be somewhere. It will therefore be in another place, and that place in another, and thus to infinity." Here we may see, that Eudemus transfers the predicament *where*, to the being in place, which is useful to a solution of the doubt. But that Eudemus assumed the predicament *where*, according to a common signification, is evident from what he says in his solution of the argument of Zeno, and which is as follows: "In answer to Zeno we say, that *where* is predicated multifariously. If, therefore, he conceived that all beings are in place, he did not conceive well. For, neither health nor fortitude, nor ten thousand

difficult to solve: for nothing hinders the first place from being in something else, yet just in the same manner as health is in hot things, as a habit, but heat is in the body, as a passion; so that it is not necessary to proceed to infinity. This however is evident, that since the vessel is not any part of that which is in it (for that which is primarily inherent, and that in which, are different), place will neither be matter nor form, but something different from either: for these things, viz. matter and form, are something belonging to that which is inherent. Let these therefore be the doubts.

CHAPTER VI.

WHAT, however, place is, will become evident as follows: But let us admit concerning it such things as appear to be truly present with it essentially. First, then, we should think that place comprehends that of which it is the place, and that it is not any thing of that which it contains. And again, that the first place is neither less nor greater than the thing contained in it; and also, that it does not desert each particular thing, and is not separable from it. Beside this we should think that every place has upward and downward, and that every body naturally tends to and abides in its proper place; and that it does this either upward or downward. These things being admitted, let us survey what remains. But it is necessary that we should endeavour so to conduct the speculation, that what place is may be unfolded; so that the doubts may be solved, and the things which appear to be present with place may remain; and beside this that the cause of the difficulty

and other things which might be mentioned, are in place; nor is place in place, if it be such as it is said to be. Place also is *where*. For the boundary of body is the *where* of body: for it is the extremity."

and

and of the doubts about it may be manifest: for thus each particular will be exhibited in the most beautiful manner.

In the first place, therefore, it is necessary to understand that place could not be investigated, unless there were some motion according to place: for on this account we especially conceive that the heavens are in place, because they are always in motion. But of this motion one kind is lation; and another, increase and diminution: for a change takes place in increase and diminution; and that which was formerly here is again transferred into the less or the greater. But with respect to things which are moved, some are essentially in energy, and others according to accident. And of those which are according to accident, some can be moved essentially; as for instance, the parts of the body, and the helm in a ship; but others cannot be so moved, but are always moved accidentally; as for instance, whiteness and science: for these thus change their place, because that changes in which they subsist^a.

But

^a Aristotle, having previously assumed common conceptions concerning place, and taught us what kind of definition ought to be given of it, next, first reminds us what kind of things we should conceive to be properly in place, and then shows us what place is. But things which are properly in place are discovered from things which are properly moved according to place. For things properly moved according to place are also in place; since we obtain a conception of place from the transmutation of bodies. Hence we acquire the following common conceptions about place: viz. that it is different from that which is in place; that it is equal to and separable from it; and that it possesses the differences of upward and downward, to which there is a transition, and in which there is rest. Aristotle, therefore, collects these many conceptions into the one cause of them, viz. motion according to place. He also shows what are the two species of every kind of motion according to place, i. e. *lation*, which is alone, and perfectly motion, according to place; and *increase* and *diminution*. Aristotle, therefore, wishing to discover place from things which are moved according to place, first makes a division into things which are moved essentially, and things which are moved accidentally; calling also things essential, in energy. Thus, for instance, every body is essentially moved, when the whole of it, detached from every thing else, passes from one place to another; as the whole of my body when I walk, and a ship when it sails. But things which are moved according to accident, are such as subsist in things essentially moved, either as parts, as my hand, and the helm of a ship; or as accidents, as whiteness and science. There is, however, a difference in these. For parts, though they are not essentially moved in consequence of being in the whole, because it is necessary that things which are essentially moved, and pass from place to place, should be entirely detached from every thing else,

2 c 3

yet

But as we say that a thing is in the heavens as in place, because it is in air, and air is in the heavens; so we say that a thing is in air, that is, not in the whole of air; but, on account of its extremity, and that which comprehends, we say that a thing is in air; for if the whole of air were place, the place of each particular thing, and each particular thing itself, would not be equal. They appear however to be equal: and such is the *first place* in which a thing subsists. When, therefore, that which contains is not divided⁹, but continued, then a thing is said to be in it, not as in place, but as a part in the whole; but when it is divided, and touches, then it is in a certain first, which is the extremity of that which contains, and which is neither a part of the thing contained, nor greater than the interval, but equal to it: for the extremities of things that touch are in the same. And that which is continued is not indeed moved in, but together with it; but that which is divided is moved in it. And whether that which contains is moved, or whether it is not, it is not the less moved. Further still; when it is not divided, it is said to be as a part in the whole; as for instance, sight in the eye, or the hand in the body: but when it is divided, or touches, it is said to be as in place; as for instance, water in a wine vessel, or wine in an earthen vessel. For the hand is moved together with the body, and the water in the wine vessel. Hence, therefore, it is now evident what place is: for there are *nearly* four things, of which it is necessary place should be

yet these, when detached from the whole, may be moved essentially; so that when they are moved together with the whole, they possess in energy the being moved according to accident, but in capacity the being moved essentially. For accidents to things which are essentially moved cannot be moved essentially, nor do they even possess this in capacity; as for instance, whiteness, or science. For these when separated are incapable of being moved essentially, because neither, in short, are they separable; but these are always thus moved and changed, because that in which they are inherent is changed; for otherwise they are incapable of being moved either in energy or capacity. This being the case, it is proper to investigate place, from things which are essentially moved according to place, but not from things which are moved according to accident.

⁹ That is, when that which contains is continuous with that which is contained, then that which is contained is in that which contains, as a part in the whole; but when it is divided, then that which is contained is in the extremity of that which contains, as in place, and in this primarily.
one.

one. For it is either form or matter ; or a certain ¹ interval between the extremes of a thing ; or the extremes, if there is no interval beside the magnitude of the inherent body. But of these, it is evident that three cannot be place. Through containing indeed it appears to be form ; for the extremes of that which contains, and of that which is contained, are in the same. Both therefore are boundaries, yet not of the same thing ; but form is the boundary of the thing contained, but place of the containing body. In consequence, however, of that being frequently changed which is contained and divided, while that which contains remains, as water from a vessel, that which is between appears to be a certain interval ; as if that which is changed were something beside body. But this is not the case ; but any body whatever departs among those that are transferred, and are naturally adapted to touch². If, however, there were any interval which is naturally adapted to abide in the same place, there would be infinite places : for water and air being transferred all the parts effect the same thing in the whole, as all the water in the vessel. At the same time too, the place will be changed ; so that there will be another place of place, and there will be many places together. There is not however another

¹ Aristotle, says Simplicius, asserts that there are four things, of which it is necessary place should be one : for it is either the form of that which is in place ; or the matter of it ; or the interval between the extremities of that which contains ; which last was the opinion of some of the ancients, as Democritus, Epicurus, and the Stoics. Some also assert that Plato conceived place to be this. Or place is the extremities of that which contains. If therefore, as Aristotle shows, it is no one of the three, it is necessary that place must be the fourth. But, with respect to this interval, the followers of Democritus and Epicurus say that it is a vacuum, so as at one time to be filled with body, and at another time to be left void of it. But the Platonists and Stoics say, that this interval is indeed different from bodies, but that it always contains body, so as never to be left void. Simplicius adds, that the word *nearly*, used by Aristotle, does not indicate an indefinite conception, but the caution of the philosopher. Since place, therefore, is neither matter, nor form, nor interval, it is evident that it will be the boundary of that which contains.

² That is, which are naturally adapted merely to touch, and not to be united. For things which are united, as for instance air, to air and water, are no longer as in place, nor as in this vessel to which they are conjoined.

place

place of the part in which it can be moved, when the whole vessel is transferred, but the same place; for in that place in which they are contained, air and water, and the parts of water, are alternately transferred, and not in that place into which they pass, and which is a part of the place, that is the place of the whole heaven³.

Matter,

³ Aristotle having mentioned the circumstances which persuade us to think that space is interval, and having also added the causes of this deception, now turns to a confutation of the hypothesis, in a certain respect employing a more obscure argument. This however unfolded is as follows: If place is a certain nature of interval essentially remaining, and not subsisting in body, three absurdities will follow: for there will be infinite places; and place will be changed according to place, so that place will be another place of place; and there will be many places together. But these things are impossible; and therefore place will not be an interval of this kind.

The truth of this conclusion will be apparent, if we suppose a vessel containing water or air, so transferred from place to place as that the water or air may be moved in it with its proper motion, fluctuating, or revolving in a circle. If therefore the interval pervaded through the whole water, the water, says he, and the air being transferred will make all the parts to be the same in the whole, as all the water is in the vessel. For, as in the alternate mutation of bodies, when air passes into that in which there was water, we form a conception of place, as was before observed, so the parts of water alternately succeeding each other in the fluctuation, each part will be in a part of the interval, that is in place essentially, since the whole interval pervades through the whole water: for those who say that place is the boundary of that which contains, say that the whole is essentially, but the parts accidentally, in place; since these are not proximately comprehended by it. But those who assert that place is an interval pervading through all things, these say that there are proximate and essential places of the parts: for in the interval each part is essentially contained. But things which are proximately in place are detached from other things, as we have before shown, and the places also are separate. If, therefore, the parts of that which is continued are detached, as must evidently be the case if they are moved essentially, there will be infinite parts, and infinite places. But Aristotle, instead of saying that the parts will no longer be continued with the whole, but will be essentially in place, says that all the parts in the whole will do that which the whole water does in the vessel. But the whole water is transferred essentially, and was essentially separated in place. So that the hypothesis of the interval of place becomes the cause of the parts being essentially moved according to place, and subsisting in place. But this becomes the cause of the parts and the places being separated; and this is the cause of the parts and the places being infinite in energy. Since, however, the present discussion is about place, Aristotle adduces the doubt of the places, and not of the parts, as absurd. But if places are infinite in multitude, being intervals in energy, in the vessel also there will be an infinite magnitude. The like also must be said of the infinite parts in infinite places: for the quantity which consists of

Matter, also, may appear to be place if any one directs his attention to that which is at rest, and is not separated, but continued: for, just as if matter is changed in quality, something which is now white was formerly black, and that which is now hard was formerly soft, on which account we say that matter is something; thus also place appears to be something, through a phantasy of this kind. Except, however, that in the instance of water and air, this is said to be the

of magnitudes infinite in multitude, will also be infinite in magnitude. Thus, therefore, it is concluded that there will be infinite places in the same interval, if place is interval.

A second absurdity mentioned by Aristotle follows, viz. that at the same time place will be changed, so that there will be some other place of place: for if the vessel which contains an interval in itself is transferred, this interval will be in the interval in which the vessel is; and thus there will be a place of place, which is absurd. A third absurdity likewise follows, that many places will be together: for the vessel being transferred, the interval which is between the boundaries of it will also be transferred, and will subsist in another equal interval, so that the things in the vessel will be in the intervals from the beginning, which were called places, and in those into which they pass when transferred. Hence, many places will subsist together with many other places of the same body. Will not therefore the same absurdities be consequent to the assertion that place is the extremity of that which contains? By no means: for it cannot be said that when the vessel is moved the water will be in another place, or the parts of the water: for they subsist in the same place, and not in another, as if interval were in interval. How, therefore, if the wine possesses the same place, both according to the whole and according to the parts, will it be moved from Thasus to Athens. To this we reply, that it is not moved essentially, for it remains in the vessel; but the vessel which contains the wine is moved and transferred, and not the wine itself, nor its parts, except according to accident. But if place were interval, bodies would be essentially transferred together with the vessels, and in a similar manner their parts, in consequence of separately changing the interval, and they would exist in different places, but not according to accident. The place, too, of each of these would be a part of a greater, and again, the greater would be a part of a greater, and this as far as the greatest place and interval, in which the universe is contained: for the authors of this hypothesis contend that there is a certain interval in which the whole world is contained, and is distributed through the whole of it; in a part of which every body is always ingenerated: for this assertion makes place to be a part of place, in the same manner as it makes interval to be a part of interval. We may however see, that those who assert place to be a certain interval in no respect different from the amphora, either make the wine to be moved essentially, or they must say that it remains perfectly unmoved in passing from Thasus to Athens: for they cannot be allowed to say that it is moved according to accident, because they assert that the amphora is similarly in the interval, and the wine it contains, and the parts of the wine.

case,

case, because that which was air is now water; but in place, because where there was air, there is now water. But matter, as was before observed, is neither separable from the thing nor does it contain, both which are the properties of place⁴. If therefore place is no one of the three,

⁴ Aristotle having subverted the hypothesis that place is form and interval, now employs a similar method concerning matter; and, as on other subjects so likewise here, he first mentions the causes through which some one may fancy that matter is place. He likewise now assigns a more probable reason than before, and at the same time unfolds the intention of Plato in calling matter a receptacle and place. Afterward he adduces the arguments through which it is not possible to think that matter is place. Wishing however to mention the probability of the similitude of place to matter, he appropriately assumes the hypothesis: for then, says he, matter may appear to be place when any one directs his attention to that which is at rest in place, and is not moved according to place: for things which are in matter are at rest, but are not moved in it. But it is perhaps better, says Aspasius, to dismiss him who introduces the similitude of matter and place, because matter flows: for place, as long as it endures, is at rest and is immovable. Further still; thus also matter may appear to be place, if we look to one of the postulates concerning place, viz. that place, and that which it contains, are continued; since also the form which subsists in matter is in continuity with and is not separated from it. But this is evidently contrary to what was before admitted concerning place. In such an hypothesis, therefore, Aristotle assigns the cause of the deduction from that which is properly place, to matter. But this is the similitude of the mode according to which we arrive at the conception of matter and place: for we apprehend that there is such a thing as matter, in consequence of seeing one and the same thing, which is now hard, but was formerly soft, and which is now white, but was formerly black; and which we call the subject of these qualities. In like manner, through the same auxiliaries, we also arrive at the conception of place; because, where air formerly was, there air is now. Aristotle, however, appears to have added a small difference, through which he subverts all the apparent similitude, when he says, "Except however in the instance of water and air, &c." For if the form which subsists in matter fashions the matter, and makes it to be essentially denominated, but that which is in place does not fashion the place, nor is any part of it, nor produces any one thing together with it, nor is place denominated according to it,—if this be the case, it is evident that there is a great difference between matter and place. But this, is common to them, to receive different things, remaining the same as they were before they received them. Hence also Plato called matter the place, region, and receptacle of forms. May not, therefore, essence or substance be called the place of accident? This indeed, so far as it is a receptacle, will not be remote from such an appellation, but it differs in this, that the things contained in matter and in place are essences in essences.

After this, Aristotle briefly reminds us of what he had before mentioned, viz. of the properties which distinguish place from matter. But they are these: place is separable from that which it contains;

three, viz. if it is neither form, nor matter, nor interval, in consequence of always being something different from the thing which is transferred ; place must necessarily be that which remains of the four, viz. it must be the boundary of the containing body. But I call the containing body that which is moveable according to local motion. It appears however to be something great and difficult to apprehend what place is, both through its appearing to be at the same time matter and form, and through the transition of that which is borne along being effected in that which contains when at rest : For it appears that there may be a certain interval between, different from the magnitudes which are moved. The air also contributes something, which seems to be incorporeal : for place appears to be not only the extremities of a vessel, but also that which subsists between as a vacuum. As, however, a vessel is a place which may be transferred, so place is an immoveable vessel⁵. Hence, when any thing is moved in that which is moved, that

contains ; matter is not separable. Place comprehends that which is in itself ; matter does not comprehend, but is comprehended by that which is in it. But how is matter said to be not separable, if forms accede to and recede from it in the same manner as bodies in place ? In the first place, every thing which may be separated ought to remain, that thus it may be said to be separated ; but form does not remain without matter ; so that neither is it separated from matter, nor matter therefore from it. In the next place matter, together with form, make the composite to be one thing, matter being in a certain respect changed together with form, and on this account will not be separable ; but place is then by itself, and has nothing in common with that which is in place. In short, not only with respect to form is it necessary to understand that matter is not separable, but also with respect to that which is material. For matter is not separable from that which is material in the same manner as place from that which is in place ; since matter is not separable from the thing of which it is the matter, in the same manner as place is separable from the thing of which it is the place.

⁵ Aristotle has thus far employed place and a vessel as the same, and has assigned in common, the definition of place and a vessel ; for each is the boundary of that which contains, according to which it is conjoined with the thing contained. Thus, the *body* of a shell, for instance, is not a vessel, but the inward superficies, which remaining continued, the utensil has the power of a vessel. But now Aristotle adds the peculiarity of place and a vessel, viz. that place is in its own nature immoveable, but that a vessel may be transferred. Hence, if at any time place and a vessel are changed, yet each preserves its peculiarity ; so that place is an immoveable vessel, and a vessel a place which may be transferred. As place too, is the boundary of that which contains,

also which is within changes its place, just as a ship in a river : so that it uses that which contains, rather as a vessel than as place. But place wishes to be something immoveable ; and hence the whole river is⁶ *rather* place, because the whole is immoveable. So that the first immoveable boundary of that which contains is place.

CHAP.

it is very properly said to be immoveable. For as a superficies it is of itself immoveable, and as place still more so. For how can place be moved according to place ? It may however be said, that a vessel is especially said to be a vessel according to its inward superficies. To this we reply, that a vessel possesses the capacity of containing, which is common to place, according to superficies ; but it subsists as an utensil, both according to body, and according to its being a body which may be transferred, and which is also itself the recipient of a certain body. Simplicius adds, that perhaps Aristotle did not previously assume, in the axioms concerning place, that place is immoveable, through the aid afforded by a vessel in the investigation of place.

⁶ Aristotle here uses the word *rather*, because the whole river is not properly the place of the ship : for *all* the water of the river is not the boundary of that which contains, nor, in short, superficies, but body. But the *whole* river is *rather* place, so far as it is not moved together with the ship. And it is the *whole place* of the ship, because the ship moves in a part of it. Or shall we say, that neither is the river the place of the ship, but the whole river will be in place, as Alexander says, in consequence of the boundary of that which contains it not being moved together with it, and the ship will be in a vessel ? and perhaps, says he, it may be said, that neither is the whole river the place of the ship, but of the water which it contains ; if we understand by a river, not water, but the superficies of the earth comprehending water : for it may be more congruously said of this, “ hence the whole river is rather place : ” for this superficies of the earth, being immoveable, is properly the place of the water which is comprehended and moved in it ; yet it is not primarily the place of the ship ; but the ship indeed is in the water as in a vessel, and the water is in the bank of the river which contains it as in place. This therefore, will be the river which Aristotle calls the place, not of the ship, but of the water. And if this be admitted, it is evident that he calls a river, at one time, water, and at another superficies containing water.

Aristotle, therefore, having shown the difference between place and a vessel, and from this demonstrating the immobility of place, collects from what has been said a complete and perfect definition, viz. that place is the first immoveable boundary of that which contains ; by the word *first* concisely manifesting the *proximate*, which he had before signified by the words, “ according to which it is conjoined to the thing contained : ” for a thing is said to be in place, both when it is in the inward superficies of the containing body, and when it is in the interior part of that which contains the thing contained. Thus, for instance, if a stone is in water, and the water is in unmoved air, the stone is comprehended in the superficies of the air, yet it is neither proximately nor primarily in it ; nor is it conjoined, according to this, to that which is comprehended. Hence, neither is this properly place. The boundary also of a vessel is proximate to that which is contained,

CHAPTER VII.

AND on this account the middle of the heavens, and the extremity of the circular motion which is toward us, appear to be especially common to all things, this above, and that beneath; because the one always abides; and the extremity of the circle also abides, possessing a sameness of subsistence. Hence, since that which is light is naturally carried upward, and that which is heavy, downward; the comprehending boundary which is toward the middle, and also the middle itself are downward; but the containing boundary which is toward the extremity, and the extremity itself are upward. On this account place appears to be a superficies, and, as it were, a vessel and that which contains. Further still; place in a certain respect subsists together with the thing which it contains: for boundaries subsist together with that which is bounded⁷. Hence that body is in place, beyond

tained, but it may be moved and transferred; on which account it is a vessel, and not place, unless the immovable is assumed. But this Aristotle confirms in what follows.

⁷ Aristotle proves that place is immovable from the most proper differences of place; and these are, as has been already observed, upward and downward. He appears therefore to collect such a syllogism as the following. Place has for its differences upward and downward. That which has for its differences upward and downward, has also the middle and the extremity for its differences. That which has the middle and the extremity for its differences, has immovable differences. That which has immovable differences is immovable. Place therefore is immovable. And that place indeed has for its differences upward and downward has been already assumed: for the fifth of the axioms about place was, that every place has upward and downward. But that upward and downward are the middle and extremity, he shows from that which is light, when it tends to the extremity, and that which surrounds, being said to tend upward: for thus we say that fire when it tends to the surrounding ether, tends upward. And that which is heavy as earth, when it tends to the middle, is said to tend downward. But that the middle and extremity are

beyond which there is some other body that contains it; but that is not in place beyond which there is no such body. On this account, though water should become a thing of this kind, yet the parts of it will be moved; for they are comprehended by each other. But the universe in a certain respect will be moved, and in a certain respect not: for so far as it is the whole, at the same time it will not change its

are immoveable, Aristotle reminds us when he says, "because the one always abides, and the extremity of the circle also abides:" for the middle, which is the centre of the universe, always abides, and also the earth which surrounds it; the latter always remaining both according to place and according to essence, in its wholeness and form, though it is changed in its parts, and in number. But the extremity with reference to us of a circulating body, which is the cavity of the lunar sphere, and the superficies which is toward us, always remains essentially the same according to number, both in the whole and parts. And although in its parts it is moved according to place, yet the * whole does not change its place, but always similarly remains, possessing local immobility. Let it also be observed, that Aristotle calls the hollow superficies of the lunar sphere, upward.

But that a thing whose proper differences are immoveable, is also immoveable, is evident: for differences, and essential parts are constitutive of essence. At the same time it will be more evident from the following consideration. If the parts of a thing are moved, nothing hinders but that the whole may be unmoved, as in the parts of things moved in a circle; but if the parts are perfectly unmoved, so as neither to be moved essentially, nor according to accident, much more will the whole be unmoved. The immobility, therefore, of place is confirmed from our asserting that upward and downward are the differences of place, viz. the middle and the extremity. But the extremity of a circular motion with reference to us, will be the upward place: for things which are moved upward, being moved as far as to that extremity, are comprehended by and according to it. And that is the boundary of the comprehending circulating body, according to which it contains that which is comprehended. But what will be the place downward? for the centre is not a place, since it comprehends nothing. It is also impartible, and the most inward of all things. Nor is earth a place; for it is a body, and not a boundary. Nor yet is the boundary of the earth a place; for this is the form of the earth, and not place. Aristotle, therefore, solving these inquiries, adds, "the comprehending boundary which is toward the middle, and also the middle itself are downward; but the containing boundary which is toward the extremity, and the extremity itself, are upward." In which he also says what the places upward and downward are, and what the things which they contain: for the middle itself, which is the earth, is the body in the downward place; but the comprehending boundary toward the middle is the downward place, being the boundary of the body containing the earth, which body partly consists of water, and partly of earth.

* For when a sphere revolves about an immoveable centre, the parts indeed of the sphere are moved from one place to another, but the whole does not change its place.

place ;

place; but it will be moved in a circle; for this is the place of the parts. And some things, indeed, will not be moved upward and downward, but in a circle: but others, viz. such as have rarity and density, will be moved upward and downward⁸. As we have said, however, some things are in place according to capacity, but others according to energy. On this account, when that which is of similar parts is continued the parts are in place according to capacity; but when they are separate, and touch, like a heap, then they are in place according to energy. And some things indeed are in place essentially; as, for instance, every body which is moveable, either according to lation, or according to increase, is essentially somewhere. But heaven (i. e. the universe) is not, as we have said, any where totally, nor in one certain place, since no body comprehends it; but so far as it is moved, so far its parts are in place; for one part adheres to another. But other things are in place accidentally; as for instance soul and the universe; for all the parts are in a certain respect in place; since in a circle one

⁸ Aristotle having defined place to be the first immoveable boundary of that which contains, well observes that, according to this definition, not every body is in place, but that only external to which there is some body comprehending it. Hence it follows, that neither is the inerratic sphere in place; for there is not any thing external comprehending it, if it is the extremity of all things: nor is the whole world in place; since neither is there any thing external to this: for if there were any thing external to it, it must either be a vacuum, and it will be shown that this has no subsistence; or it must be a body; and this must either be finite, and there will be something external to this, if every body is in place, and this will be the case to infinity; or there must be an infinite body external to it, which has been already shown to be impossible. Aristotle, therefore, wishing to persuade that the universe and the heavens are not in place, endeavours to accustom us to a still more paradoxical hypothesis: for though the universe, says he, should be supposed to be water, which especially requires to be in place, or in a vessel, yet at the same time the whole of such a thing will not be in place, because in short, every subject has not something externally comprehending it, the boundary of which, i. e. place is subjacent to that which is contained. The parts, indeed, of the water would be in place if they were separated, as now the parts of the universe are separated, and which, touching each other, and the one being comprehended by the other, are in place. But since things are said to be in place which are moved according to lation, on this account he syllogizes from local motion, and infers that the parts of the universe are indeed in place, but that the whole is not.

part

part comprehends another. Hence the upward body alone is moved in a circle; but the universe is not any where: for somewhere, is itself something, and it is necessary that there should be something else in which this somewhere is, and which contains it. But beside the universe and the whole there is nothing external to the universe. Hence all things are contained in the heaven: for the heaven is perhaps the universe. But place is not the heaven, but a certain extremity of the heaven, and a quiescent boundary which touches the moveable body. Hence the earth is in water, this in air, and air in ether; ether is in the heaven: but heaven is no longer in any thing else⁹. But from these

⁹ Aristotle proposing to show that the whole heaven and the whole world are not in place, he makes a division into all the modes according to which any thing is said to be in place: for some things are in place in capacity, and others in energy. Thus, continued quantities which are not yet parts, are said to be in place in capacity; just as when they are divided, they will be in place, according to energy: for that which is separate, and now divided, when it is comprehended by something, is in place according to energy. Again, such things are in place essentially as are naturally adapted to be moved according to place, either according to lation, that is, motion in a right line, according to which the transition from place to place is effected; for *lation* is one thing, and *circulation* another: or such things as are moved according to increase and diminution; for we say that these are in place, as being themselves moved according to place: for though they do not change the whole place, yet they receive and abandon a certain place. And hence these things are essentially in place. But having mentioned the three significations of a subsistence in place, viz. in capacity, in energy, and essentially, he shows that the whole heaven is not in any place, according to any of the above-mentioned modes of a subsistence in place: for it cannot be in place in energy, because there is nothing external with which it can come into contact, although it should be supposed to be in place in capacity, because it is not a part. Nor yet is it essentially in place, because it does not receive or abandon place. Nor in short, is it moved according to place, because it is neither moved according to lation, nor according to increase or diminution. But Aristotle adds the common cause of the whole heaven not being in place, according to any of these modes, viz. its not being comprehended by any body. Having also said that it is not in short in place, because the whole is not moved according to place, he adds, "but so far as it is moved, so far its parts are in place." For it is moved neither upward nor downward, but in a circle. Hence, it is not itself in place, as not having any local transition. But its parts, viz. the celestial spheres, are in place: for the inward spheres are always comprehended by the outward, and are moved in the place of these; their parts at the same time changing their places. And in this they differ from the inerratic sphere, or the whole heaven, or the universe, that these do

these things it is evident, that this explanation of place being admitted, all the doubts may be solved: for neither is it necessary that place should be co-increased; nor that there should be a place of a point; nor that two bodies should be in the same place; nor that there should be any corporeal interval: for that which is between place is any casual body, and not an interval of body. Place also is somewhere, yet not as in place, but as bound in the thing bounded: for not every being is in place, but only moveable body¹. Every thing therefore tends
to

do not change their place, not even according to their continued parts: for the continued parts of the inerratic sphere, admitting this sphere to be the outermost, do not change their place, because they are not in place, nor are comprehended by any thing externally.

It must be observed, however, that though the whole heaven, or the universe, is not properly in place, because there is nothing external to it, yet as the stars, and whatever exists in the outermost body, are in the boundary of that body, so far as it comprehends, and are therefore in place, the whole heaven may also be said to be in place, because we say that the whole is in that place in which the parts subsist. The whole heaven therefore is in place according to accident.

¹ One of the doubts concerning place was, if every body is in place, and in every place there is body, it will be requisite that the place of things which are increased, should also be increased together with them: for if this is not admitted, the enlarged body will no longer be in place. To this we reply, that the containing body recedes, either according to an antiperistasis, when that which is next in succession occupies the place of that which is elsewhere diminished; or according to condensation and compression, in which case, the boundaries give way, so that the things which are increased are in a greater place. When this happens however, place is not essentially increased, for no boundary is increased essentially. But the contrary takes place, when being condensed it is contracted. Again, neither is there a place of a point: for it is not necessary, if there is a place of a body, that the boundaries of it should also be in place; since these are neither separated, nor contained, as it is necessary things should be that are in place. In short, if continued parts are not in place, because they are not separated from the whole, much less will the boundaries of body be in place.

In the third place, Aristotle says, the doubt is solved which was first mentioned. viz. that neither is place incorporeal: for it has three intervals, length, breadth, and depth, by which every body is defined. And it is impossible that place should be body; for if it were, there would be two bodies in the same thing. This doubt therefore is solved from the definition of place: for the boundary of that which contains has not three intervals, nor is it body. Through the same definition also it may be shown that place is not corporeal interval, since this has three dimensions; so that he who asserts that place is a triply-extended interval, must also grant that two bodies may be in the same place, which does not happen to him who says that it is the boundary of body. The
doubt

to its own place in a becoming manner : for that which is next in order and touches, but not by violence, is of a kindred nature ; and being con-nascent indeed, they are impassive ; but when they come into contact they are mutually passive and active. Hence every thing naturally abides in its proper place, not irrationally : for this particular part has the same ratio to the whole place, as a divided part to the whole ; as for instance, when any one moves a portion of water or air. Thus also is air to water ; for this is as matter, but that as form. Water indeed is the matter of air ; but air, is at it were a certain energy of water. For water is air in capacity ; but air is after another manner water in capacity. Afterward, however, we shall determine concerning these things ; but the occasion rendered it necessary to speak about them at present : and what has now been obscurely said will be then more perspicuous. If therefore the same thing is matter and energy ; for water is both, but is one in capacity, and the other in energy ; it will subsist in a certain respect as a part to the whole. Hence also in these there is contact. But there is a coherence when both become one in energy. And concerning place indeed, that it is, and what it is, has been said ².

CHAP.

doubt of Zeno is likewise solved from this definition : for Zeno said, if every being is *somewhere*, place also will be in place. But if place is the boundary of that which contains, place also will be in something, *where* signifying a subsistence in something. It will not however be as in place but as boundary in the body of which it is the place. So that it will necessarily follow that place will not be in place ; since a moveable body is indeed in place according to location : but the boundary of that which contains is not essentially moveable according to location ; for it has not a separate subsistence.

² What is here said is not the solution of a doubt, but is added as the last of the axioms concerning place, viz. that every body naturally tends to, and abides in, its proper place. Aristotle therefore shows that this is consequent to the definition of place and at the same time solves a certain objection which occurs. Hence, this also accords with the solution of the doubts : for how, it may be said, will the boundary of water be the place of earth, or the boundary of air the place of water, and so in succession, if it is necessary that place should be allied and similar to that which is in place ; on which account also, it is said to be appropriate to it ? But water is dissimilar, different from, and contrary to earth, and air to water, in consequence of changing into

CHAP. VIII.

AFTER the same manner we must conceive, that it is the business of a natural philosopher to speculate concerning a vacuum, whether it is
OR

into each other. Aristotle therefore says, that bodies which are next in order to each other, and touch each other without violence, are mutually allied and appropriate; air indeed to fire, for it has heat in common and in compact with it; and on this account the mutation from air to fire is easy. But water is allied to air; for moisture is common to both. In like manner also earth is allied to water; for they have the cold in common. Earth, however, is not allied to air, nor water to fire. Fire also, though it has its being in generation and mutation, yet, as in things of this kind, is the most appropriate of all things to the lunar sphere, and to that part of it which approximates to generation, or the sublunary region: for fire is luminous and immaterial, and has the relation of form to the other elements. Each, therefore, tending to its kindred body tends to its proper place. But Aristotle very properly says, not only *in a consequent order*, but touching: for things are successive or in a consequent order when there is nothing of a similar kind between; as houses are said to be in a consequent order to each other when there is no other house between them. But things which are thus successive neither touch each other, nor is the one as it were in the place of the other. Contact, therefore, is necessary, that it may be place. He also necessarily adds, *but not by violence*: for some things may touch each other, not naturally but violently; and such as these are not of a kindred nature. If, therefore, kindred bodies, having a natural order with respect to each other, desire to be successive, and to touch each other without violence, these, when divulsed, will hasten to and abide in each other as their proper places. But since the parts are allied to each other and to the whole, yet are not in each other, as in place, or as in the whole place, he assigns the cause of this: for things which are connascent and continuous with each other, are impassive by each other; since it is necessary that which acts should be one thing, and that which is passive another. But things continued and connascent are one: and things which are not impassive, but act and suffer, these are not continued nor so allied as things which touch: for here the agent is one thing, and the patient another, but they approach and are allied to each other. They are not however so allied as parts which are from the same elements; but they have something common, and something different; and on this account they change into each other. These, therefore, are things which are in place: for bodies which when placed near to and touching each other act and suffer, these are naturally moved, and tend, as he says, as the imperfect to the perfect.

2 E

But

or not, and how it subsists, or what it is ; just as concerning place : for it is attended with similar incredibility, and the belief in it is derived from the conceptions about it : for those who assert that there is a vacuum consider it as if it were a certain place and vessel. And it appears indeed to be full when it possesses the bulk which it is capable of receiving ; but when it is deprived of this it is void : as if a vacuum, plenum, and place, were the same, but their essence not the same. It is necessary however to begin the speculation, assuming the assertions of those who say that there is a vacuum, and again of those who deny its existence ; and in the third place we must consider common opinions concerning them. Those therefore who endeavour to show that there is not a vacuum, do not refute that which men wish to call a

But Aristotle having said that the alliance of body is the cause of its tending to its proper place, he also says, that the same thing is the cause of its abiding in its proper place : for as that which is separated from its kindred nature, in consequence of desiring it, is moved toward it, so likewise when it has arrived where it is it desires to remain there ; for it is *nearly* a part of it, by which it is comprehended according to nature. But it is *nearly* a part, because it is not a continued, but a divided part. As therefore it is natural to parts both to tend to their wholes, and abide in them, so likewise it is natural to things that are allied, when they are divided to tend to and abide in each other, as in their proper place : for as parts properly so called, as for instance, a part of water or air, preserves in its whole, an adaptation to it, both when the whole is moved, and when it is permanent, in like manner things which are allied according to another mode, preserve an appropriate subsistence ; as for instance, water to air. But Aristotle supposes the part to be moved, that he may the more assimilate it to things in place : for water seems to be in a certain respect a portion separated from air, yet it is not a part or portion, in the same manner as matter, from which a composite is produced, characterized by form ; for air is produced from water as from matter, in the same manner as a statue from brass, or rather as an animal from seed ; since the water does not remain when air is produced.

But how does Aristotle say, " Thus also is air to water ; for this is as matter, but that as form. Water indeed, is the matter of air ; but air is as it were a certain energy of water," though at the same time he says, water is a part of air : for matter is not a part of form, but both are parts of the composite. In answer to this, it may be said, that the composite is especially essentialized, and characterized, according to form ; or as Aristotle says, that water is air in capacity : for as seed appears to be a part of the animal produced from it, so water is, in a certain respect, a part of the air, generated from it, being air in capacity.

In the additional notes to this volume we shall present the reader with a beautiful digression of Simplicius, concerning place.

vacuum,

vacuum, but that which they erroneously assert, as Anaxagoras and others, who confute after this manner; for they demonstrate that air is something by twisting bladders, showing how strong the air is, and receiving it in clepsydræ³. But men conceive that a vacuum is an interval in which there is no sensible body; and, fancying that all being is body, they say *that* is a vacuum in which in short there is nothing; and on this account, that what is full of air is a vacuum. Hence, it is not necessary to demonstrate that air is something; but that there is not an interval different from, and separate from bodies, and that it is not in energy, and does not pervade through every body, so that it is not continuous, as Democritus and Leucippus say⁴, and many other physiologists, and that it is not any thing beyond all body, since body is continuous. These, therefore, do not meet the problem through the gate; but rather those who say that there is a vacuum. But one thing, indeed, which they say is this, that if there is not a vacuum there will not be local motion; and this is lation and increase: for motion would not appear to subsist unless there were a vacuum; since that which is full cannot receive. And if it could receive, there would be two bodies in the same thing. Certainly on this hypothesis any number of bodies whatever, may subsist together; for the difference cannot be adduced through which that which is asserted will not take place. But if this be possible the smallest may receive the greatest thing: for that which is great is many small things. So that if many equal things may be in the same thing, this also may be the case with many unequal things. Melissus, therefore, shows from these things that the universe is immoveable: for if it were moved, it would be necessary says he, that there should be a vacuum; but a vacuum does not rank among beings. In one way, therefore, they thus show that

³ The clepsydræ, says Simplicius, i. e. *barpagæ*, were instruments for drawing up vessels of water from wells. These instruments, when they contained air, did not receive water; but immediately on the departure of the air, seized the water, which they did not dismiss, till the person who covered the cavity with his finger removed it, and thus permitted the air to enter in proportion to the water that ran out.

⁴ Of this opinion also, says Simplicius, were Metrodorus the Chian, and some of the Pythagoreans,

that there is a certain void ⁵. But in another way, because some things appear to come together, and to be compressed ; just as they say that
wine

reans, as Aristotle also shortly after informs us. This likewise was the opinion of Epicurus. Simplicius adds, that Porphyry does not write *ουτε χωριστον ουτε ενεργεια ον*, *neither being separate, nor in energy*, but *ουτε ακχωριστον αυτων ουτε χωριστον*, i. e. *neither inseparable, nor separable from them* (bodies), for Democritus, says Porphyry, asserted that this interval is inseparable from bodies, on which account neither is the universe continued, bodies being intercepted by a vacuum ; but those, as the Pythagoreans, said it is separable, who asserted that there is a vacuum beyond the world, but admitted the universe to be continued. However, as Simplicius justly observes, the former reading is better, though the latter may also be defended : for of those who believed in a vacuum, some said, it was itself, separate by itself, pervading through the whole world, and extending in continuity beyond the world ; but others said that it is every where dispersed through the pores of bodies, and on this account appears to be inseparable from them. Hence of the four following arguments, that from motion and increase, introduces the first vacuum, but that from compression and ashes, the second. So that those who wish to oppose a vacuum, by showing that air is something, do not proceed to this conception of a vacuum through the proper gates, according to the proverb, and as it were entrances, but *beside* the gates, that is *externally*, and through other avenues. But those speak more probably who say that there is a vacuum.

⁵ Aristotle adduces four arguments of those who say there is a vacuum ; one, according to the conception of a separate vacuum ; and three according to the conception of a vacuum dispersed through the pores of bodies. He also adds a fifth argument from the opinion of the Pythagoreans. But of the four arguments the first is as follows : arising from a certain division of one asserting that local motion, which is beheld in lation and in augmentation, is either produced through an intermediate vacuum, or through a plenum. But it is impossible that it can be produced through a plenum, as will be shown. It must therefore be produced through a vacuum ; and consequently there is a vacuum. And, indeed, that motion must necessarily be produced through something intermediate, appears to be self credible to the intelligent, because the local transition from this thing to that, the thing *from which*, and that *to which*, differing from each other, must be effected through some interval between the two. But that every interval must necessarily be either full, or not full, is evident : for the division is contradictory. But that which is not a plenum is entirely a vacuum. That it is however impossible for motion to be produced through a plenum he demonstrates through an hypothetic syllogism, as follows : If the motion of bodies according to place, is through a plenum, body will penetrate body, and the smallest will receive the greatest. But this is impossible ; since, if admitted, the water in a bowl might receive the sea. The antecedent therefore is impossible, viz, that motion should be effected through a plenum. He also shows the deduction, i. e. that the smallest would receive the greatest, through this, that, if in short, it received any other body from the first, so as that there could be two bodies in the same interval, the same also would receive another third, because it had received the double, and the
whole

wine is received by tubs, together with bladders, as if the condensed body would enter into the inherent void spaces⁶. Again, increase likewise appears to all men to be effected through a vacuum: for nutriment is a body; and it is impossible for two bodies to subsist together. They also adduce as an evidence, that which happens about ashes, which receive as much water as a void vessel⁷. The Pythagoreans

whole again would receive another fourth, and so on in succession: for no reason can be assigned, why it should receive one and not many bodies: for one was full, as also two. It will therefore, receive the greatest: for since it is great, it may be divided into many parts, equal to that small thing which was the subject at first: for that which is great, as Aristotle says, is many small things, and each of the small things is that which is great, being equal to the small subject which was at first, the whole also will subsist in it, and the smallest will receive the greatest, which is obviously absurd. It is evident, also, that if it should receive things equal, it will likewise receive things unequal to itself; for many equal things make the unequal. It receives, therefore, things unequal, and consequently the greatest; though for it to receive things unequal is absurd; and hence Aristotle does not omit to mention this absurdity.

But that the introduction of a vacuum from motion is ancient, is credible from Melissus using the deduction as evident, that if any being is moved, it is moved through a vacuum; and afterwards assuming this position, but there is not a vacuum, he adds, being therefore is not moved. Melissus, however, did not reason in this manner concerning a corporeal nature, nor concerning any thing partial, but about that which is intelligible and every way perfect; for he conceived that this is one and immovable, demonstrating its immobility though its being all things, and through there being nothing beside it which can occasion it to be moved from the condition of being it possesses through a vacuum: for there is no vacuum there. Perhaps, too, neither is there any difference there, since it is all things; and non-being has no place in all-perfect being. And though it should be admitted that difference is there, according to which forms are separated from each other, yet difference also is being. And a vacuum has no place in all-perfect being, as neither has non-being.

“ Let not your intellect this path explore,”

Says the great Parmenides.

⁶ The second argument by which a vacuum is attempted to be proved, is taken from the following experiment. Let there be a tub full of wine; and let the wine afterward be poured out into bladders. The tub will now receive the same wine together with the bladders; but it was full with the wine alone. How therefore will a place be given for the bladders, unless we say there are certain void spaces in the wine, into which a part of the wine recedes, and which it fills; and that thus the wine is compressed and condensed. Hence it comes to pass that a place is left for the bladder.

⁷ The fourth argument is assumed from another experiment, by which it appears that a vessel will

reans also say that there is a vacuum; and that it enters into the heaven, as if the heaven respired from an infinite spirit. They likewise assert that a vacuum is that which distinguishes natures, as if a vacuum were a certain separation and distinction of things in a consequent order; and that this first subsists in numbers; since a vacuum gives distinction to their nature⁸. So many, therefore, and such are nearly the arguments, from which some assert and others deny the existence of a vacuum.

will receive as much water when it is full of ashes as when it is empty, which it would seem cannot happen, for any other reason than because the ashes have many void spaces which receive the water, or receive the ashes when they are compressed.

⁸ What else, says Simplicius, can be the meaning of these enigmas of the Pythagoreans than this, that the *difference* which is above the corporeal world, and gives separation to the forms that are there, being participated by the sensible worlds, produces the distinction and separation of the forms it contains; there being no vacuum in the incorporeal world. Thus the beautiful is different from the just, not because it is not just, but because it is all things according to the beautiful, through the union which is there*, and because non-being is not in that which is perfectly being. But in the sensible region, separation is produced through the introduction of non-being: for the monad is not the duad, and the duad is not the monad; and non-being which subsists between these, is the vacuum which separates the forms in the world; just as *difference* in the incorporeal world, which is itself being, and is not called non-being, and therefore is not a vacuum, separates the supermundane forms. The *difference*, however, which is there, is the cause of the void which is here; and on this account Plato in the Sophista † calls it in a certain respect non-being.

Simplicius adds, that Straton, of Lampsacen, reduces these four arguments to two, viz. to motion according to place, and to the compression of bodies; but that he adds a third argument from attraction: for it happens, says he, that the magnet draws some pieces of iron through others, because the stone attracts through the pores of the iron, and the iron is at the same time drawn together with the body which it attracts; and this piece of iron, again attracts another which is next to it, and that another. This series too of pieces of iron is suspended from the stone.

* i. e. The beautiful participates of the just, and of all other forms, but all its participations are stamped, as it were, with the character of beauty.

† See the Notes to my translation of the Parmenides and Sophista.

CHAPTER IX.

IN order however to understand which of the assertions are true it is necessary to consider what the name signifies. A vacuum therefore appears to be a place in which there is nothing. But the cause of this is that they fancied being to be body; but every body is in place; and in the place in which there is no body there is a vacuum. So that if any where there is no body, there there is a vacuum. Again, they fancied that every body is tangible; and that whatever has gravity or levity is a thing of this kind. From syllogism, therefore, it happens that a vacuum is that in which there is nothing heavy or light. These, things, therefore, as we have also before observed, are syllogistically inferred. But it is absurd that a point should be a vacuum: for it is necessary that a vacuum should be a place in which there is an interval of tangible body. A vacuum however appears in one way to be called that which is not full of a sensible tangible body: and that which possesses gravity and levity is sensible according to the touch. Hence, some one may doubt if interval had colour or sound whether it would be a vacuum or not. Or is it not manifest that if it could receive a tangible body it would be a vacuum, but if not, that it would not be a vacuum? But, after another manner, a vacuum is said to be that in which there is not this particular thing, nor any corporeal essence. Hence some say that a vacuum is the matter of bodies, who also say, though not rightly, that this very thing is place; for matter is not separate from bodies; but they investigate a vacuum as that which is separate.

CHAP.

CHAPTER X.

SINCE, therefore, we have sufficiently discussed the nature of place, and it is necessary that a vacuum, if it has a subsistence, should be place deprived of body, and we have shown how place subsists, and how it does not subsist; this being the case, it is evident that a vacuum does not thus subsist, neither considered as separate, nor as inseparable: for a vacuum cannot be a body, but an interval of body. On this account, a vacuum appears to be something, because place also appears to be so; and through the same causes: for those also direct their attention to motion, according to place, who say that place and a vacuum are something beside the bodies that fall into them. But they fancy that a vacuum is the cause of motion in the same manner as that in which a thing is moved; and this resembles what some assert of place. There is not, however, any necessity that if there is motion there should be a vacuum. And, in short, a vacuum can by no means be the cause of every motion, for that reason which was concealed from Melissus: for a plenum may be changed according to quality*. But neither is it necessary that there should be motion according to place, on account of a vacuum. For bodies which are moved may yield to each other when there is no separate interval beside them. And this also is manifest in the revolutions of things continuous, as likewise in the⁹ revolutions of humid natures.

⁹ Thus, for instance, the first body may pass into the place of the second because the second yields. The second also may pass into the place of the third; the third into the place of the fourth; and the fourth into the place of the first. Aristotle perspicuously demonstrates that this may be effected, from things which are moved in a circle, whether they are continued, as a wheel, or liquid as water which is rolled round in a vessel: for in these instances, all the parts are moved,

* viz. A thing may become hot or cold without any change of place.

and

natures. Bodies too may be condensed, not into a vacuum, but because the things inherent are expelled. Thus, water being compressed, the inherent air is expelled. Things likewise may be increased not only from the ingress of some body, but also by a change in quality, as if air should be generated from water. And in short the reason concerning increase¹, and that of water poured upon ashes, are respectively

and all change their place, yet they do not occupy any space which before was void, but mutually yield to each other.

¹ If any one, says Simplicius, indefinitely understands increase of things which arrive to a greater magnitude, it will be sufficient to adduce to him the mutation of water into air, and in short, of a body less to one greater in bulk; but, if he understands it of the increase which properly subsists through the intromission of food, he will not by introducing a vacuum, through the accession of food, be any longer subverted by other arguments, but will be caught, according to the proverb, by his own wings. Or, as Aristotle more properly says, the argument will impede itself: for in order that he may solve the common doubt about nutriment, he introduces a vacuum, at the same time not solving, but rendering the doubt more dubious: for either accretion is produced in consequence of the nutriment pervading through a vacuum, or the nutriment does not pass through the body. And if this be the case, of what use will the hypothesis of a vacuum be, if body does not proceed through body, that which nourishes through that which is nourished. Or what will be the use of a vacuum if nutriment is a body, or if every part is not nourished and increased, which is contrary to evidence; for bodies are nourished and increased in every part. Or if bodies are entirely nourished and increased, either body will pervade through body, to avoid which, they suppose a vacuum, or every body will be a vacuum, if every body is indeed increased, but the increase is produced through a vacuum; so that body will no longer have a vacuum in itself, but will be itself a vacuum, and body and a vacuum will be the same thing. Hence, those who suppose a vacuum do not show that it has a subsistence, but endeavour to solve the common doubt concerning nutriment through a vacuum, and thus make the doubt still more dubious.

These doubts concerning nutriment, Aristotle solves in his Treatise on Generation and Corruption; when he says, that not every part of the nutriment accedes to the body, but one part of it is carried off insensibly, and another is introduced; and that when the influx is greater than the efflux, then increase is produced; just as when the efflux is greater than the influx decrease is produced: for nutriment subsists in the pores of bodies, and when it is assimilated, adheres to them. The whole body however, is not a pore; but where a pore is now, there a plenum is produced; and that which is now a plenum, through effluxion becomes a pore. But the fourth argument was that which introduced a vacuum from ashes, since a vessel full of ashes receives as much water poured on the ashes as it would receive when empty; for, say they, either body pervades through body, which is absurd, or the water proceeds into the void spaces of the ashes. By these, therefore, says Aristotle,

respectively impediments to themselves : for either any thing whatever is not increased, or it is not increased by body ; or two bodies may be in the same place ; (they think fit therefore to solve the common doubt, but they do not demonstrate that there is a vacuum) or it is necessary that all body should be a vacuum, if it is every way increased, and is increased through a vacuum. The same reasoning also applies to ashes. That the arguments, therefore, from which they show that there is a vacuum may be easily solved, is evident.

CHAPTER XI.

AGAIN, however, we shall say, that there is not a vacuum so separate as some assert it to be : for if there is a certain natural lation to each
of

the doubt also is impeded : for avoiding the absurdity of body penetrating body, they are compelled to say that ashes are incorporeal, and void throughout, in order that the vessel may receive the same quantity of water, as if it did not contain the ashes : for if the ashes being body, could receive an equal quantity of water, it would thus follow that body would pervade through body, to avoid which they suppose a vacuum. Hence, these also endeavouring to solve the doubt by a vacuum, are impeded by it in the solution of the doubt. Eudemus, however, solves the doubt of the ashes in the third book of his Physics : for he says, that this may happen without void spaces ; since something hot appears to be contained in the ashes, just as in a calx. But this is evident from hence, that when the water is poured in, both these burn ; the calx indeed itself ; but the ashes heat the water which pervades through them. And when this happens much vapour is exhaled, so that the masses are diminished through the vapour. Though they are diminished however, the whole substance of the ashes is not consumed. Simplicius adds, it is possible therefore, to give assistance both to those who suppose a vacuum, and those who introduce condensation, by saying, that not only the void spaces of the ashes solve the thing investigated, but also that those of the water subside, being impelled by the plenitude of the ashes, so as that they have not the same bulk with the water poured by itself on the ashes. This, then, is what Aristotle says in opposition to the arguments which according to his narration introduce a vacuum. But
Straton

of the simple bodies, as for instance, to fire upward, but to earth downward, and toward the middle, it is evident that a vacuum will not be the cause of lation. Of what then will a vacuum be the cause? For it appears to be the cause of motion according to place; and yet is not the cause of this². Further still; if it is any thing, as for instance a place deprived of body, whither will the body placed in it be impelled? For it will not be impelled in all directions³. The same reasoning also may be urged against those who fancy that place is something separate into which that is carried which is borne along: for how will that which is in this be either impelled or abide? And the same reasoning will fitly accord to upward and downward, and to a vacuum: for those who say there is a vacuum make it to be place⁴. How therefore will
body

Straton also solving the argument which is derived from attraction, says that neither does attraction compel us to admit a vacuum: for in short it is not evident whether there is such a thing as attraction, since Plato himself appears to subvert an attractive power; nor if there is such a thing, is it evident whether the magnet draws through a vacuum, and not through some other cause: for those who thus speak do not demonstrate, but suppose, a vacuum.

² For the cause of local motion is nature; but a vacuum is not nature; and therefore a vacuum is not the cause of local motion. But that nature is the cause of local motion, Aristotle clearly shows from the physical tendency of bodies: for if a tendency upward is natural to fire, but a tendency downward to earth, and a tendency to the middle to the middle elements, nature and not a vacuum, is evidently the cause of local motion.

³ Aristotle having shown that a vacuum is not as the producing cause of motion, because the advocates for its subsistence do not introduce it as the producing cause, but as that in which, and as place, in which and through which it is necessary bodies should be moved, now very properly proceeds to show that a vacuum is neither a cause, nor a concause, in the same manner as place in which bodies that are moved, are both moved and permanent: for if a vacuum is as a certain place, Aristotle having previously assumed that it differs from place in consequence of having no body in itself, but subsisting in a privation of that of which it is the recipient,—if this be the case, and if an infinite body as they say be placed in it, whether will it be moved? for what difference of motion will a vacuum impart, so far as a vacuum? For it will neither impart a motion upward, nor a motion downward definitely. But if it is at once impelled in all directions, it will either be divulsed, or it will rather be the cause of permanency than of motion. Or rather, neither will it be the cause of permanency: for why should it rather abide in this place than in that? Aristotle employs the same argument in the third book concerning the infinite.

⁴ Aristotle before subverted a vacuum from its similitude to the infinite, but he now attacks it
2 F 2 from

body be in place, or in a vacuum? For this cannot happen, since the whole of some body is considered as being in a separate and permanent place: for a part of such a body, unless it is considered separately, will not be in place, but in the whole.

Again, if place is not separate from body, neither will a vacuum. But to him who considers this affair, it will appear that the contrary rather happens to those who say there is a vacuum, as if this were necessary if there is motion; I mean that nothing can be moved if there is a vacuum: for just as those who say that the earth is at rest through similitude; so likewise it is necessary to be at rest in a vacuum: for there is not any place in it where a thing can be more or less moved: since so far as it is a vacuum it has not any difference⁵. In the first place,

from its similitude to local interval: for the same reasoning, says he, will be adapted to those who say that place is a separate interval, as is adapted to those who introduce this void interval: for how will every natural body be impelled to such a place; or how will it remain in it? for those who say that place is the boundary of that which contains, since they do not assume this boundary as a mathematical superficies, but as that which subsists in a natural body, the peculiarity of which the boundary also participates,—this being the case, since bodies on high differ from those beneath, the boundaries of them are likewise different, and the natural tendencies of bodies to these are different. But interval is every where without difference: for in this, in what does upward differ from downward? And in what does the aptitude of fire in this, differ from that of water. Thus also in a vacuum: for a vacuum is considered as nothing else than a separate interval, in the same manner as place, according to those who assert it, to be interval. If, therefore, local interval is not the cause of motion it is evident that neither is a vacuum. In like manner, neither is it the cause of permanency: for why should a thing rather remain in this part of place, than in this part of a vacuum?

⁵ Aristotle having dissolved the arguments which appear to prove the existence of a vacuum, and having shown that a vacuum is not the cause of motion, now evinces that the contrary to what they wished happens to the authors of this hypothesis: for they fancied that local motion could not have a subsistence, unless there is a vacuum. But he on the contrary shows that there cannot be a local motion, if there is such a thing as a separate vacuum. And in the first place, he adduces an argument tending to this, that a vacuum being a thing indifferent, that which is placed in it will not be moved in one direction more than in another; and therefore, that it will not be moved at all. But that when subsisting similarly with respect to every part of that in which it is contained, it will remain immovable, may also be inferred from what is said by Plato in the *Timæus*, concerning the permanency of the earth in the middle: for he there says, “that a thing which

place, therefore, because every motion is either from violence, or according to nature, it is necessary, if there is violent that there should also be natural motion : for violent motion is contrary to nature ; and that which is contrary to nature is posterior to that which is according to nature. So that if motion according to nature is not present with every natural body, neither will any one of the other motions be present. Besides, how will it be natural, since there is no difference in a vacuum and the infinite ? For so far as it is infinite there will be no downward, nor upward, nor middle ; but so far as it is a vacuum, there will be no difference between the downward and upward : for as there is no difference in nothing, so neither is there in non-entity. But a vacuum appears to be a certain non-entity and privation. Natural motion however is different ; so that things which are naturally moved will be different. Either, therefore, there will not be any where a natural motion to any thing, or if there is, there is not a vacuum. Further still ; things which are thrown are now moved, he who impels them not touching them, either through an antiperistasis *, as some say ; or because the air being impelled, impels with a swifter motion than that of the motion of the impelled body through which it tends to its proper place. But in a vacuum there can be nothing of this kind ; nor can any thing be borne along, unless as that which is carried ⁶. Again, no one can
assign

which subsists similarly with respect to the middle is in equilibrium :” for if it subsists similarly with respect to every part about itself, why should it rather proceed to this part than to that, since it has an equal inclination to every part : and every thing which surrounds it has on all sides a similar habitude about it ? for why should it rather incline to this than to that part ? If, therefore, a vacuum is entirely without any difference, it will also possess a similar habitude with respect to that which is placed in it, and that which exists in a vacuum will be similarly affected toward the whole of that in which it exists. Hence, it will be in equilibrium, and on this account will not be moved.

⁶ The design of Aristotle is now to show, that if there is a vacuum there is no such thing as violent motion ; having before shown, that admitting a vacuum there can be no natural motion. But since violent motion is twofold, arising either from that which compels being present, and carrying, or impelling, or drawing it along, or from its not being present, as in things which are thrown, Aristotle frames his demonstration of the latter, omitting the former as Alexander says, on account

* That is, the contest between two contrary qualities joined together.

assign a reason why that which is in motion stops somewhere: for why should it rather stop here than there? So that either it will be at rest,
OR

count of its evidence. Now therefore, Aristotle demonstrates that the violent motion which is produced by the absence of him who impels it, cannot be produced in a vacuum: for in the throwing which is effected in a plenum, the things thrown are moved, either by an antipe-ristasis of the air which is pushed before that which is thrown by the impetus of him that throws: For the air being more easily moved than that which is thrown, is pushed before it, and through violence acquiring a collected opposing force, impels what is moved. But this taking place in a continued succession, the motion of that which is thrown remains continued until the impulse of the surrounding opposing air gradually failing, the proper motion according to nature of that which is thrown vanquishes the impulse of the air. Plato also was of this opinion as may be seen in his *Timæus*. Either, therefore, the motion of things that are thrown remains in this manner continued, or through the impulsion of the air which is violently compelled by him who throws: for in this case, the air being more easily moved than that which is thrown, as long as it possesses power from him who throws, impels that which is thrown, there being at the same time a conflux of collected air behind it, through the violence of the motion, and which also co-impels, until the power in it gradually failing, the natural tendency downward of the thing which is thrown subdues it. Thus, therefore, the cause of the motion of things thrown through a plenum is assigned. But in a vacuum neither of these can take place: for neither can there be any impulsion, or surrounding opposition, since there is nothing in a vacuum. But Aristotle having said, that no one of these can exist in a vacuum, and that there can be no local motion in it, he adds, "unless as that which is carried," indicating that it is impossible for that which is moved in a vacuum to be moved after the manner of throwing. If it is moved, therefore, it must be moved as things which are carried; and of it be thus moved, it must either be carried in the vacuum itself, or in some body. But it is impossible for it to be carried in a vacuum; for a vacuum, since it is nothing, is inefficacious. But if there should be any body which carries in a vacuum, and carries through violence, since that which is moved also itself moves, it is evidently moved either according to nature, but it has been shown that it is impossible for any thing to be naturally moved in a vacuum, or it is moved by violence; and if by violence, it is either thrown, and this is impossible, or again, as that which is carried, and this will be the case to infinity. But since, as we have said, one thing is moved violently, viz. as that which is thrown, but another is moved, in consequence of that which moves being present, and employing compulsion, and this either by impelling, or drawing, or carrying, but carrying is more common, since to draw and to impel is after a certain manner to carry, this being the case, Aristotle adduces the instance of carrying instead of all the rest. It may however be said, what should hinder animals themselves from being moved according to their proper impulse, in a vacuum, and also other bodies, from being moved violently, either through being impelled, or drawn, or carried, or thrown? For it cannot be said of animals that they are definitely moved upward or downward according to nature. To this it may be replied, that the present discussion being physical, the discourse is now about natural motion, and not about that which is the effect
of

or it is necessary that it should be borne along to infinity, unless something more powerful impedes⁷. Further still; now it seems to be carried to a vacuum, because it yields; but in a vacuum a thing of this kind is similarly every way; so that it will be every way impelled. Again, what is said will be evident from the following considerations. We see the same weight and body more swiftly borne along, through two causes; either because there is a difference in that through which it is borne along, as when it moves through water, or earth, or air; or because that which is borne along differs, if other things remain the same, through excess of weight, or levity. Hence that through which

of deliberate choice; for this latter is discussed by Aristotle in his treatise on the motion of animals. But things which are thrown, though they are thrown by animals, the mover not being continually present with them, yet possess a physical theory, in consequence of being moved contrary to their proper nature.

⁷ Aristotle having before shown, that if there is a vacuum there is not motion, neither the motion which is according, nor that which is contrary to nature, now shows, says Simplicius, as it appears to me, that if there is a vacuum, not only motion is subverted, but also permanency according to nature: for natural permanencies are in the proper places of bodies, which proper places are different. But a vacuum is without difference. Why then should a thing which is moved stop here rather than there? So that if there is no difference in a vacuum, though some one should suppose bodies to be moved in it, it is therefore necessary they should be moved to infinity, unless something more powerful impedes; and though they should be said to be at rest in a vacuum, it is necessary that they should always be at rest: for if it is natural to them to be at rest in this particular part of a vacuum, it is evidently natural to them to be similarly at rest in all its parts. Hence it will be shown, that neither is it possible, if there is a vacuum, for any thing to stand still according to nature: for the words "or it is necessary that it should be borne along to infinity" are added by Aristotle, as consequent to its not standing still naturally. But if the interpreters say that this is an argument that there will not be motion according to nature in a vacuum, because things naturally moved tend to their proper place, but there is no proper place in a vacuum, because it has no difference; if this be the case, it will be better to say that Aristotle having previously subverted motion now subverts permanency; and this, as Simplicius justly observes, appears to be more consonant to the text, since the argument thus begins, "Again, no one can assign a reason why that which is in motion stops somewhere". But Aristotle omits to investigate what that will be in a vacuum which will impede motion as being more powerful; because it is evident that it is nothing: for this thing being permanent either according or contrary to nature, will impede. And, according to nature indeed, is impossible. If this also is impeded, there will be a procession to infinity.

it

it is borne along is the cause that it impedes, especially if it is borne in a contrary direction, and in the next place if it abides. But this is more especially the case with that which is not easily divided ; and that which is more dense is a thing of this kind. Let the weight A, therefore, be impelled through B in the time G ; but through D, which is more attenuated in the time E, if the length of B is equal to that of D, according to the proportion of the impeding body : for let B be water, but D air. By how much the more attenuated, therefore, and incorporeal, air is then water, by so much swifter will A be impelled through D than through B. It will therefore have the same ratio of celerity to celerity, as air to water. So that if it is doubly more attenuated, it will pass through the space B in double the time that it will pass through D ; and the time G will be double the time E. And thus always by how much the more incorporeal that is through which it passes, and by how much less it impedes, and may be more easily divided, by so much the more swiftly will it be impelled. But a vacuum has no ratio by which it may be surpassed by body ; just as *nothing* has no ratio to number ; for if four surpasses three by one, but two by more than one, and one by still more than it surpasses two, there will no longer be any ratio by which it surpasses nothing : for it is necessary that what surpasses should be divided into excess, and that which is exceeded ; so that four will be divided into four, and nothing. Hence, neither can a line surpass a point, unless it were composed from points. In like manner, neither can a vacuum have any ratio to a plenum ; and therefore neither the motion through the one to the motion through the other ⁸. But if a weight passes through so much space

⁸ Aristotle here says that a magnitude by so much the more resists motion, and causes motion to be slower by how much the more bulky it is, and the more difficultly it is divided. He now therefore declares how far it impedes motion, and how far it renders it slower, explaining the beautiful proportion between magnitudes through which motion is made, and the times in which things are moved : for by how much the more gross a magnitude is, so much the more time is required, that a thing may arrive at the end of that magnitude ; and by how much the more subtle a magnitude is, by so much the more swiftly will a thing pass through it. There is the same ratio therefore,

space in such time, through a most attenuated medium; in passing through a vacuum it will exceed every ratio: for let Z be a vacuum, equal to the magnitudes B and D. If, therefore, it passes through A, and is moved in a certain time, viz. in the time E, which is less than the time F, the vacuum also will have this ratio to the plenum⁹. But in as much time as E the weight A will pass through G a part of D. But it will also pass through it, even if there should be something in Z differing in subtilty from air, in the same proportion as the time E to the time F; for if the body in Z is as much more attenuated than D as the time E surpasses the time F; vice versâ, the weight A, if it is borne along, will pass through Z with a celerity measured by the time, F.

therefore, between the celerity of motion through a lighter and the celerity of motion through a more gross magnitude, as between a more gross and a more subtle magnitude. Thus if water is twice as gross as air, the motion of the same weight through air will be doubly more swift than the motion through water; so that the same stone, if it consumes six hours in its descent through water, will consume three hours in a descent of the same length through air. But when Aristotle says that air is more *incorporeal* than water, he means nothing more than that air *less impedes* than water. And he concludes in general, that by how much less a body resists, and by how much the more subtle it is, by so much the more swiftly is a thing moved through it. In the additional notes the reader will find what is here said illustrated by appropriate diagrams; and in like manner every thing that follows when diagrams are necessary.

⁹ Aristotle having shown, through the first argument, that a vacuum has no ratio to a plenum, inferred from this that if there is motion through a vacuum, an impossibility will happen about motion and time, viz. that a finite motion, will be in no ratio to a finite motion, and that there will be motion which is not in time. But he now says that the motion in a vacuum will be in no ratio, even to that which takes place in the most attenuated medium, because the motion through a vacuum is without time, and he adduces the absurdities which attend such an assertion. He therefore now shows what consequences will result to those who suppose a temporal motion through a vacuum, and who assert that there is a ratio of the motions and times. On the contrary, it follows that there is a ratio of a vacuum to a plenum which he has shown to be impossible; for, as from their being no ratio of a vacuum to a plenum, it follows that neither is there any ratio of motions or times, so from admitting that there is a ratio of motions and times, it follows that there is a ratio of a vacuum to a plenum: for supposing that a motion through a vacuum is effected in a finite time, and assuming that there is the same proportion in the times of the motion, and the media through which the motion passes, he collects an impossibility, viz. that a vacuum will have the same ratio to a plenum, as one time to another, that is to say, as number to number. And not only this, but that a vacuum will have the same ratio to a plenum, as a plenum to a plenum.

2 G

So

F. If, therefore, there is no body in Z, it will pass through it with still greater celerity: but it was in the time F. So that in an equal time it will pass through a plenum and a vacuum. This, however, is impossible. It is evident, therefore, that if there should be any time in which any thing whatever is impelled through a vacuum, this impossibility would happen: for let it be assumed that any thing will pass through a plenum and a vacuum in an equal time: then there will be some body having the same ratio to another as time to time. And to sum up the whole in a few words, the cause of that which happens is manifest; viz. that there is a ratio of every motion to every motion: for it is in time; but there is a ratio of every time to every time, both being finite. But there is no ratio of a vacuum to a plenum. These things, therefore, happen, so far as the media differ through which they are moved¹. But these, according to the excess of the things which are moved. For we see that things which have a greater momentum, either of weight or levity, if in other respects they possess similar figures, are more swiftly carried through an equal space, and that according to the ratio which the magnitudes have to each other. So that this also will be the case in passing through a vacuum. But this is impossible: for through what cause will it be more swiftly impelled? For in a plenum this necessarily happens; since that which is greater more swiftly divides by its force. And that which is borne along, or thrown, either divides by its figure, or by the momentum which it possesses. All things, therefore, will be moved with equal swiftness; but this is impossible. From what has been said, therefore, it is evident that if there is a vacuum,

¹ Aristotle here shows the absurdities which result from supposing any thing to be moved through a vacuum in time: for if there is any ratio of motion to motion, and of time to time, both being finite, but there is no ratio of a vacuum to a plenum, it is evident that the motion through a vacuum will be without time. But if any one supposes that the motion through a vacuum is in time, since time has a ratio to time, and, as are the times in which the motion is performed, so also are the media through which the motion is effected, a vacuum also will have that ratio to a plenum, which a plenum has to a plenum; and a thing will be moved through a vacuum and through a plenum in an equal time. These, therefore, are the consequent absurdities.

the

the contrary will happen to that through which those who say there is a vacuum endeavour to prove its existence; for these fancy there is a vacuum separate and per se, if there is motion according to place. But this is just the same as to say that there is a certain separate place; and that this is impossible, has been already shown.

CHAPTER XII.

To those, also, who consider the affair by itself, it will appear that what is called a vacuum is truly a vacuum: for just as if any one puts a cube into water, as much water will give way as is equal to the cube; the like also happens in air, though it is immanifest to sense. Hence, in every body which may be transferred, so far as it is naturally adapted to be transferred, it is necessary, unless it is compressed, that it should be transferred, either always downward, if its lation is downward, as earth; or upward, if it is fire; or toward both, as air; or of whatever kind the thing may be which is locally situated. In a vacuum, however, this is impossible; for neither is it a body. But through the cube an equal interval may appear to permeate, which was before in a vacuum; just as if neither the water nor the air should yield to the wooden cube, but should permeate it throughout. The cube, however, has as much magnitude as the vacuum contains; which, if it should also be hot or cold, or heavy, or light, would be no less, but would even be more essentially different from all passive qualities, although it is not separate from them. I mean the bulk of the wooden cube. So that though it should be separated from all other things, and should neither be heavy nor light, yet it would occupy an equal vacuum, and would be in the same part of a place and a vacuum equal to itself. In what, therefore, will the body of the cube differ from an equal vacuum and place? And if there are two of this kind, why will not also any thing whatever be

in the same ? This, therefore, is one absurdity and impossibility^a. Further still ; it is evident that the cube when transferred to another place will

^a There is a great order of doctrine here, says Simplicius : for Aristotle first dissolved the arguments which appear to establish a vacuum. Afterward he shows that a vacuum is not the cause of motion, and that on this account it has no subsistence, if through this it is assumed ; and then he turns the argument to the very contrary : for since, they say, if there is motion there is a vacuum, he shows by many arguments that if there is a vacuum there is not motion. In the next place, here proposing the problem by itself, he demonstrates that there is not a vacuum, again deducing the reasoning to an impossibility, i. e. that body will pervade through body, if there is a vacuum, to avoid which consequence they suppose a vacuum : for when one body is placed in another, as for instance, a wooden cube in water or air, it is necessary that what was previously inherent should give place to that which enters, and should either depart upward, if fire, or downward, if earth, or into that which is between, if it is any one of the middle elements. It is also necessary that so much should depart as is equal to the bulk of that which is introduced. This, indeed, is immediately evident in some things, as in a wooden cube placed in a vessel of water : for a quantity of water flows over equal to the bulk of the cube. But in some things this receding is not evident to sense. It may, however, Simplicius adds, be apprehended from certain machines : for in hydraulic organs, when, being full of air, water is poured into them, certain tongues being added to the cavities of the trumpets or pipes through which the wind makes its egress, they infer from the sound the egress of the air through these cavities. But if the body which was previously inherent has no egress whatever, and another is compelled to enter, that which was previously inherent, is either compressed into itself, and being contracted is condensed, so as that the vessel may receive as much of the body which is introduced, as the compression had contracted of the first body, or the vessel will burst rather than receive the other body. These things, therefore, being thus obviously apparent, what shall we say happens in a vacuum when any body is placed in it ? Shall we say that an equal bulk of the vacuum will recede ? But this is ridiculous, if that which is impossible can be said to be ridiculous : for that recedes which has a being. Will it therefore abide ? An equal interval of the vacuum therefore will pervade through the cube. Hence if a vacuum is entirely nothing, we have the object of our investigation ; but if it possesses a certain nature triply divided, how will it pervade through another triply-extended interval ? For this is just as absurd as if water, not departing from the vessel that contains it, should proceed through a stone cube : for why should these be prevented proceeding through each other, but a vacuum not ? Shall we say that these are hot, or white, or heavy, or are replete with certain other passive qualities which happen to them, but that a vacuum is deprived of these ? To assert this, however, would be absurd : for it has been before shown that bodies exist in place according to intervals alone, through which, also, being distant by parts, they require position : for though intervals are inseparable from other accidents, yet their existence, so far as intervals, which definition is naturally adapted to separate, is different. A stone therefore does not occupy so much place because it is white, or black, or heavy,

will have this [a triple dimension] which all other bodies have. So that if it in no respect differs from place, why is it necessary to make a place for bodies, beside the bulk of each, if bulk is impassive? for it contributes nothing, if another equal interval of this kind should be about it. Again, it is necessary that the quality of the vacuum, which is in things that are moved, should be manifest; but now it no where appears within the world: for air is something; but it does not seem to be [a body]. Neither would water appear to be a body if fishes were made of iron: for the judgment of that which is tangible is by the touch. Hence, therefore, it is manifest that there is not a separate vacuum³.

CHAPTER XIII.

THERE are some, however, who fancy that it is evident there is a vacuum, from the rare and the dense: for if there is not the rare and the dense,

heavy, but because its interval is so much; though through its gravity it tends to this place. But when it is in place it is in place according to bulk: for to this alone, among the things belonging to the cube, the magnitude of place is consequent. Hence, though a stone cube should be supposed, all other accidents being separated from it, to be in interval alone, it would nevertheless occupy a space equal to that which it occupied in conjunction with other passive qualities. In what, therefore, will the interval of a cube differ from that of an equal vacuum and place? And if two such are in the same thing, why may there not be many, and infinite? By collecting, therefore, what has been said, we may see the necessity of the demonstration: for if body is in a vacuum, interval will be in interval, bulk in bulk, and body in bodies; for nothing hinders the other accidents of body, since they are incorporeal, from pervading through each other. If, therefore, it is impossible for body to be in body, it is also impossible for it to be in a vacuum. But Aristotle says, that what is called a vacuum is *truly* a vacuum, because it affords no utility whatever.

³ Aristotle adds this second argument tending to the same thing: for if in every body, the interval

dense, it is not possible for things to come together and be compressed. And if this does not take place, either, in short, there will not be motion, or the universe will overflow, as Xuthus said, or air and water will always be changed into the equal. I say, for instance, if air should be generated from a cup of water, at the same time as much water must be generated from equal air; or there must necessarily be a vacuum; for it is not otherwise possible that compression and co-extension can exist ⁴. If, therefore, they call the rare that which has many void separate

interval being separated by definition from the passive qualities, i. e. from the accidents, differs in no respect from a vacuum, and bodies when moved and transferred are moved together with their proper intervals, why are other intervals of the like kind necessary to bodies? for if each, so far as it possesses interval, requires another interval, a vacuum also will require another interval, and that another, and thus we shall proceed to infinity:

⁴ Of the advocates for a vacuum, some say that it is something separate, subsisting by itself, as pervading through all bodies. They also assert, that according to one part of itself it possesses body, but that according to another part it does not, which they say is properly a vacuum, in the same manner as they call that which had this, place. But others assert that a vacuum is every where dispersed in bodies, according to small pores. Aristotle, therefore, having opposed the former opinion, now attacks the latter, viz. the opinion of those who say that if there is rarity and density there is a vacuum. He has indeed already opposed this assertion; for this is one of the four arguments mentioned in the beginning, in support of a vacuum. Now, however, he delivers this opinion more accurately, and adduces the subversion of it: for they not only say that rarity and density are subverted by the subversion of a vacuum, but that if there is not rarity and density there will not, in short, be motion: for there will neither be motion according to place, nor according to increase, nor according to change in quality, and generation: for, say they, motion according to place, is no otherwise produced, than by bodies being contracted and compressed, and affording a place to bodies that are moved through them, in the same manner as to those who walk through a multitude. Things, also, which are increased and extended in bulk, in consequence of others being condensed and contracted into their own void spaces, receive a place for increase. Such things likewise as become larger from smaller, and occupy a larger place, become such through compression and contraction. But there could be no compression, unless a vacuum was dispersed through bodies. In short, rarity not existing, it is not possible for any thing to become greater from lesser; and rarity cannot exist, unless there is a vacuum for the reception of bodies. But neither could change in quality be effected without motion according to place: for it is necessary that things which are moved should approach near to each other, both that which changes, and that which is changed according to quality. They say, therefore, if there is not a vacuum there are not rarity and density; and that if there are not rarity and density, there is not motion: for if there could be motion without the existence of
rarity

parate spaces ; it is evident, that if there cannot be a separate vacuum, as neither is there a place which has an interval of itself, neither can the rare subsist in this manner.

But if they say that there is not a separate vacuum, but that at the same time a vacuum is inherent, this indeed is less impossible. It will happen, however, in the first place, that a vacuum is not the cause of all motion, but only of that which is upward : for the rare is light ; and on this account they say that fire is rare. In the next place, a vacuum will not be the cause of motion as that in which ; but just as bladders, because they are carried upward, carry also that which adheres to them, in like manner a vacuum will have a power of carrying upward. But how is it possible that there can be lation of a vacuum, or a place of a vacuum ? for there would be a vacuum of a vacuum, into which it would be carried. Again, how can they assign the cause why a heavy body tends downward ? And it is manifest, if by how much the more rare a body is, and contains void spaces, by so much the more it will be impelled upward, so that if, in short, there is a vacuum, it will

rarity and density, the universe would fluctuate, as Xuthus the Pythagorean says, and would cause an inundation, and be more widely extended, just as the seas, through the waves, inundate the shores. They add, that this will happen in things which are locally moved in a right line, through those that are moved impelling those that are near them ; and in a similar manner it will happen in things that are increased, because there is no compression through which a place may be afforded to things which accede : for in things which are moved in a circle a translation into a contrary part is alone effected. And when any condensed body is changed into one more rare, it is again necessary that it should be propelled, and cause an inundation. But again, this inundation would not be produced unless there was a separate vacuum external to the universe. So that the argument again comes to the same thing : for a vacuum being subverted, compression is subverted ; and this being subverted, a vacuum is introduced : for the universe will not overflow into body, but entirely into a vacuum.

Simplicius adds, that there is also another fictitious hypothesis concerning generations : for it may be said, that when the water in a cup is changed into greater air, some other air equal to this changing into the water that was in the cup, preserves the equality. Or that fire sometimes being changed into air preserves the analogy. If, therefore, it is absurd to say that the universe inundates, and that equal mutations are produced, it is necessary that a vacuum should be mingled in bodies ; for thus alone will there be compression and rarefaction, and none of the above-mentioned absurdities will follow.

be

be most rapidly moved. Perhaps, however, it is impossible for a vacuum to be moved. And the reason is the same; because, as in a vacuum, all things are immoveable, so likewise a vacuum is immoveable: for the celerities of a vacuum and a solid cannot be compared with each other ⁵.

Since,

⁵ Aristotle here again divides a vacuum into the separable and inseparable. And he calls, indeed, the separable vacuum continued interval, subsisting by itself, and which is capable of receiving body, but does not receive it; but he denominates the vacuum which is not separable that which is dispersed in bodies: for these were the two hypotheses of the advocates for a vacuum. But he now divides the vacuum which is dispersed in bodies, into that which is dispersed according to large, and into that which is not dispersed according to large parts. And he says, that with respect to those who speak of the rare as that which has many void separate spaces i. e. circumscriptions, it has been already shown that it is impossible there can be such a vacuum, so as that any thing can be moved through it. The same thing also was shown when it was demonstrated that place cannot be any separable interval. And in short, neither can the rare subsist in this manner. But if they speak of the rare, as if a vacuum were dispersed through the small pores of bodies, and is not separable from them, the hypothesis will indeed be more probable, and will appear to be less impossible. The absurdities, however, mentioned by Aristotle will happen: for in the first place a vacuum of this kind will not be the cause of all motion; but if of any, of the motion which is upward: for the rare which appears to be rare, through such a vacuum as this in it, is light, and tends upward; on which account they also say that fire is rare. What therefore will be the cause of motion downward?

In the second place, if a vacuum naturally tends upward, it will evidently be in the upper region as in place. The upper region therefore will be a vacuum; so that there will be a vacuum in a vacuum. After this, Aristotle adduces the absurdity consequent to those who say that a vacuum tends on high. For let this be the cause of motion upward; but what will they say of that which is heavy, and how will they assign the cause of its tendency downward? For a vacuum will not be the cause of this; since it, and the bodies in which it is, will not be attracted downward. Hence a vacuum is not simply the cause of local motion; but something else is the cause both of upward and downward motion. Aristotle also adds another absurdity from supposing a vacuum to be the cause of the upward lation of bodies: for if this is the cause of upward lation, as elevating bodies together with itself, a vacuum will evidently be by itself moved most rapidly, since in its motion upward it also carries bodies. And what absurdity, it may be said, is there in this? Because, in short, it is impossible for a vacuum to be moved. Aristotle adds, that the reason of this is the same now as that which before showed that there will not be any motion in a vacuum, because a vacuum has no ratio to a plenum: for as is the time in which a vacuum is moved, to the time in which a light body is moved, so is the vacuum to the body. But there is no ratio of a vacuum to a body, as neither
is

Since, however, we say that there is not a vacuum, and it is truly doubted of the rest, hence, either there will not be motion, unless there is condensation and rarefaction, or the universe will overflow, or there will always be an equal quantity of water from air, and of air from water: for it is evident that more air will be produced from water. It is necessary, therefore, unless there is compression, or that which adheres is expelled, that what is last must be made to overflow, or an equal quantity of air must in some other place be changed into water, in order that the whole bulk of the universe may be equal; or if this be not admitted, it will follow that nothing can be moved; for some body being always transferred, this will happen, unless it revolves in a circle. But motion is not always in a circle, but likewise in a right line. These, therefore, through arguments of this kind, assert that there is a vacuum. *We, however, say, from the things which are admitted, that there is one matter of contraries, viz. of the hot and the cold, and of other contraries; also that from what is in capacity, that which is in energy is produced; that matter is not separate, but is different in essence; and that the matter, for instance, of colour, of the hot and of the cold, is one in number. The matter also of body, of the great and of the small, is the same. But this is manifest: for when air is generated from water, the same matter, not assuming any thing else, is produced; but that which was in capacity becomes in energy. And again, in like manner, water is generated from air; a change being made at one time into magnitude from parvitude, and at another from parvitude into magnitude. In a similar manner, therefore, if air passes from a greater into a less quantity, and from a less into a greater, the matter which is in capacity becomes both: for as the same matter from being cold becomes hot, and from being hot, cold, because it was in capacity so*

is there any ratio of nothing to number. A vacuum therefore will not be moved in time: and hence it will not be moved. But Aristotle says *perhaps* it is impossible for a vacuum to be moved, because a light and rare body being properly assumed, what is asserted is indubitable; but that which is called light by them, is not from its own nature light, but from being mingled with a vacuum.

2 H

likewise

likewise from being hot it becomes more hot, no part of the matter being made hot which was not hot before, when there was less heat. Just as if the circumference and convexity of a greater circle should become the circumference of a less, whether it be the same or another, the convexity would not be in any part which was not convex but straight; for it is not less or more by intermission. Nor can any magnitude of flame be assumed in which both whiteness and heat are not inherent. Thus, therefore, is the prior heat with reference to the posterior. So that the magnitude and parvitude of the sensible bulk is extended, the matter not assuming any thing; but because the matter is in capacity to both. Hence the same thing is both dense and rare, and there is one matter of these ⁶. The dense

⁶ Aristotle admits that there is compression in bodies, but does not grant that on this account there is a vacuum, but after another manner assigns density and rarity as the cause, from the subject matter of bodies. Very properly, therefore, does Aristotle announce that he shall speak from things which are admitted, and have the relation of a subject *. For in the first book it is said that matter is a certain subject to contraries. There is also the same matter of the hot and the cold, and in like manner of the moist and the dry, and other contraries, which changes from one to the other, in consequence of always being in energy one of the contraries, and in capacity the other. And in subsistence, indeed, matter is never separate from one of the contraries, but in its own proper definition, and abstractedly considered it is different from these. Remaining also numerically the same it receives each of the contraries. As, therefore, of contrary qualities the subject matter is the same in number, as for instance, the matter of the hot and the cold, the white and the black, the sweet and the bitter; so likewise of the contraries in or about quantity, and together with the quantity of the great and the small in bodies, the recipient matter is the same in number: for if matter had in itself any magnitude whatever, it would not receive the contrary to that which it possesses according to nature, neither the greater, nor the less: as neither if it were naturally white would it receive blackness. But as it is deprived of other forms, so likewise of magnitude and body; and remaining the same in number it receives the contraries in magnitude. This is evident from the mutation from water into air: for another matter is not introduced when air is generated from water: for if the then existing matter was in capacity air, when it changes from a subsistence in capacity to a subsistence in energy, then air is generated, matter remaining the same in number, which before was water. A greater bulk also is produced the former being smaller, neither the matter being mingled, nor a vacuum acceding: for the same

* For in the original Aristotle says, "We however say from subjects," *ημεις δε λεγομεν εκ των υποκειμενων.*

matter

dense also is heavy ; but the rare, light ; for there are two things in each, that is, in the rare and the dense : for the heavy and the hard appear

matter would no longer be air in capacity if it became air from the mixture of any thing. In like manner, though water should be generated from air, it would be changed into a less bulk, matter by no means departing. But Aristotle makes this more evident by considering air as passing from a greater to a less, and from a less to a greater quantity, nothing either acceding or departing, but the air itself becoming condensed and attenuated, the matter in it possessing the power of becoming both, and changing from a subsistence in capacity to a subsistence in energy ; thus also passing from a greater to a less bulk, and from a less to a greater. Since however it does not change from a privation of magnitude into magnitude, or the contrary, but from the greater to the less, or from the less to the greater, which is similar to the more and the less in qualities ; on this account Aristotle shows in other qualities also, that as the same subject changes into contraries, so likewise into the more and the less : for as the same matter from being hot becomes cold, and from being cold, hot, because it was both in capacity, so also from being hot it becomes more hot : for it does not change in such a manner as if certain parts of the subject not being formerly hot now became hot, as if that which is less hot, being such, mingled with things which are not hot ; since when a body was less hot all the matter was similarly such ; and when it became more hot, all the matter of it was similarly increased in heat. As, therefore, in these, so likewise in a body which is rarified and condensed, and which becomes greater and less, it is the same matter which receives both, and not any thing externally acceding or departing, as those assert who introduce a vacuum ; for these are ignorant of the nature of matter, which remaining the same receives contraries. Aristotle, therefore, having shown in other qualities that the same subject remaining receives the more and the less, shows this also in figure ; since though it is quality, yet it possesses an abundant communion with magnitude and quantity. for if a part of the periphery of a larger circle is bent so as to compose that of a less, it does not form a circle because some parts of the periphery which before were not curved but right-lined, are now bent so as to compose a less circumference, but because parts which were less become more curved. Although, therefore, it should be said to be the same periphery which before was curved, but afterwards became more curved, or though the former should be said to be one periphery, and the latter another, this is evident, that the curvature does not accede as to a right line, but that which was less becomes more curved : for in short, the more is said to be less, not in a certain form failing in that which is said to be less, and not failing in that which is said to be more ; since a certain form is not introduced, but the whole suffers intension or remission, as that which is more hot, or more sweet, or more white. Thus also in the parvitude and magnitude of a sensible bulk, the matter is not extended by receiving another magnitude, nor contracted by rejecting another, as those assert who introduce a vacuum as the cause, but the same subject remaining which was great in capacity, becomes, from being less, great in energy : for this it is, for the subject nature to be the recipient of contraries, which Aristotle manifests by asserting

appear to be dense ; and the contraries appear to be rare, viz. the light, and the soft. But the heavy and the hard are discordant in lead and iron⁷. From what has been said, therefore, it is evident that there is not a separate vacuum, (whether simply considered, or as in that which is rare) nor a vacuum in capacity, unless some one in short, should be willing to call a vacuum that which is the cause of lation. But thus the matter of the heavy and light, so far as it is such, will be that vacuum ; for the dense and the rare, according to this contrariety, are effective of lation ; but according to the hard and the soft, they have the power of producing passion and impassivity, and not lation, but rather change according to quality⁸. After this manner, therefore, let it be determined

that matter is these in capacity. But as flame is both hot and white according to every part, in like manner also it is rare according to every part, and not according to the mixture of a vacuum. Thus also heat, and the former heat with respect to the posterior, possesses the more and the less, not by any thing acceding or departing : for a certain form does not accede or depart, but the same thing suffers intension or remission. But he calls material, *sensible bulk*, in contradistinction to that which is intelligible and mathematical : for it is the sensible and material bulk which is extended and contracted. It must however be observed, that magnitude is a certain form, and that the great and the small are formal differences of magnitude ; for they are reasons, or productive principles, which giving completion to forms proceed into matter : for as animals and plants derive their completion from the white and the black, the hot and the cold, and things of this kind, so likewise from their proper magnitude. And hence in every animal the greatest and the least magnitude have certain boundaries.

⁷ Aristotle says that the heavy and the hard are discordant in lead and iron, because lead, though it is softer than iron, is at the same time heavier and rarer than it, in an equal bulk. Nor does he add this in vain, but for the purpose of indicating that the rare is also itself a certain form not subsisting according to the intervention of a greater vacuum : for if this were the case it would also be entirely lighter. Now however it does not appear to be so, since lead which is rarer and softer than iron is at the same time heavier than it.

⁸ Of the advocates for a vacuum, some contend that it is always separate in energy from bodies, but others in capacity, as being generated and corrupted in bodies. And of those who say that it is separate in energy, some assert that it is simply and by itself external to bodies, as those who place a vacuum beyond the world ; but others assert that it subsists separate, indeed, and as in energy, yet is not by itself, but is dispersed in bodies, and cuts off their continuity ; which also becomes the cause of rarity. Aristotle has demonstrated, therefore, that there is not a vacuum, neither as subsisting by itself, nor as dispersed in bodies ; so that it is not according to any mode, as that

terminated concerning a vacuum, how it subsists, and how it does not subsist⁹.

CHAP.

that which is in energy, and separate. But when Aristotle says, that neither is there a vacuum in capacity, he means that which is not yet a vacuum, but which becomes different according to the interval of bodies; just as we say that pores are produced, in which there is always something more attenuated than the body which contains them. It is also evident, that if a vacuum in energy, has not a progression into beings, neither will that which is in capacity: for that which is in capacity is every where that which is naturally adapted to be led into energy.

⁹ In the beginning of the discussion about a vacuum, Aristotle proposed to investigate whether it is, or not, how it is, and what it is, and now concluding the discussion he says, let it be thus determined how it subsists, and how it does not subsist: for it is not as that which may be separated in capacity, if it should be said that a vacuum is an interval deprived of body, either in capacity or energy. But if any one should call a vacuum the cause of motion as matter, after this manner, he will admit that there is a vacuum.

Simplicius also informs us that Straton Lampsacenus endeavoured to show that there is a vacuum which intercepts every body, so as to prevent its continuity: for he says that light would not be able to pervade through water or air, or any other body, nor would heat, or any other corporeal power whatever, unless there were such a vacuum: for how could the rays of the sun penetrate to the bottom of a vessel. For if moisture had not pores, but the splendors pervaded it by force, it would happen that full vessels would overflow, and some of the rays would not be reflected to the upper part, but others pervade downward. This however, Simplicius adds, may be solved from Peripatetic hypotheses, according to which, heat and other corporeal powers, even also light, being incorporeal, they do not require a void subject interval, in order to their subsistence and penetration; but they subsist in bodies without increasing their bulk. But if it should be said that light is a body, and a material body, adducing as a proof of this the sublunary light of the sun, reflexions, and the resistance of solids, because passive matter is mingled with them; even thus through rarity and density it is possible to solve the doubt: for nothing hinders bodies that are so rare as air and water, when they are condensed, from affording a place to the penetration of some of the rays. But such rays as fall into more dense parts, these are reflected. These doubts therefore, may perhaps thus be solved, there being nothing in them to impede the subversion of a real vacuum; but perhaps what as yet been said does not subvert the existence of an interval which is by itself the receptacle of bodies, and which possesses aptitudes to the differences of bodies. For in condensations and rarefactions, it is necessary that there should be a certain receptacle, and another interval different from that of bodies, which may receive what is rarefied: for it is not effected in the body which approaches near, but in the interval from which the body that accedes, being impelled, or compressed, departs. Plato also appears to have rejected that which is in reality a vacuum, and an interval deprived of all body, and also to have assigned the final cause of this: for in his *Timæus* he says, "The period of the universe being orbicular, since it comprehends the genera of things, and such as from natural adaptation wish to coalesce, compresses all things

CHAPTER XIV.

It now remains, as consequent to what has been said, that we should speak concerning time¹. In the first place, then, it will be well to doubt

things, and does not suffer any void space to be left." For, in short, the existence of this vacuum in energy subverts the continuity and sympathy of the universe, and is of no real use.

¹ That a discourse concerning motion is most proper to a physiologist, is manifest, since nature is a principle of motion. But if all motion is in time, and some philosophers have been of opinion that time is motion itself, but others that it is something belonging to motion, it is evident that a discourse concerning time is necessary to a physiologist: for time is perspicuous and obvious to all men, though an accurate knowledge of its nature is concealed from the multitude. It likewise follows every thing natural and in generation, in the same manner as motion. Hence a discourse concerning time deserves the attention of the physiologist. But Aristotle having spoken concerning motion in the third book, and conjoined with it the consideration of the infinite, since motion is continued, and the continued is divisible to infinity, and is either infinite or finite,—this being the case, since all motion is produced in place and time, and since he has spoken concerning place, and has added a discourse about a vacuum, he very properly says, that the discussion of time is consequent to what has been said.

But time is attended with something wonderful, partly in common with other things, and partly peculiar to itself: for as colour and motion have an obvious existence, but it is different to apprehend the nature of their essence, thus also the existence of time is manifest not only to the wise, but likewise to all men: for we all speak of the younger and older, of yesterday, and to day, of to-morrow and formerly, and of this year, and the following. And what man appears to be ignorant of days and nights, of months and years? But if it is asked what time is, the wisest man can scarcely answer the question. And this, indeed, it has in common with other things; but it has this peculiar to itself, that its essence cannot be apprehended by sense, though it possesses certain auxiliaries from sense: for older and younger are not sensible objects, nor yesterday and to day, though at the same time they appear very evident to all men. So dubious, indeed, has the investigation of its essence appeared to be, that some being darkened by it have entirely denied the existence of time though it is so conspicuous. It is however absurd to subvert the existence of a thing through ignorance of its essence: for there are many things of which we are

doubt concerning it, through ² exoteric reasons, whether it ranks among beings, or among non-entities; and in the next place to consider what its nature is. That time, therefore, in short, is not, or that it scarcely and obscurely is, may be suspected from the following considerations. One part of it was, and is not; another part is future, and is not yet: but from these parts, infinite time, and which is always assumed, is composed. That, however, which is composed from things that are not, does not appear to be ever capable of participating of essence. To which may be added, it is necessary with respect to every thing partible, if it should have a subsistence, that either some or all of its parts should be when it is. But of time, some of the parts are past, others are future, and no part *is*, in consequence of time being divisible. But *the now*, or an instant, is not a part of time: for a part measures; and it is necessary that the whole should be composed from the parts; but time does not appear to be composed from instants. Besides, with respect to this now which appears to bound and separate the past and the future, whether it always remains one and the same, or is another and another, it is not easy to see: for if it is always another and another, but there is no part of time which is at once another and another, and of which one part does not comprehend, and another is comprehended, just as the less is comprehended by the greater time; but that which now is not, but was before, must necessarily once have perished; if this be the case, instants cannot subsist together with each other, but the prior instant must always have necessarily perished. It is not possible, therefore, that it can have perished in itself, because it then is. Neither is it possible, that a prior now can perish in another now: for let it be impossible for instants to adhere to each other in the same manner as it is impossible for a point to adhere to a point. If, therefore, it does not perish in that which is successive, but in an-

are not only ignorant *what* they are, but likewise *whether* they are, and yet they nevertheless rank among beings.

² *Exoteric* reasons, says Simplicius, are such as are common, and are produced from opinion, but are not demonstrative and acroamatic.

other,

ther, it will at one and the same time be in the intermediate instants which are infinite. But this is impossible³. Neither is it possible for the same instant always to remain: for there is not one boundary of any

³ Aristotle first assuming *the now* as being, demonstrates that it is not a part of time, and afterward endeavours to show that neither *the now* which appears to bound the past and the future, and to separate them from each other, is any thing: for it is necessary if the now is, either that it should be the same or another and another. If therefore it is neither the same, nor another and another, it evidently is not. In the first place, therefore, he shows that it is not another and another, as follows: if the now is another and another, it is necessary that the former now should be corrupted. But it is impossible for the now to be corrupted. The now, therefore, is not another and another. And Aristotle indeed shows the conclusion from the prior and posterior now not subsisting together: for it is impossible for two times to subsist together, unless the one is more, and the other less, and the one comprehends, but the other is comprehended; as a year with respect to a month in it, and a month with respect to a day in it: for because the day of this month is present, the month also is said to be present. And thus they appear to subsist together. But it is not possible in *nows* or *instants*, that the one should contain, and the other be contained, or that the one should be a part, and the other a whole, or that the one should be more than the other: for they are not quantities, but the beginnings of quantities; and the more is in quantities. Hence, they cannot subsist together, but it is necessary, if the now is another and another, that the former now should be corrupted: for that which having been before is not afterwards, is corrupted.

In the next place, Aristotle proves the assumption, when he says, it is impossible for the now to perish; and he proves this from division: for if it were corrupted, since that which is corrupted is corrupted in time, it must either be corrupted in itself, or in another now. But it is impossible it should be corrupted in itself; for it then is. If therefore it is corrupted in another, since *nows* or *instants* do not adhere to each other, for time is not composed of instants, which he now supposes, but demonstrates afterwards; if this be the case, it will be corrupted in another now, which exists between it and that in which it was. But the intermediate *nows* are time, just as a line is between points. It was therefore in the intermediate time. But in the intermediate time there are infinite *nows*, if all time is divisible to infinity, as will be shown, and is divided according to *nows*. The now, therefore, will subsist together with those infinite *nows* which are in the intermediate time. But neither is the *now* corrupted in the intermediate time: for if this were the case, it would be requisite that some part of the *now* should be corrupted in each part of it. But the *now* is impartible. So that it will neither be corrupted in an instant, nor in the intermediate time. Besides, if the *now* is corrupted in some time different from itself, either that time is a *now*, and thus two *nows* will subsist together, that which is corrupted, and that in which it is corrupted; or it is time, and is either past or future. But if past time, the now was corrupted

any finite divisible thing, neither if it should be continuous to one thing, nor if to many. But the now is a boundary; and a finite time may be assumed. Again, if a simultaneous subsistence according to time, and to be neither prior nor posterior, is nothing else than to be in the same, and in an instant; in this case, if those things which are prior and posterior are in the same now, the transactions of a thousand years past will subsist together with those which are accomplished to day, and one thing will not be prior or posterior to another. Such, then, are the doubts concerning the particulars which belong to time .

CHAPTER XV.

But what time is, and what is its nature, from what has been delivered, is similarly immanifest with the things which we have before discussed :
for

corrupted before it existed; and if future time, the now will not yet be corrupted, but will always be about to be corrupted: for that in which it is corrupted, is always about to be. And, in short, time is past and future. But if the now were corrupted in time, the impartible would be co-extended with the partible.

³ Aristotle having shown that the now cannot be another and another, in the next place shows, through two arguments, that neither can the same now according to number always remain, if there is not one boundary of any continued finite quantity, whether it is continued according to one dimension, as a line, or according to two, as a superficies, or according to three as a body. But a line is bounded by two points, a superficies, by as many as the lines which contain it, and a body by as many as its comprehending superficies. This being the case, it is evident that *the now*, since it is the boundary of a finite time, will not be one and the same: for every time which we may assume, though it should be the least finite time, will have one now in the beginning of it, and another in the end: for each way it is bounded by *the now*; so that *the now* does not always remain one and the same. But it is necessary to assume a finite time, as that which is continued in a right line, of which kind also is time: for such things as these have not one boundary ;

for some say that it is the motion of the universe; but others, that it is the sphere itself. A part, however, of the revolution of the universe is a certain time; but it is not a revolution: for that which is assumed is a part of the revolution, and not the revolution. Again, if there were many heavens time would be similarly the motion of any one of these. So that there would be many times subsisting together. But the sphere of the universe seemed to those who made that assertion to be time, because all things are in time, and in the sphere of the universe. This assertion, however, is so stupid that it is not requisite to consider the impossibilities with which it is attended ⁴. But since time especially appears

dary; though there appears to be one boundary of a sphere and a circle; for they are comprehended by one superficies, and one line.

In the next place, Aristotle shows by another argument that the same *now* cannot always remain: for if there is always the same *now*, all things will be in the same *now*, and there will neither be prior nor posterior. But things which thus subsist subsist together. Hence the most ancient things will exist together with the most recent; for both are in the same *now*.

⁴ Aristotle having shown from the above arguments that it is immanifest whether time has any existence, in the next place says, that he who attempts to consider it from what has been delivered will find that it is similarly immanifest with what has been before discussed, what time is, and what is its nature. It is immanifest, therefore, what it is, since some said that time is the motion and revolution of the universe, which Eudemus, Theophrastus, and Alexander, says Simplicius, conceived to be the opinion of Plato. But others said that it is the sphere of the heavens, as the Pythagoreans, who perhaps derived this opinion from the assertion of *Archytas*, who said that *universal time is the interval of the nature of the universe*. Some of the Stoics also were of this opinion. But others said that it is motion simply: for Aristotle relates three opinions concerning time, omitting the more mythological, in which, from division, he comprehends all in those assumed: for time is either motion, or that which is first moved, which is the sphere of the universe. And if it is motion, it is either every motion, or the motion of the universe: for the conception of time does not admit permanency, or any thing belonging to permanency. Aristotle therefore says but little in opposition to those who assert time to be the circulation of the heavens; but he speaks more copiously against those who say that time is simply the same with motion; and he does not think the opinion, that time is the sphere of the universe, worthy of contradiction, as being exceedingly absurd: for they appear to have called time the heavens because all things are in the heavens, and all things are in time. And it is evident that those who are of this opinion are in the first place ignorant of the ambiguity attending the subsistence of one thing in another, which Aristotle has well defined in his discussion of place: for a subsistence as in time is one thing, as in place, another, and as in a whole, another. And in the next place the syllogisms

appears to be motion and mutation, this must be considered. The mutation, therefore, and motion of every thing, is in that alone which is changed

sylogisms are unskillfully formed; and hence he calls this opinion more stupid: for they syllogize in the second figure*, from two affirmatives, that heaven, or the sphere of the universe, is that in which all things are contained, and time is that in which all things are contained; and on this account time is the sphere of the universe. But perhaps it might be possible to conclude this in the first figure. Heaven is that in which all things are contained; but that in which all things are contained is time. In the next place, the parts of time are the past and the future; but these are not the parts of a sphere. Time, also, has its subsistence in *becoming to be*, but this is not the case with a sphere. And the parts of a sphere are not every where, but time is every where: for in the *same* sphere the older and the younger are contained, but not in the *same* time. The sphere of the universe, likewise, is a certain corporeal essence, but time is not. This, however, as a most stupid hypothesis, Aristotle does not think worthy of discussion.

But he opposes the other, which says, that time is the motion and revolution of the universe: for a part of the circulation and revolution of the universe, as for instance, a day, is, according to the authors of this hypothesis, time, but is not a circulation: for a part of a revolution, is neither a revolution, nor a circulation; from which, Aristotle infers that time is not the circulation of the universe: for if a certain time is a part of the revolution, all time therefore is not the revolution. But that a part of the circulation is not circulation, though it be time, Aristotle evinces, when he says, "a part, however, of the revolution of the universe is a certain time; but it is not a revolution:" for a revolution is a motion from the same to the same. And then the universe is said to have made a revolution when each of its parts is restored from the same to the same. But the aforesaid time, such as day or night, is a part of the circulation but is not a circulation. And if you assume both together, viz. day and night, this time is more than the circulation of the universe, through the motion of the sun †.

* This is absurd, because in the second figure the major and minor terms always consist of a negative and an affirmative.

† An astronomic natural day, of which Simplicius is here speaking, is that space of time in which an entire revolution of the equator is performed, together with a portion of the same equator, corresponding to that portion of the ecliptic which the sun in the mean time runs through: for if the sun, indeed, were not moved through the ecliptic, and if it returned with the same point of the equator with which it departs from meridian to meridian, then one entire revolution of the equator would precisely measure a day; but because the sun continually advances, and daily, by nearly one degree towards the east, it comes to pass, that the point of the equator returning with which the sun departed to the meridian, the sun returns with nearly one degree later.

This arises partly on account of the obliquity of the zodiac, and partly on account of the excentricity: for through this at one time, something more, and at another something less than one degree must be added. Hence, some inequality of days is produced.

changed, or wherever that may be which is moved and changed. But time is similarly every where, and with all things. Besides, every mutation

After this, Aristotle adduces another argument against this opinion: for if there were many heavens, says he, that is worlds, as the followers of Democritus suppose, the revolution of each of these would be time; and thus there would be many times existing together, which is impossible: for it is possible that many motions may subsist together; but it is impossible for many times to be co-existent: for the same now is every where the same.

Simplicius further observes, that Alexander, endeavouring to show that it was the opinion of Plato, that time is the motion of the heavens, in the first place adduces Eudemus as an evidence of the truth of this: for Eudemus, according to Alexander, says "Plato adopted this opinion, and very absurdly; for he says, that prior to the generation of the universe there was confused and disorderly motion. He does not however, connect line with line, since all motion is in time." In the next place, he does not admit those who assert that Plato, in conformity to the opinion of Aristotle, says, that time is the number of motion, when in the *Timæus* he calls time an eternal image, proceeding according to number: for he does not, says he, call time the number of motion, but that which is according to the number of motion, which is according to order. Thus far Alexander.

Simplicius, however, with his usual acuteness, answers him as follows: In the first place, whence came Eudemus to suspect that Plato called time the circulation of the heavens? In the next place, the absurdity which Alexander adduces does not happen to Plato, that there is time prior to time: for if, says Alexander, all motion is in time, it is evident that confused and disorderly motion also will be in time. If, therefore, such a motion was prior to the generation of the universe, time also was prior to the circulation of the heavens. Hence, if there was this time, time will be prior to time. In answer to this, it is necessary to observe, that we shall then understand how Plato says, that time is an eternal image moving according to number, when we understand Aristotle's Definition of time, that it is the number of motion. And Eudemus appears to have conceived that Plato called time the circulation of the heavens, from the following passage in the *Timæus*: "From hence, therefore, night and day arose; and through these revolving bodies the period of one most wise circulation was produced. And *month* indeed was generated, when the moon having run through her circle passed into conjunction with the sun. But year, when the sun had completely wandered round his orb. As to the periods of the other stars, they are not understood except by a very few of mankind; nor do the multitude distinguish them by any peculiar appellation; nor do they measure them with relation to each other, regarding the numbers adapted to this purpose. Hence it may be said they are ignorant that the wanderings of these bodies are in reality time." And thus he appears to say that each period is a certain time, and that the one period of the universe is the whole of time: for he says, "that the perfect number of time will then accomplish a perfect year, when the eight circulations, concurring in their courses with each other, become bounded by the same

tation is swifter and slower ; but time is not : for the slow and the swift are defined by time ; since that is swift which is much moved in a short time ; and that is slow which is but a little moved in a long time. But time is not defined by time, neither because it is a certain quan-

same extremity ; being at the same time measured by the circle subsisting according to sameness." That Plato, however, does not call time the motion of the celestial orbs, but the measure of motion, is evident from the above quotations : for when he says that the multitude in consequence of not knowing that the periods of the heavenly bodies are measured by numbers, are also ignorant that the wanderings of these bodies are time, he evidently shows that time possesses its essence through being the measure of motions.

But we shall still more clearly learn that Plato does not call motion and time the same, if we find, that when the universe was now moving according to reason, through the participation of soul, he then introduces time as the measure of motion : for he thus speaks in the *Timæus*, after the animation of the corporeal nature of the universe : " But when the generating Father understood that this generated resemblance of the eternal Gods moved and lived, he was delighted with his work, and in consequence of this delight considered how he might fabricate it still more similar to its exemplar. Hence as that is an eternal animal, he endeavoured to render this universe such to the utmost of his ability. The nature indeed of the animal its paradigm is eternal, and this it is impossible to adapt perfectly to a generated effect. Hence he determined by a dianoëtic energy to produce a certain moveable image of eternity : and thus while he was distributing and adorning the universe he at the same time formed an eternal image flowing according to number of eternity abiding in one, and which receives from us the appellation of time". And it is evident indeed, that though all things were constituted at once by the demiurgus, the narration indicates their order with respect to each other : for if time was generated together with the universe, as is evident from what Plato says shortly after, it follows that the one did not precede the other in time. And how can any part of time be prior to time ? But if the demiurgus introduced time to the universe when it was already in motion, it is evident that time and motion, according to Plato, are not the same ; but in a certain respect time is perfective of motion. And, when Plato says, that the whole of a visible nature was moved in a confused and disordered manner prior to the generation of the world, he does not mean, as the words seem to indicate, that a disorderly sensible nature once presubstituted in time, and that the demiurgus afterwards, as if rising from a certain sleep, arranged it in order : for if he fabricated the world through goodness, and his goodness is always perfect and in energy, and *essentially* imparts good to all things, demiurgic providence is evidently consubstantial with the goodness of Deity. But Plato in thus speaking indicates that the demiurgus is the cause of *order and ornament* to the universe, which considered in itself, independent of the supernatural powers which it receives from an intellectual and divine soul, is full of a confused and disorderly motion. If, therefore, all motion is in time, it also is evident that the confused and disorderly time subsisting with such a motion, is nothing more than a certain adumbration of perfect time according to the hypothesis of the narration.

tity,

tity, nor because it is a certain quality. It is evident, therefore, that time is not motion ⁵. But there is no difference whether at present we say it is not motion, or that it is not mutation.

CHAPTER XVI.

NEITHER, however, is time without mutation: for when there is no change in our thoughts, or if there is, but we are ignorant of it, then it does not appear to us that any time has elapsed; as neither did it to those in Sardis who are fabled to have slept with the heroes when they awoke: for they conjoined the prior with the posterior now, and made them to be one, not taking into account the intermediate time, through not having had a sensible perception of it. As, therefore, if there were no other now, but one and the same, there would be no time, thus also when it is concealed from us that there is a different time, then the intermediate time does not appear to exist. If, therefore, it then happens to us that we do not imagine there is time, when we do not distinguish any mutation, but the soul appears to remain in one and an indivisible, but when we sensibly perceive and distinguish mutation, then we say there has been time; if this be the case, it is evident that time is not without motion and mutation ⁶. But since we investigate

⁵ Plotinus also adds another argument, to show that time is not motion: for motion, says he, may cease and fail, but time cannot. But though Aristotle here indicates that he uses indifferently *motus* and *mutatio*, yet he demonstrates in the fifth book of this treatise, that they are not the same: for he shows that generation and corruption are mutation, but not motion.

⁶ Aristotle, says Simplicius, having shown that time is not motion, in the next place shows that neither is it without but entirely with motion: for it is the province of one who is endued with science, to show in things which are allied by nature, in what they differ, and what they have in common. But, that time cannot exist, and that it is not possible to assume it, without

to investigate what time is, let us assume beginning from hence, what it is belonging to motion ; for, together with motion, we have also a sensible perception

of motion, he demonstrates as follows : Time without motion cannot be perceived by sense. That which cannot be sensibly perceived without motion, cannot be assumed without motion ; because it entirely subsists with motion. Time, therefore, subsists, together with and cannot be conceived without motion. But that it cannot be sensibly perceived without motion he demonstrates from this, that when there is no change in our thoughts, or when we are ignorant that there is any change in them, then we do not think that any time has elapsed, as being unable to form a conception of time without a conception of motion. And that this is the case, is evident to us from sleep : for when we wake, after having slept without perturbation, we have no conception of the intermediate time. This also is evident in strenuous intellectual perceptions, or actions : for the mind being attentive to these, we do not think that there has been any intermediate time, though frequently a long time has elapsed : for not from being moved ourselves, but from receiving a conception of motion, we, together with this, conceive time as being con-subsistent with motion. Hence, Aristotle says, when there is no change in our thoughts, because, in consequence of the mental perception of motion though the mind is immoveable, the co-sensation of time also is produced : for on the contrary we may see that those who when suffering pain, or who want or desire any thing, in consequence of conceiving that a motion of this kind is much, conceive also that the time is much. Hence, some one says in the comedy,

'Twill surely ne'er be day,
Yet long ago I heard the cock.

And another says,

Those who desire grow daily old.

But that those who do not mentally follow motion have not any co-sensation of time, we know every day, as I have said, from sleep. Aristotle, however, confirms this from that longer sleep which those in the island of Sardis are fabled to have slept with the heroes : for the nine sons of Hercules, which he had from the daughters of the Thespian Thestia, dying in Sardis, it was said, till the time of Aristotle, and perhaps of Alexander the Interpreter of Aristotle, that their bodies remained incorruptible and entire, and exhibited the appearance of men asleep.

The following singular circumstance, is also said by Eudemus to have happened at Athens. At a public sacrifice, certain persons had a banquet in a subterraneous cavern, and being intoxicated, they and their servants slept two days and nights. One of them, indeed, happened to wake, but as soon as he saw the stars, again returned to sleep. On the following day when they awoke, that part of the festival called *Koureotis*, was celebrated, from which they understood what had happened. But the *Koureotis* was the third day of the festival called *Apatouris* ; just as the first

perception of time: for even in darkness, and when we are passive to nothing through the body, if there is nevertheless a certain *motion*⁷ in the soul, there immediately also appears to have been some time. But when likewise some time appears to have elapsed, together with this, there seems also to have been some motion. So that time is either motion, or something belonging to motion. Since, therefore, it is not motion, it is necessary that it should be something belonging to motion. But since that which is moved, is moved from something to something, and since all magnitude is continuous; motion is consequent to magnitude: for because magnitude is continuous, motion also is continuous; and because motion, also time: for as much motion as there was, so much time likewise always appears to have elapsed. But prior and posterior primarily subsist in place; and here indeed in the position of the parts. Since, however, there are prior and posterior in magnitude, it is also necessary that these should be in motion, analogous to the prior and posterior which are there. Moreover, there are also prior and posterior in time, because one of these is always consequent to the other. But the prior and posterior of these do not in reality differ from motion, but only in essence and definition. We likewise know time when we give a boundary to motion, distinguishing prior and posterior;

first day was *Dorpia*, the second *anarrusis*, and the fourth *epibda**. After the sacrifice, therefore, of the second day, they slept the following day and night, and thought that the remaining fourth day was the *Koureotis*, instead of the third. From all that has been said, therefore, it is evident that time will not be without motion and mutation.

⁷ It is evident from hence, that when Aristotle contends (as in his books *On the Soul*) that the energies of the soul are immovable, he only means that they are immovable according to physical motions, but not according to another species of motion which belongs to incorporeal natures, whose essence is separate from that of body.

* The first day of this festival was called *Dorpia*, from *Dorpos*, a supper, because on the evening of that day each tribe had a separate meeting, at which a sumptuous entertainment was provided. The second day was named *anarrusis*, because on this day, victims were offered to Jupiter *Phratris*, and *Apatenor*, and to Minerva, in whose sacrifices, as in all that were offered to the celestial gods, it was usual to turn the head of the victim upwards toward heaven. The third day was named *Koureotis*, from *Kouros*, a youth, or *Koura*, shaving, because the young men who till that time remained unshaved had their hair cut off before they were presented to be registered. And the fourth day was called *epibda*, from *following*, because it was a kind of appendage to the great festival. See *Potter's Antiquities*, Vol. I. p. 369.

and

and we then say there has been time when we receive a sensible perception of prior and posterior in motion. But we distinguish them by apprehending these to be another and another, and also by conceiving that there is something between, different from these: for when we understand that the extremes are different from the middle, and the soul says that there are two instants, the one prior, and the other posterior; then we say that this is time: for that which is bounded by instants appears to be time. And let this be admitted. When, therefore, we have a sensible perception of the now, as one, and there is not any thing as prior and posterior in motion, or when we perceive it as the same, and not belonging to a certain prior and posterior, then there does not appear to have been any time, because neither was there any motion. But when we perceive prior and posterior, then we say there is time: for time is this, the number of motion according to prior and posterior. Time, therefore, is not motion, unless so far as motion has number; an indication of which is this, that we judge of the more and the less by number, but of a greater and less motion by time. Time, therefore, is a certain number. Since, however, number is twofold (for we call both that which is numbered and that which is numerable number, and also that by which we number) time is that which is numbered, and not that by which we number. But that by which we number is different from that which is numbered⁹.

CHAP.

⁹ The whole intention, says Simplicius, of what is said is this, that as motion possesses its continuity from the magnitude in which it is, so likewise prior and posterior are appropriately derived from motion, subsisting according to position in magnitude, and from motion, time: for in magnitude, the *prior* for instance is where the champions in the games stand, but the *posterior*, the extremity of the stadium. But in motion, the *prior* is motion according to the first point, but the *posterior* according to the posterior point. In magnitude, however, the prior is always consubstantial with the posterior: for the first point and the posterior subsist together. But in motion the prior being destroyed, the posterior succeeds. Prior and posterior, however, are not the same with motion, as neither in magnitude are prior and posterior the same with magnitude; but though in subject they are the same, yet they differ in definition. Thus five things are in their subject wood, but they are *five*, according to number. And the subject indeed of motion is the energy of that which may be moved; but the prior and posterior in motion are number and order in a thing of this kind. In like manner in magnitude, in which there

CHAPTER XVII.

AND, as there is always another and another motion, so likewise with respect to time. But the whole of time, considered as subsisting at once,

there is prior and posterior to motion, the subject perhaps is pillars, but prior and posterior are the order in them. Thus, therefore, Aristotle separating the prior and posterior in motion, in the next place inquires what the essence is of prior and posterior by which they differ from motion. Thus, in a line, as long as we conceive it to be one and continued, we do not conceive one part of it to be prior by position, and another posterior; but when we divide and distinguish it by points, then immediately we make one part of it prior by position, and another posterior, and the extremities of the line different from the middle, which is comprehended by the extremities. Thus also in motion, we do not conceive in it prior and posterior unless we divide and distinguish it as it were into two parts, and receive a sensible perception, as of another and another. By what, therefore, do we distinguish it? certainly not by a point; for a point has not position. We distinguish it, therefore, after another manner: for I call that the former motion with which I moved, if it should so happen, in walking; but the posterior, that with which I shall be moved. So that the distinction arises from the one being past, and the other future. But the past and future are time. Hence time and the prior and posterior are the same when these are distinguished. But they are distinguished when *nows* or instants are noticed by the soul, the one as the beginning, and the other as the end of motion: for then we immediately form a conception of the time which is between the *nows*, and which is different from them. Frequently, likewise, directing our attention to one *now*, as the end of the past, and the beginning of the future, we again obtain a conception of the prior and posterior time.

Hence, the conception of time is every where produced by apprehending the prior and posterior of motion: and this is apprehended when motion is assumed as another and another, that is, when it is numbered: for number is not of one thing, nor entirely of the same thing, but of that which possesses another and another. So that time is the number of motion, as numbered according to prior and posterior. And that it is indeed the number of motion is evident, since we form a judgment of every thing which is more and less by number: but we form a judgment of the more and less of motion by time; for the motion is more which with an equal velocity consumes more time, and that is less which consumes

once, is the same¹. For the now is in reality one and the same, but its essence is different. The now, however, measures time, so far as it is prior

sumes less time. Hence it is concluded in the third figure, that time is a certain number. But that it is necessarily added, according to prior and posterior, is evident, since motions indeed are numbered, and many at once; as when a man at one and the same time is increased in bulk, and becomes hot, and moves from place to place: for he then moves with three motions at once, yet such a number of motion is not time, but that which is according to prior and posterior. Nor is it wonderful, if Aristotle, defining time to be that which is numbered of motion, does not mention in the definition the numerable, but number: for that which is numerable, is called number, in the same manner as that which may be measured, is called a measure. Thus monadic number, which is measured by unities, is called a measure, and a number of oxen, and a number of horses. Thus again, a wooden bushel, and a bushel of corn, are called measures, and so in other things. And numerating number, indeed, is not adapted to time; for it is divided, and not continued; but numerable number may also be continued, as a spear of eleven cubits. That which is numerable also is twofold, one according to quantity, as when we say two or three motions; but the other according to order, as when we speak of motion according to the prior and posterior. Aristotle, therefore, wishes to show that time is the number of motion, both as numbered, and as numbered according to order; for this is its proper number: for there is a number common to motion, to oxen, and to horses. When, therefore, Aristotle says, "that which is bounded by instants appears to be time; and let this be admitted;" he indicates in what manner time is the number of motion, that it is the number of it as numerable and bounded, and not as that which numerates: for that which is numerable in motion, and is so bounded as another and another, is prior and posterior in motion, and not motion: for the number of the prior and posterior of motion is time, and not the number of motion itself. Hence time is the enumeration of many motions according to prior and posterior: for it is not the prior and posterior in magnitude; since the prior and posterior in it abide together; but the prior and posterior of time do not abide.

But, since it appeared to Alexander, says Simplicius, that the definition of time here given by Aristotle has not the same meaning with that given by Plato, let us compare their definitions with each other. Aristotle then says, that time is the number of motion according to prior and posterior; but Plato, that it is an eternal image flowing according to number, of eternity abiding in one; to the *one* opposing, *according to number, to abiding, flowing, to paradigm, image*. Here then we may see that Aristotle understood the conception of Plato concerning time far better than others: for what else is *an eternal image flowing according to number*, than the subsistence of time according to number, beheld neither as paradigmatic, nor as monadic, but as having the relation of an image, and subsisting according to the order of motion, i. e. according to prior and posterior? for the proper number of that which is moved, so far as moved, since it possesses another and another, introduces prior and posterior, and is bounded according to order. Aristotle, therefore, acutely perceiving this, and more clearly unfolding Plato's definition, says that *time is the number of motion according to prior and posterior*. Hence, if the words *according*

prior and posterior. The now also subsists as partly the same, and partly not the same: for so far as it is in another and another, it is different;

to number, signify according to order, as Alexander conceives they do, they manifest nothing else than according to prior and posterior: for this is tactic number, or number according to order, just as monadic number is one, two, or three. We may also see how well Aristotle understood the word eternal according to the conception of Plato: for Plato says that animal itself possesses its perpetuity through eternity which abides in one; but Aristotle says that eternity derives its appellation from being always, and that it possesses and comprehends the whole of time; thus beautifully unfolding the meaning of eternity abiding in one, and indicating that it illuminates all things with being and life. But the first participant of life is the first animal.*

* Aristotle having shown that time is something belonging to motion, for it is the numerable of motion according to prior and posterior, confirms their alliance from that flux which is common both to motion and time: for as there is always another and another motion, the first not remaining, but being corrupted, so likewise the prior of time is always corrupted on the accession of the posterior. It is evident also, that not only the temporal priority of motion does not remain, but that this is likewise the case with the priority according to position: for in this the prior being corrupted, the posterior accedes; though in the same magnitude in which the motion is produced the prior and posterior remain together: for in those things alone which have their being in becoming to be, the prior is always corrupted on the accession of the posterior. The prior and posterior, therefore, in motion, not according to the position of motion, but according to the extension of being, is time, not so far as it is motion, but so far as it is prior and posterior: for with respect to the prior and posterior according to the position of motion, through which, to him who walks from Athens to Thebes, the first motion is near to Athens, though this prior and posterior have their being in becoming to be, yet, considered according to their relation to a permanent position, in a certain respect they appear to remain, when the motion also is beheld as co-extended with the magnitude in which it exists. But when it is properly beheld as motion, according to its flux, and possessing its being in becoming to be, then having the prior as the past, and the posterior as the future, it becomes chronological. But Aristotle having mentioned the agreement between time and motion, very properly adds their difference: for in motion not only the prior is different from the posterior, which is common also to time, but motions also which exist together differ from each other; some, indeed, in species, if one is corrupted, another increased, and another changed in quality; but others in number only, if many are at once corrupted, or increased, or changed in quality: for

* In order to understand what is here said, it is necessary to observe, that the intelligible order, which is the first procession from the ineffable principle of all, consists of being, life, and intellect. Of these three, the first or being, since it is wholly absorbed in the ineffable, and subsists in unproceeding union with the one, is called by Plato in his definition of eternity, one. The second of these three or life, since it is infinite, is no other than venerable eternity. And the third, or intellect, is called by Plato animal itself, because it is the first participant of life. When Aristotle therefore says that eternity derives its appellation from being always, it is just as if he had said that it is stability of being, and this is equivalent to saying that it abides in being, i. e. according to Plato, in one.

motion

ferent ; but this was the now itself. But so far as the now is that which it once was, so far it is the same : for, as we have said, motion is consequent to magnitude, and time to motion. In a similar manner also that which is borne along is consequent to a point, by which we recognise motion, and the prior and posterior in it. But this is in reality the same for it is either a point, or a stone, or something else of this kind ; but is different in definition : just as the sophists assume that Coriscus in the Lyceum, is different from Coriscus in the Forum ; and this also is different, because it is in a different and a different place. But the now is consequent to that which is borne along, in the same

motion is in that which is moved ; so that such as are the things moved, so many also are the motions. Nevertheless the same time is every where, according to a certain signification of time ; and time does not differ from time : for neither is the difference of those things in which there is time, whether according to species, or according to number, the difference of time : for the things in Athens and the things in Corinth are in the same time, because the number of every definite motion is not time, in the same manner as there is a certain proper motion of every thing which is moved. But the number of all motions as one, is time ; since prior and posterior, so far as such, are one and the same in all things which subsist together : for they do not possess prior and posterior, so far as one is in this, and another in that, nor so far as one is corruption, another increase, and another change in quality, but according to that which is common, so far as motion. Hence, things are said to be of the same age because they subsist together in the same time ; just as there is the same five, though the things in which it exists are different. But difference according to time, is alone from the difference of the nows : for in the assumption of these time has its being when one of them is assumed as prior, but another as posterior. But if a difference in the *now* produces the difference in time, the difference in time also will be according to prior and posterior alone. Of the time, however, which exists at once, one part is not prior, and another posterior ; and consequently in such time there is no difference.

In short, time being the numerable of the first and simple motion of the heavens, according to the prior and posterior of this motion, numbers the prior and posterior in different motions, according to one appropriate now. Hence, also, the same time is at once every where. And Aristotle himself also, as we shall shortly see, considers the now as not only numerable, but as that which numbers. But if this be the case, so far as it numbers, it will be without difference, but so far as it is numbered, it will be different. We may also say, that different motions, though so far as they are motions of a certain kind they differ from each other, yet that which is common to motion, viz. to have its subsistence in becoming to be, through which we assume prior and posterior in it, according to the extension of its being, and according to which time also is bounded, is one and the same.

manner

manner as time to motion: for by that which is borne along we know prior and posterior in motion; but the now is, so far as prior and posterior are numerable. So that in these a real instant is the same; for that which is in motion is either prior or posterior; but the essence is different; because the now is, so far as prior and posterior are numerable. And this is especially known: for motion is known through that which is moved, and lation through that which is borne along; for that which is borne along is this particular thing; but this is not the case with motion. That which is called the now, therefore, is partly the same and partly not the same: for the like also may be said of that which is borne along². But it is also evident, that whether time is not, there will

* Aristotle having observed that time has this in common with motion, that it is generated and corrupted, and again, that it differs from it, because motions differ from each other, but all time is at once the same, says, that the cause of this is, that *the now is one and the same in subject*, for this is the meaning of the words *ο' νω' ην*, but that it differs in reason or definition, so far as the one is prior, and the other posterior. But according to this prior and posterior, the now has its being, and is the measure of time, according to which time is measured, as being another and another; just as number is measured by the monad. Very properly, therefore, does he consider the difference and sameness of time, according to the difference and sameness of *nows*. And the time will be the same, indeed, which is bounded by *nows* indifferently assumed, as that which is in different motions. Thus it is the same day, to-day, in which one thing is increased, another is whitened, and another walks, since they have the same now, both in the beginning and the end. But if different *nows* are assumed, in consequence of some being prior, and others posterior, time also will be different. Time, therefore, subsisting at once, though bounded by the same and different *nows*, will not be different.

Again, as Aristotle had before observed that motion is consequent to magnitude, and time to motion, this being the case, those things which are generative of these, will also be consequent to each other. But a point is generative of magnitude, since a line is the flux of a point, and a line is the first magnitude. That also which is borne along, or which is in lation, is productive of motion, and the now is generative of time. As therefore the same point by its fluxion produces magnitude, and not by being added to another point, and as the same thing borne along produces motion, so also the now being the same according to subject, bounds and produces time by receiving prior and posterior numbered.

But that what is moved is the same in subject, Aristotle assumes as evident, because it is either a point, or a stone, or something else of this kind. And that it is indeed the same stone is evident, though it becomes situated through its motion in different places; and that in the fluxion there is the same point is evident, from that which is generated being continued, and not being

will not be the now ; or whether the now is not, time will not be : for as that which is borne along and lation subsist together, so likewise the number of that which is borne along, and the number of the lation : for time is the number of lation ; but the now, with respect to that which is borne along, is as the monad to number³. Time also is continued through the now, and is divided according to the now : for according to this, time and the now are consequent to lation, and the

being composed from the contact of points ; but with that which precedes remaining, that which is next in order is connected, according to the flux of one point. The stone, however, which is borne along differs in definition, in consequence of becoming situated in different parts of that in which it is moved. But that this difference appears to take place Aristotle proves from the arguments of the sophists ; who, transferring this difference to the subject, seem to have collected this absurdity, that the same thing may become different from itself : for they say that Coriscus being the same, becomes at one time in the Forum, and at another in the Lyceum ; but he who at one time becomes in the Forum, and at another in the Lyceum, becomes different from himself : for, in thus speaking, they do not preserve the different, according to the difference which is assumed, but transfer accidental to essential difference. He shows, therefore, that it is sophistical to suppose that from prior and posterior being different in definition, it follows that they are different in subject. And having shown how that which is borne along is the same in subject, but is different in definition, he says that the now also exists in a similar manner, since time follows and suffers the same things with motion, as was before observed, and the *now* with that which is moved.

³ Aristotle having shown how the now subsists with respect to time, that it is as that which is borne along to lation, and that the now is more known than time, at present demonstrates the co-existence of them, again, according to their similitude to that which is borne along and lation : for, as says he, that which is borne along and lation subsist, since it is impossible for the one to be without the other, if that which is borne along is assumed not according to essence, but so far as it is borne along, such also is the subsistence of the now and time. He also shows the necessity of this consequence from the analogy of that which is borne along and lation : for of that which is borne along the number is the now, this being, as it were, a certain monad which adapts the indivisible to the indivisible. But of motion, time is the number : for as the monad by being assumed again and again produces number, thus also the now produces time, and that which is borne along lation. But time is the number of lation, not so far as lation, as has been already observed, but according to the prior and posterior which is in it : for time is not the same number of motion, but the interval which is between the prior and posterior, these producing the interval by being again and again assumed. But the monad differs from that which is borne along and the now, so far as the monad makes number to be definite, but the other two cause motion and time to be continued.

thing

thing which is borne along: for motion and lation are one with that which is borne along, because it is one; and not according to that which is; for it may fail; but also in definition. And this bounds prior and posterior motion. According to this, also, it is in a certain respect consequent to a point: for a point also, in a certain respect, connects and bounds length; since it is the beginning of one length, and the end of another. When, however, any one thus considers it, using one point as if it were two, it is necessary to stop, if the same point will be the beginning and end. But the now, because that which is borne along is moved, is always different. Hence, time is a number, not as of the same point, because it is both beginning and end, but rather as the extremities of a line, and not as parts; for the reason already assigned: for it uses the middle point as two points; whence it happens that it rests. And, further still, it is evident, that neither is the now a part of time, nor *division* a part of motion; as neither are points parts of a line; but two lines are parts of one line⁴. So far, therefore,

⁴ That the continuance of time and its division subsist according to the now, Aristotle again shows from its agreement with that which is borne along and lation: for motion, that is lation, becomes continued and one with that which is borne along, and not with any thing else. But it becomes one and continued with this, because he has shown this to be one according to the subject, which again he calls, *according to that which is*. Thus if a stone were that which is borne along, according to its being borne along, and not according to its being a subject, it will be the cause of continuance: for it may cease to be borne along; and then it will remain indeed what it is, but it will not produce a continued motion; since, though it properly remains one, yet its motion is cut off, being intercepted by permanency. Nevertheless, if it is assumed as one, according to the definition of that which is borne along, and as borne along, then it becomes the cause of the motion being one and continued. The *now*, however, does not only make time to be continued, according to its agreement with that which is borne along, but also divides it, by distinguishing the prior and posterior of motion: for thus time is divided. But the now, through continuing and separating, not only corresponds to that which is borne along, but also after a certain manner to a point: for when the same point is assumed, it is the beginning of one part and the end of another. It also continues the length, if it is assumed as one and the same in each part of it, and also divides it: for the division of length is according to a point. In like manner the now continues and divides time. Hence through continuing and dividing it simply accords with a point; but so far as the same point is both beginning and end, we use the two as one; and it is necessary to stop in one point twice assumed, at one time as the end, but at another as the beginning;

fore, as the now is a boundary, it is not time, but an accident of time; but so far as it numbers, it is number: for boundaries belong to that only of which they are the boundaries. But the number which is of these horses, as for instance the decad, has also a subsistence elsewhere.

CHAPTER XVIII.

THAT time, therefore, is the number of motion according to prior and posterior, and that it is continued, for it is of the continuous, is evi-

beginning; for its being is permanent in position. But that which is borne along cannot be twice assumed; for it is always another and another. It is, however, another, not because it is different from itself, but because it is another in another and another: for if it were twice in the same, it must necessarily stand still; but it is supposed to be continually moved. Thus also the now cannot be twice assumed. How, therefore, does time consist in the now being numbered? Not as the same point twice assumed as beginning and end, but as the two boundaries of a line this and that. But these bound the interval of the line which is between them, this interval being another and another. After this manner also *nows* are numbered, as another and another, the one being prior, but the other posterior. But to assume the now twice is impossible; since in this case time would stand still. There is no absurdity indeed in assuming a point twice, since it has position and abides; but the now does not abide, so as to be twice assumed. It is also evident that if a point is assumed as a beginning and end, the line will be divided according to it; and being divided, it is no longer continued; so that neither will the motion in it be continued. But time is continued, since motion also is continued. Time, therefore, is the number of *nows*, not as if the same now were twice assumed, like a point in a line, but since motion is different, as the beginning of one and the end of another. Nor is it beginning and end in the same manner as parts are frequently said to be the first and the last.

Indeed that *nows* are not similar to a point twice assumed, Aristotle shows, when he says, "for it uses the middle point, as two points; whence it happens that it rests." If time, therefore, does not rest, the now is not in it, as a point twice assumed, but as a beginning and end. But that it is not a beginning and end in the same manner as parts, but as boundaries, he again confirms from its similitude to things co-ordinate. Simplicius adds, that Aristotle calls the boundary of motion *division*, motion being divided according to this. And in his treatise concerning motion he calls this *νῦμα*, *kinema*.

dent¹. The least number, however, simply considered, is the duad; but a certain number is partly the least, and partly not; as for instance, of a line the least number is in multitude two, or one; but there is not a least in magnitude; for every line is always divisible. Hence also similarly time; for one or two is the least according to number; but is not according to magnitude². It is also evident why time is not

¹ Aristotle having observed that the now is a boundary in the same manner as the extreme points of the same line, since the now is indeed of itself the boundary of time, in consequence of time being nothing else than that which is numbered of motion according to prior and posterior, and that which is numbered consists of nows;—this being the case, he further observes, that when the now is assumed as that which is numbered of motion, then it becomes the boundary of motion, and it *happens* to it to be a boundary. Then also the now is assumed according to the subject, and is in that alone of which it is the boundary. But when it is assumed as the boundary of time, it is not an accident; for it is essential to time. And since that number which the now is, is every where, but the number which is every where is that which numbers, since the decad which measures ten horses, also measures ten men,—hence the now is at once every where, and is not in motion alone, of which it is the boundary not as *the now*, but as *kinema*, or, *that which divides*.

Aristotle concludes what he has said by adding, that time is continued, because it is the number of the continued: for time has its being in this, that it is the number of motion. The essence of time, therefore, being extended with the continuity of the numbered motion, will be itself also continued; for motion not failing, neither will it fail: for time being limited by the boundaries of motion, not so far as they are the boundaries of motion, but so far as they are prior and posterior, will also be itself continued, so far as it is time.

² Aristotle having said that time is number and continued, wishes to remove the apparent opposition in what has been said: for number is a discrete quantity, but that which is continued is not discrete. And, as he says, in number the least is the duad; for this is the first number, and is indivisible into numbers. But in continued quantity there is not a least; for the continued is divisible into things continued, to infinity. If, therefore, there is a least number, but there is not a least time, since time is continued, time will not be number. In solving this doubt, therefore, he uses what he had before said, that time is number, not as numbering, but as numbered. But number is twofold, the one being simply and properly so; and this is that by which we numerate, is definite, and is composed from indivisible monads, and on this account contains that which is least; but the other division of number is as that which is numbered, and which is not simply, nor properly called number, and subsists in continued quantities. This, however, when it is also assumed as number, as for instance, two lines, or two years, has that which is least; but this is no longer the case when it is assumed as magnitude: for these have quantity according to magnitude, and not only according to number.

said

said to be swift and slow ; but much and few, and long and short : for so far as it is continued it is long and short ; but so far as it is number, it is much and few. It is not, however, swift and slow ; for neither is any³ number with which we numerate swift and slow. The same time also is every where at once ; but prior and posterior are not the same ; because with respect to mutation, the present indeed is one, but the past and future are different. But time is number, not that with which we numerate, but that which is numbered. And this happens according to prior and posterior to be always different ; for the instants are different. The number is also one and the same of a hundred horses, and a hundred men ; but the things to which the number belongs are different, viz. the horses and the men⁴. Further still, as it happens

³ If number which numerates were swift and slow, the things *numbered* would also possess from it the swift and slow ; but number which numerates is not swift and slow, and therefore neither is time, since time is that which is *numbered* of motion according to prior and posterior.

⁴ One of the particulars which have been before observed concerning time is this, that the present time, and which is beheld according to the now, is every where at once the same, but beheld according to the prior and posterior is not the same. Aristotle now shows that the same things may be asserted of motion in which time has its being : for the present motion is the same ; since there is no difference in this with respect to itself, but it is one according to the common form of the extension of its being ; nevertheless the past and the future are different from each other. As therefore one motion has same and different, so likewise has all time, which at once measures all motions : for time is not the number of this or that motion, so far as they are *such* motions, but it is the number of motion so far as motion. Hence time is one, though there are many motions, because it is the number of them, not so far as they are many, but so far as all of them are motions. But every present mutation is one, so far as it is mutation. Time, however, is not only one in species, but also in number, because it is of one species of motion, and according to number, and does not vindicate to itself the diversities of motion. But the former time is different from the latter, because motion, though it is assumed as one in number, yet, through having its subsistence in becoming to be, it is varied by prior and posterior.

Afterwards, Aristotle shows why prior and posterior time are not the same : for number, by which we numerate, is always the same, whether it be assumed as prior or posterior ; as for instance, the triad. It is not, however, necessary that the things numbered should be any longer the same ; for horses are different from men. If therefore time is number, as that which is numbered in motion, and not as that which numerates, but that which is numbered of motion does

happens that motion is one and the same, again and again, so also it happens with respect to time: as for instance, the year, the spring, or the autumn⁵. We not only, however, measure motion by time, but time by motion, because they are bounded by each other: for time bounds motion, since it is the number of it; and motion bounds time. And we say, that time is much or few, measuring it by motion, in the same manner as we measure number by that which is numerable; as for instance, by one horse the number of horses: for by number we know the multitude of the horses; and again, by one horse we know the number of the horses. The like also happens in time and motion; for by time we measure motion, and by motion time. And this happens reasonably; for motion is consequent to magnitude, and time to motion; because these are quantities, and are continuous, and divisible: for because the magnitude is such, the motion suffers these things; and time, because of the motion. And we measure magnitude by motion, and motion by magnitude: for we say that the way is long, if the journey is long; and that this is long, if the way is long. We also say that the time is long, if the motion is much; and that the motion is much, if the time is long.

not remain the same, it follows that the prior is different from the posterior time, and the past from the future; for the *nows* by which it is numbered and distinguished are different: for that which is numbered of motion according to prior and posterior is different. And it is evident that prior and posterior are different in definition, but in their subject as in species the same: for this has been already demonstrated.

⁵ Aristotle having said that all present motion is the same, according to its possession of that which is common, and on this account that the same present time is also every where at once, but that the past and future are different, and times are different, now shows how prior and posterior, both in motion and time, may be the same, by existing again and again. Having also before observed, that the now is the same in subject, but different in definition, now distinctly shows how he then said it was the same; and that it is the same, just as motion is, by existing again and again; that is, while remaining the same according to species, it is generated again and again: for since motions are generated again and again, as the motion of the sun from the same, and from Aries to Libra again and again, and time is consequent to motion, it is evident that this will also be the case with the year, the spring, and autumn.

CHAP.

CHAPTER XIX.

SINCE, however, time is the measure of motion and of being moved ; and it measures motion by giving a definite extent to a certain motion which measures the whole ; (just as a yard measures length by giving a definite extent to a certain magnitude which measures the whole ;) this being the case, for motion to be in time, is nothing else than for time to measure it, and its essence : for at the same time it measures motion, and the essence of motion. And this it is for motion to be in time, viz. for time to measure its essence. But it is evident that this it is also for other things to be in time, viz. for their essence to be measured by time¹ :

¹ Aristotle having shown what time is, and that the properties which are said to belong to it, accord with its definition, and also that we assert things to be properly in time, which are comprehended by time, now indicates what that is according to which every thing is said to be in time. His explanation, however, on account of its length, possesses a certain obscurity. But through motion, as a medium, he infers that to all things a subsistence in time is this, to have their being measured by time. And this very properly, for the existence of every thing is the energy and motion of its being. Since time therefore, as he says, is the measure of motion, a subsistence in time, both to motion and to other things according to their motion, is for their being to be measured by time. But he shows how motion is in time, as follows: Time measures motion. But to measure motion, which does not subsist at once, but which has its being in becoming to be, is properly the same as to measure its being ; that is, so far as it is motion : for motion measures, and this according to the interval in which the motion is, when we say that there is a motion of a stadium. This, however, has a measure according to accident, and not so far as motion : for, in consequence of that which is prior remaining, it has a measure of this kind ; but as motion, and as having its being in becoming to be, it has for its measure time, as long

time: for, to have a subsistence in time, is one of two things; one of which is, then to be when time is; and the other, just as we say, that certain

long as the motion continues: for this is the measure of its being which subsists in becoming to be. And we may now see that Aristotle clearly unfolds the manner in which time is the measure of motion; that it is so, according to the extension of the being of motion, according to which also it especially subsists: for in motion, as Alexander says, to be, and to be in motion are the same; just as in other things which have their being in becoming to be. And, on this account, to measure motion is the same thing as the being of motion. Since, therefore, the essence of motion is an extended energy, for it is the entelechia of that which may be moved, motion and the being of motion are the same. Hence Aristotle having said that time is the measure of motion, adds also, "and of being moved," not adding this as something different, but indicating that motion is energy, and that time is the measure of energy. But that motion, and the being of motion are measured by time, he shows, from every assumed motion being bounded by time: for future time is not yet, and therefore is not bounded. For as he who says that time measures the being of man, says this, that time bounds and measures as many years as man lives; in like manner, he who says that the being of motion is measured by time, says nothing else than that time measures it, so far as it is motion. In other things also, which have not their subsistence in becoming to be, but subsist wholly at once, as in man, the being of man, that is, the interval of his existence, is measured by time; but a yard, or something else of this kind, measures the man himself, that is, the interval of the man. But in motion, time measures both the being of motion and motion itself: for in motion, the being of motion, which is measured by time, and motion itself, concur.

If, however, these things are true, what will that be of motion which is measured by magnitude? if, as has been observed, we not only measure magnitude by motion, but also motion by magnitude. It is evident that it will be the interval of motion, *which* is the same in subject with the extension of its being; for motion is energy, and is not permanent; but it is measured as a permanent interval, by magnitude, through its relation to magnitude; but as an extension of being, it is measured by time. Since, however, these are the same in subject, it is very properly said, that motion and the being of motion are the same. Having also said that time is the measure of motion, he adds, how it measures it: for every thing which is measured, appears to be measured by a certain peculiar part; since it is this part which measures the whole. This, therefore, will be the case with motion, if it is measured by motion: for a part of motion is motion; and every thing continued may be divided into equal definite parts. How, therefore, is motion said to be measured by time? Time, says he, bounds a part of motion, which part measures the whole motion; and this is bounded by the prior and posterior now. In a similar manner time measures motion, as a yard measures magnitude, not being a part of it, but by bounding a certain part of it, through which part, so often assumed, it measures the whole.

Since,

certain things are in number. And this signifies, either as a part and property of number, and, in short, that it is something belonging to number; or that it is the number of it. But, since time is number, the now, the prior, and things of this kind, are so in time, as the monad, the even and the odd, are in number; (for these are something belonging to number, and those are something belonging to time, but things are in time as in number.) If this then is the case, things are comprehended by number, in the same manner as things in place, are comprehended by place. It is also evident that to be in time is not *then* to be *when* time is, as neither to be in motion, nor to be in place, is then to be when motion and place are: for if a subsistence in any thing were of this kind, all things would be in any thing whatever, and heaven would be in a grain of millet: for where a grain of millet is, the heaven also is; but this is an accidental circumstance. That, however, necessarily follows, viz. that to a thing which is in time, there is a certain time *when* that thing is; and that to a thing in motion there is *then* motion. But since that which is in time, is as in number, a certain time may be assumed greater than every thing which is in time. Hence it is necessary that all things which are in time, should be comprehended by time, just as other things which are comprehended in any thing; as for instance, that which is
in

Since, therefore, motion, bounded by time, as for instance that of an hour, measures the whole motion, on this account motion is said to be measured by time.

But here it may be doubted, if time is the number and measure of motion, how any thing else besides motion is measured by time and is in time, so as that it may be asserted that this to other things also is to be in time. In the second place, how will this man, and this horse, and every thing else which has not its being in becoming to be, as far as it is possible to assert this of things in generation, *i. e.* of any thing which is an object of sense, be in time, if time has its being in becoming to be, and it is necessary that what is said to be in time should be co-extended with time? In answer to the first doubt it may be said, that motion is indeed energy, and has its being in becoming to be; that the being of motion is precedaneous in time, and is measured by time; but that other things which are said to be in time, such as man or horse, according to their essential motion, which signifies the existence of essence in energy, and an energy neither perfect nor stable, but having its being in becoming to be,—that these, according to this, are in
time,

in place, by place². Hence, that which is in time, will suffer something from time, just as we are accustomed to say, that time consumes, that

time, being composed from generation and corruption. Other things, therefore, besides motion receiving their essences in time, Aristotle says, that these also, according to their motion, which is an extension of being, are in time. Hence things which are properly beings and which have not their being in becoming to be, and which both Plato and Aristotle call *perpetual*,—these are not in time, but in eternity, which abides in one. And if this be true, the second doubt also is solved: for generated essences are called temporal according to the flux and extension of their proper being. And thus time is a measure, of a flux and extension according to being. Simplicius adds, and thus, as it appears to me, are the philosophical discussions of Aristotle, intellectually and accurately delivered, concerning time.

² Aristotle having observed that motion is said to be in time, as being measured by time, in the next place enumerates the significations of a subsistence in time, in order that it may become evident how temporal things, such as the now, the prior and the posterior, and the like, and also how other things are in time: for a subsistence in time signifies two things; one, then to be when time is, but the other, as when we say a thing is in number. And this is twofold: for it is either in number, because it is a part or a property of number, as two is a part, and the odd a property; or, because there is a number of such things, and they are numbered, as ten horses and ten oxen in number. Since, therefore, time is number, as is the subsistence of things in number, such also is the subsistence of things in time. Hence, the *now*, and *the prior*, so subsist in time as *the monad*, and *the odd*, in monadic number: for the latter are the parts or accidents of number, but the former of time. But motion and other things, which are not parts or passive qualities of time, subsist in time, in the same manner as ten men subsist in number, through being numbered by it. As, therefore, of things which are thus said to be in number, there is always a greater number, so of things which are in time, there is always a greater time: for time is a certain number. But if this be the case, things in time are comprehended by time, and things in place are comprehended by place. And here we may see how Aristotle understood the agreement of time with place and number prior to the things which afterwards unfold it. But this is the more proper signification of a subsistence in time: for to say, that to be in time is to be when time is, is less properly said to be in time; since thus that which is immoveable may be said to be in motion, if it is when motion is? But what does this differ from saying that heaven is in a grain of millet, and, in short, everything in every thing, and the greatest in the least, since when the heaven is, then also a grain of millet is. It happens, however, to many things, to subsist *together*, or at *once*, which the words *wben* and *then* signify; but for one thing to be in another, is for one thing to be comprehended by another. And to these, a subsistence together is consequent; but it does not follow that, because they subsist together, on this account they are in each other; but because they are in each other, on this account they subsist together, and because both are in the same time. Things, however, which are not in time, such as eternal natures, though, when time exists

that all things grow old from time, and are forgotten through time : but nothing learns, nor becomes young, nor beautiful, through time : for time is of itself *rather* the cause of corruption, because it is the number of motion, and motion removes that which exists from its state or condition³.

exists they are, yet they cannot be said to subsist *together*, or *at once*, because things which subsist *at once* are in the same time ; nor are the terms *wben* and *then* adapted to these. But Aristotle having shown that things which are properly said to be in time, subsist as comprehended by time, in the same manner as things in number are comprehended by number, delivers a certain argument of things which are thus in time, and at the same time a cause of their being said thus to subsist : for of things which are properly in time, it is always possible to assume a greater time than that of their existence : for thus they will be comprehended by, and will be properly said to be in time, as in place and in number. Hence, says Alexander, things *perpetual* are not in time ; since time does not comprehend their being. And if, indeed, he calls things eternal perpetual, as Plato does in the *Timæus*, when, speaking of the paradigm of the universe, he says, "The nature, therefore, of animal itself being perpetual," he speaks well ; for the *eternal* is not in time, nor is comprehended by time. But if he calls the *perpetual*, that which subsists according to the whole of time, it is not true that this is not in time, if it is only supposed so to subsist as to have its being in time. But things which have their being in becoming to be, are of this kind, and which do not, like things eternal, wholly subsist at once. If, therefore, other things which are in generation, are in time according to motion, nothing hinders things which have a never-failing subsistence in becoming to be, whether they are changed according to energy, or according to quality, or according to place, from being in time. But a subsistence in time appears to be in every respect similar to a subsistence in number, because time is number : for of things in number, it is possible to assume a greater number, because every thing numbered is in a finite number ; but it is possible to assume a number greater than every finite number, because number may be increased to infinity ; just as magnitude may be infinitely diminished. Of things in place, however, it is not always possible to assume a greater place : for if place is the boundary of that which comprehends, or the apt position* of things which are separated, place will be co-circumscribed by place. But if place is an interval, partial bodies, indeed, which are in place, will always have a certain place surpassing them, into which also they will frequently be transferred ; but the whole will no longer have a greater place ; for the whole receives the whole. Hence, according to every signification of place, it may be truly said that it is not possible to assume a place greater than every place, as it is of every time, and of every number. But Aristotle uses the example of place merely to show, that things in time are comprehended by time, in the same manner as things in place are comprehended by place.

³ Aristotle having shown that whatever is in time, is comprehended by time, and is so comprehended as that there is time prior and posterior to it, in the next place adds, that things which are in time suffer from time : for we are accustomed to say, that time consumes, that all things

* See the Additional Notes concerning Place.

dition. So that it is evident that eternal beings, so far as they are eternal, are not in time: for they are not comprehended by time, nor is their being measured by time. As a token of the truth of this, they do not suffer any thing by, as not being in time⁴. But since time is the
the

grow old from time, and are forgotten through time, which things are corruptive of essence, life, and knowledge: for we do not, in like manner, say that we learn, or become young, or beautiful through time, because time appears to be rather the cause of corruption, since it is the number of motion; but motion is a departure and mutation of being from its state or condition. Hence, time being something belonging to motion, removes that which exists in it from its condition, and causes it to be changed, since it is the number of the mutation and egression of every being which it contains. But Aristotle, when he says, that time is the cause of corruption, with very proper caution adds the word *rather*: for it is evident that time appeared not only the cause of corruption, but also of generation and unfolding to him who said, "long and innumerable time brings to light things immanifest, and conceals things manifest." It is likewise, not only the cause of oblivion, but of learning: for the same person says, "time causes me to know." But Simonides describes that which is wisest, by time: "for by this," says he, "all men discover and learn." And Evenus, from both these circumstances, makes time to be the wisest and the most ignorant of all things. Aristotle himself, also, says in the third book, that there is a two-fold motion, one from form to privation, the other from privation to form. Hence, time not only causes an egression from form, but also from privation. But it is on this account rather the cause of corruption, because generated natures always appear to be generated in time, but not by time, because the efficient cause, as for instance the builder of a house, is different from time. Corruptible natures, however, not only appear to be corrupted in time, but also by time; since nothing else is seen to be the cause of the corruption of the house. In like manner, a preceptor is the cause of learning, but time appears to be sufficient to oblivion.

⁴ Aristotle now, as a certain corollary from what has been above said concerning time, collects that eternal beings, so far as they are eternal beings, are not in time: for they are neither comprehended by time, so as that a longer time of their being may be assumed, nor do they suffer any thing from time. What then shall we say of perpetual motion? for a circular motion will be demonstrated by Aristotle to be perpetual. Is this, therefore, in time or not? for if it is not in time, time is not the number of every motion. But if it is in time, how is that in time which time does not transcend? To this we reply, that because there is always another and another motion, and never the same according to number, on this account, it is possible to assume a time greater than that which is assumed. With respect, however, to things which are said to be perpetual according to essence, such as always wholly subsist at once, as intelligibles, and true beings, these possess also an energy always subsisting wholly at once; and are above time, being entirely measured by eternity. But with respect to a celestial essence, it is indeed *essentially im-*
mutable;

the measure of motion, it is also the measure of rest according to accident: for all rest is in time: for it does not follow, that as that which is in motion, must necessarily be moved, so also that which is in time; since time is not motion, but the number of motion. But in the number of motion, there may also be that which is at rest: for not every thing immoveable is at rest; but that is at rest which is deprived of motion, when it is naturally adapted to be moved, as we have before observed. But to be in number, is nothing else than to be some number of a thing, and to have its being measured by the number in which it is. So that if a thing is in time, its essence is measured by time. But time measures both that which is in motion, and that which is at rest, so far as the former is in motion, and the latter at rest; for it measures the quantity of their motion and rest. So that what is in motion, will not simply be measured by time, so far as it is a certain quantity, but so far as its motion is so much⁵. Hence, such things

mutable*; and if it did not sustain any change in quality, since in this case it would not have any motion, nor extension in its being, it would also be evidently above time; for time is the measure of things *becoming to be*, and not of *being*. If, however, the celestial orbs impart to each other a certain perfection, according to their different configurations, as is evidently the case in the moon, these also will be measured by time: for that which participates of generation, must necessarily possess something generable and corruptible; but it is not necessary that it should possess this *essentially*. But, by Aristotle, and his followers, who always philosophize from clear evidence, the essence of the celestial orbs is considered as unbegotten and above time, but their motions are asserted to be temporal. Perhaps, therefore, it may be better to say, that with respect to the extremes, that is, things entirely immoveable, and things perfectly mutable, eternity is the measure of the former, and time of the latter; but that of middle natures, such as soul, and perpetual bodies, there are certain other middle measures, which are without a name.

⁵ Aristotle having thus far said that time is the measure of motion, very properly adds, that it is also the measure of rest: for if rest is a privation of motion, but the same things are the criterions and measures of habits and privations, as the sight of light and darkness, the hearing of sound and silence, and a rule of the straight and crooked,—if this be the case, that which measures motion, will also measure rest, which is the privation of it; but this according to accident: for time measures motion essentially; since its essence consists in this; but it measures rest according to accident, and according to the relation of rest to motion. But since all rest is be-

* In the next volume, which will contain Aristotle's books on the Heavens, &c. this will be demonstrated.

things as are neither in motion, nor at rest, are not in time; since to be in time, is to be measured by time; and time is the measure of motion

tween two motions which time measures essentially, and the one *now* is indeed prior, being the boundary of the former motion, but the latter posterior, being the beginning of the second motion, the interval between these will be time, and will be accidentally the measure of the intermediate rest; because there happens to be rest between the two motions. Since, however, time is essentialized in being the number and measure of motion, how does it measure rest which is the privation of motion? For rest will be motion, if that which is measured by time is motion. Aristotle, therefore, solving this objection says, it is not necessary that what is in time should be moved: for time is not motion, but the number of motion, and a certain accident. But it does not follow that if a thing is in an accident, it will also be in the subject of the accident: for if a thing is in day, it will not also be in the motion of the sun; since day is so much time which is the number of so much motion of the sun. Hence, it is not necessary that rest should be moved, though it is not hindered from existing in time which is the number of motion: for we say, that he who is diseased has rested in so much time. A rule also which is a criterion essentially of straight lines, is likewise a criterion of such as are crooked.

But Aristotle having said that a thing which is at rest is in time, informs us also what that is which is at rest, and that it is not every thing immoveable: for if this were the case, time would not be the measure of all rest, since it is not the measure of eternal immobility, because it does not comprehend the being of it. But things at rest are, as has been before observed, such as being naturally adapted to be moved, are deprived of motion; and that which is naturally adapted to be moved, has not a perpetual immobility. In the next place he shows what it is to be in time; that as to be in number is to be some number of a thing, and to have its being measured by the number in which it is, so for a thing to be in time, is to have its being measured by time. To which also he adds, that time measures that which is at rest, so far as it is at rest, just as it measures that which is moved, so far as it is moved. It does not, however, measure the subject, but the motion and rest of the subject. But it must here be observed, that as the being of every thing in generation is the flux of its existence, so likewise the being of rest is in a flux and extension. Hence, though Aristotle, at first, says that rest is measured by time according to accident, yet he afterwards adds, that time measures that which is moved, and that which is at rest, so far as the former is moved, and the latter is at rest: for a certain quantity, that is the extension of each, measures the motion and rest of these, according to their being, that is, their generation and flux. Perhaps too, he says that rest is measured by time according to accident, because it is not measured by it as rest simply, but according to its generated being, just as motion and other forms become temporal through this, or, in other words, through subsisting in becoming to be; except that since in motion, motion and the being of motion are the same, time appears to subsist essentially with motion. But that Aristotle calls rest a privation of motion, not as the crooked is of the straight, nor in short, as things contrary to, are of things according

tion and rest ⁶. It is evident, therefore, that neither is every thing which is not, in time; as for instance, such things as cannot subsist otherwise, as that the diameter of a square should be commensurate with its side: for, in short, if time is essentially the measure of motion, but of other things according to accident, it is evident that the essence of all such things as time measures, consists in being at rest, or in motion. Whatever, therefore, is corrupted and generated, and, in short, at one time is, and at another time is not, is necessarily in time: for, there is a certain greater time which exceeds their essence, and the time that measures their essence. But of things which are not, such as time comprehends, partly have been, as Homer once was; and partly will be, as is the case with any thing future. These time comprehends on both sides; and, if on both sides, they were and will be. But such things as time does not at all comprehend, these neither were, nor are, nor will be; and of this kind are those non-beings, the opposites of which always are. Thus, that the diameter of a square is incommensurable with its side, always is, and this will not be in time; neither,

according to nature, but as the absence, and this according to nature, of natural adaptation, is evident from his defining nature to be not only the principle and cause of motion, but also essentially of rest; for nature is the cause of rest. On this account too, perhaps, he does not call it *permanency*; for things which always remain immoveable, as the poles and the axis of the universe, are said to be *permanent*, but not to be *at rest*; because to be at rest belongs to things which are sometimes moved.

⁶ Since some things are immoveable, others are always in motion, and others are sometimes in motion and sometimes at rest, it is evident that things entirely immoveable are not in time. But things which always, and those which sometimes are in motion and at rest, are in time; and such as are neither perpetually nor sometimes in motion, these are not in time. But how is time the measure of motion and rest? For those who say that it is essentially the measure of motion, but of rest as the privation of motion, very properly say that it is alone the measure of these. But those who assert time to be the measure of motion alone, but of rest according to its being, and so far as it is beheld in a flux, evidently say that time is not only the measure of rest, but likewise of every thing else which has a subsistence in becoming to be; just as Aristotle himself says, that time is a measure according to the *being* of things: for *time is properly the measure of motion according to the flux of being*, which is the peculiarity of *generation*, or *becoming to be*. Perhaps, however, since all things in generation, are either in motion, or at rest, it is true to assert that these only are in time.

therefore,

therefore, will it be in time, for it to be commensurable. Hence, it always is not, because it is contrary to that which always is. But those things the contrary to which is not always, these may both be and not be, and of these there is generation and corruption⁷. Again, the now is the conjunction of time, as has been observed; for it connects the time past and future, and, in short, is the boundary of time: for it is the beginning of one time, and the end of another; though this is evidently not as in an abiding point. But it divides in capacity; and the now, so far as it is such, is always different; but so far as it

⁷ Aristotle still continues to unfold what things are in time, and what are not; and he now shows that neither perfect non-beings are in time, nor things which have a perpetual subsistence, nor, in short, things which time does not exceed as to duration, but those alone of which there is generation and corruption; and through this he makes his conception about time more clear. But he says that neither are all non-beings in time, but only some: for of non-beings some are past, as for instance, Homer the poet, but others remain, as an eclipse, and others are both past and remain, as war and an eclipse; and these are shown to be entirely in time. But there are certain non-beings which are incapable of being; as for instance, it is wholly impossible that the diameter of a square should be commensurable with its side. These, therefore, are not in time; and he adds the cause: for since time alone measures motion and rest, it is evident that those things of which it measures the being, must have their existence in the being moved or at rest. But these are generable and corruptible natures, and, in short, such as exist at one time, and not at another; and, on this account, they are comprehended by time: for there is a certain time which surpasses the time that measures their essence. Of non-beings, therefore, such as are of that kind, as that they have been, or will be once, or both have been and will be, the time of the non-being of these, time surpasses: for that in which they were or will be is time: and hence non-beings of this kind will be in time.

In short, the non-being of those things is not in time, of which the existence is impossible; and what these are Aristotle first teaches by an example, as for the diameter of a square, to be commensurate with its side, and afterwards delivers to us through an universal rule: for it is impossible for those things to be, of which the opposites are perpetual. Since, therefore, the diameter of a square is perpetually and necessarily incommensurable to the side, it is impossible for it to be commensurable. Again, what those things are which are able both to be and not to be, Aristotle delivers to us a rule, when he says, "they are those things the contrary to which is not always," and therefore sometimes is: for if their contraries always were, these would never at any time be. And if the contraries to these never were, these would be always. But if the contraries to these, at one time are and at another time are not, these also at one time existing, and at another not, will be generable and corruptible natures: for when their contraries are, these are not, and when they are not these are.

connects

connects it is always the same ; just as in mathematical lines : for there is not always one and the same point in intellectual conception ; because to those who divide, there is always another and another. But so far as it is one line, there is entirely the same point. Thus, also, the now is partly a division of time according to capacity, and partly the boundary and union of both. Division too, and union, are the same, and, according to the same ; but their essence is not the same⁸. In this manner, therefore, one of the *nows* is said to be. But another now is said to be, when the time belonging to this now is near : for some one came now, because he came to-day ; or he came now because he came yesterday. But the Trojan transactions are not performed now, nor does a deluge take place now, though time is continued as far as to those events ; because they are not near. *The once*, however, is time

⁸ Aristotle proposes to speak concerning *the now*, so far as it especially appears to be time. He also speaks of *the now* which is properly so called, and of that which is so denominated with a certain latitude. And, in the first place, he speaks of the former of these, concerning which he had before said, that time is continued by *the now*, and is divided according to *nows*. At present, therefore, he makes the same observations about it more largely, viz. that *the now* is the continuation of time : for time is this, so far as it is continued : for things continued are those, the parts of which are conjoined to one common boundary, as is shown in the sixth book of this treatise. But the parts of time, the past and the future, are conjoined to the now, which is a common boundary, as subsisting in both ; and the now thus assumed, causes time to be continued. But when it is assumed and conceived to be, the end of the past, and the beginning of the future, it again divides time : for at one time it connects, and at another divides it ; just as a point does in a length : for this connects the length, when it is conceived and assumed as one, and divides it when we use it as two, asserting that it is the end of one part, and the beginning of another.

But it may be asked, why does Aristotle use the division and continuity of mathematical magnitudes as an example, and not those of natural things ? for what he asserts, is also true in these. In answer to this it may be said, that he uses mathematical examples, in the first place, because that which is properly *the now* is impartible, and that a mathematical, but not a physical point, is impartible. In the next place, because the division of these is in conception only, in the same manner as the nature of time : for, in natural magnitude, such a division as this is in actual existence. Unless, perhaps, it is also in time, if any one forms a conception of the natural divisions of the parts of time, such as day and night, months and years ; just as it likewise takes place in motion : for there also appears to be certain natural divisions of this, some from the subjects of it, and others from the difference itself according to motion.

bounded

bounded with reference to a former *now*; as for instance, Troy was once captured, and once there will be a deluge: for it is necessary to be bounded with reference to the now. There will, therefore, be a certain quantity from this time as far as to that, and it was with reference to the past. But if there is no time which has not connexion with *the once*, every time will be finite. Will time, therefore, fail? or will it not? Since motion always is. Will there then be a different time, or the same time frequently? It is manifest that, as is motion, so also is time: for, if one and the same motion is once produced, there will be one and the same time; but if not, there will not be. But since the now is the end and beginning of time, yet not of the same time, but is the end of the past, and the beginning of the future;—this being the case, just as a circle, in a certain respect, contains in the same, the convex and the concave, thus, also, time always is in the beginning and end; and on this account, it always appears to be different: for the now is not the beginning and end of the same time; since, if this were the case, opposites would subsist together, and according to the same. Hence, time will not fail; for it is always in the beginning⁹.

But

⁹ That time will never fail will be shown at the end of the Physics. But if time is the measure of rest as well as of motion, time may appear to be even when motion is not. Alexander dissolving this objection says, that time indeed measures rest, but that the being and essence of time is in motion: for it is the number of motion, as has been already demonstrated. Again, therefore, it must be recollected, that time ought not to be conceived as the number of motion, which has a division contrary to rest, but as the number of that motion which is beheld in rest, and in all generated natures which have their subsistence according to an extension of being. But the being and essence of time may be said to be in motion, because, time measuring the first and most principal of motions, the circular, measures also other motions according to this.

But, Aristotle enquiring whether time will fail, and whether there will be a different time, or the same time frequently, answers, that in a manner similar to motion, the same time is again and again produced, being indeed different in number, but the same in species. But that there is always another and another time, and that it does not fail, he clearly shows through the now: for since the present now, so far as present is the same; for simply as an end, it is not at the same time the beginning and end of time, the beginning indeed of the future, but the end of the past; and since these are in the same now, just as the convex and the concave in a circle, it evidently

But the *presently*, or *just now*, is that which is near to the present indivisible now, since it is a part of the future time: for instance, when will you walk? presently; because the time is near in which this will come to pass; and the past time in which it happened is not remote from the present now: for instance, when will you walk? I have already, *just now*, walked. But we do not say that Troy was *just now* captured, because the time, when this happened, is very remote from the present now. The *lately* also is near the present now, and is a part of the past time: for instance, when did you come? lately, is the answer, if the time was near to the present now. The *formerly* is remote time, and the *suddenly*¹ is asserted of that which is removed from its condition, in a time which is insensible through its smallness. But all mutation naturally possesses the power of altering the condition of a thing: and all things are generated and corrupted in time. Hence some have called time the wisest of things; but the Pythagorean Paron, speaking more accurately, calls it most unwise, because things are forgotten in it. It is evident, therefore, that time of itself is rather the cause of corruption than generation, as we have observed before: for mutation possesses from itself a power of removing a thing from its condition, but is the cause of generation and being according to accident. As a sufficient token of this, nothing is generated, without itself in a certain respect moving and acting; but a thing may be corrupted which is not at all moved; and this corruption we are accustomed especially to ascribe to time. Time, however,

evidently follows, that the present now is the end of the past and the beginning of the future: for thus also it divides time: from this very circumstance too, that the present now is the end of the past and the beginning of the future, time will never fail: for the future always will be; since the beginning, or the present now, having an existence, it is necessary that that also should be of which it is the beginning, and that it should not fail.

¹ The *suddenly* requires that the whole at once should take place in a short time, so as to appear to be effected without time, and that its temporal extension should be unperceived by us, through the shortness of the time, and the rapidity of the motion which is produced. Thus we say, that the flash of lightning was *sudden*, because the brightness was produced at once collectively, in a short time, and rapidly, we neither previously perceiving, nor being accustomed to it. On this account also, things which suddenly take place, disturb the bravest men.

does not produce this, but it happens that this mutation is effected in time². We have shown, therefore, that time is, and what it is, and in

² Aristotle, after unfolding the meaning of the temporal adverbs *the now, the once, the just now, the formerly, and the suddenly*, now more fully explains what he had before asserted, that time is rather the cause of corruption than generation, and also adds, that neither is it of itself, or essentially, the cause of corruption: for assuming that all mutation removes a thing from its condition, he shortly after uses this assumption in his demonstration. In the mean time, however, he now says, that since all things are generated and corrupted in time, some have called time the wisest, and others the most unwise of things: for, Simonides called it most wise, because men acquire a scientific knowledge in time; but the Pythagorean Paron called it most unwise, because we become forgetful through time. Paron, therefore, appears to speak more rightly, because all mutation naturally removes a thing from its condition. It is evident, therefore, that time is rather the cause of corruption than of generation, as was before observed: for motion and mutation essentially remove from its condition that which existed prior to them. But because it happens to some things, that when removed from their proper essence they are changed into another, on this account motion appears to be accidentally the cause of generation. If, therefore, time is the number of motion and mutation, but mutation and motion are essentially the cause of corruption, time also is essentially the cause of corruption, since it is the number of motion. But Aristotle adduces as an argument of the rectitude of what has been said, that time alone is not sufficient to the production of generated natures, but that a certain energy also is required, such as that of art, or nature, or teaching, or action, through which they are produced. But time alone is sufficient to the corruption of corruptible natures, although no external cause should accede; as is evident in things which waste away and become putrid in time; about which, also, we are accustomed to say, that they suffer these things from time. And this is the corruption effected by time. Aristotle then adds, that time does not of itself produce corruption, but that this mutation happens to take place in time.

What then is the cause of corruption? According to the interpreters of Aristotle prior to Simplicius, it is the nature of a thing, and its subject matter: for the measures of every thing in generation are bounded by nature, by increase, acme, and a declination from acme. And nature, indeed, has been acknowledged to be the cause of increase and acme; but what is the cause of corruption? To this Simplicius replies, with his usual acuteness, that nature, properly so called, which is productive and motive of bodies, is the principle of generation, and is precedaneously the cause of existence. Since, however, the generation of mortal natures is such, that when one thing is generated, another is entirely corrupted, corruptions subsist together with generations, and the motions according to them, subsist in conjunction with fabricative motions. But we say that a thing is naturally corruptible, according to its natural adaptation, and to its being material and imperfect. To him, therefore, who enquires *what is the cause of corruption*, we must say that it is the nature of the subject matter, which is not able to contain forms perpetually, and the di-

vulsion

in how many ways we speak of *the now*, and what *the once is, the lately, the just now, the formerly, and the suddenly.*

CHAPTER XX.

THESE things, therefore, being thus enumerated by us, it is evident that every mutation is necessarily made in time, and that every thing which is moved, is moved in time: for the swifter and the slower are in all mutation; since in all things this is apparent. But, I say that a thing is moved swifter, which prior to something else changed into a subject, being moved according to the same interval, and with an equal motion: as for instance, in rotation, if both are moved in a circumference, or both in a right line. The like also takes place in other things. *The prior* also is in time: for we speak of the prior and posterior according to distance, with reference to the present now. But the present now is the boundary of the past and future time. So that since *nows* are in time, prior and posterior also will be in time: for in that in which the now is, in that also is the distance from the now. But the prior is spoken of in a contrary manner, according to the time past and future; for in the time past we call that prior which is more remote

vulsion of contraries through subjection in the sublunary region; contraries here not being able to be consubistent with each other, as they are in their first and intellectual cause. If this, therefore, be true, time will be precedaneously the cause of generation, and, in a secondary degree, of corruption. Aristotle, therefore, assuming in this place the more evident causes, says, that time is rather the cause of corruption; for he adds the word *rather*. That he considered, however, matter to be the cause of all mutation, we shall learn at the end of his books on the Heavens. But how can time, if it is a measure, be said to be the cause of generation and corruption? We reply, because a measure gives completion; for just as to be three or four cubits gives completion to magnitude, so a certain quantum of duration gives completion to the extension of being generated or corrupted.

from the present now, but we call that posterior which is nearer to it. But in the future that is prior which is nearer; and that is posterior which is more remote. Hence, since the prior is in time, but the prior is consequent to all motion; it is evident that all mutation and all motion are in time³. It deserves also to be considered how time subsists with reference to soul; and why time appears to be in every thing; in

³ Aristotle having a little before observed that all things are both generated and corrupted in time, now proposes to demonstrate, making a more universal demonstration, that all mutation and all motion are produced in time; for the demonstration of this is also adapted to the enquiry concerning time, and strengthens the assertion that time is rather the cause of corruption than of generation. And the syllogism is as follows in the first figure. All motion has prior and posterior. That which has prior and posterior is in time: all motion, therefore, is in time. But since the propositions are not manifest, he proves each of them, and the minor thus: All motion has the swifter and the slower; for, according to every motion it is possible to be moved swifter or slower. But every thing which has the swifter and slower has also prior and posterior; for by these, the swifter and slower is defined: for we call the swifter that which is changed into that to which the motion tends, *prior* to another thing: and we call that the slower which is changed posterior. But the comparison will be rightly made, if we assume the same species of motion, as for instance, local motion; and the interval equal and similar, as in a circumference, or a right line; and the motion equable: for if one thing is moved irregularly, and another regularly, it is possible that what is moved swifter may arrive at the end of the motion *after* the other. A certain difference of motion also arises from the figure of the subject, if the one should be right-lined, but the other circular. But he proves the major proposition which says, that prior and posterior are in time, through prior and posterior, according to distance or a departure from the now. For *prior* in the past time is that which is more distant from the present now, but *posterior* is situated nearer to the now. But in the future, on the contrary, *prior* is that which is nearer to the now, and *posterior* that which is more remote from it. So that prior and posterior have their existence according to their distance with respect to the now: for the now is the boundary of the past and the future. Hence, since the now is in time, prior and posterior also will be in time: for in that in which the now is, in that also is the departure from the now, which is the prior and posterior. If, therefore, all motion has prior and posterior, and these are in time, all motion likewise is in time, each of the propositions being truly assumed: for that Aristotle places as propositions proximate to the demonstration, both that which says that all motion has the prior and posterior, and that which says that the prior and posterior are in time, he signifies by adding, after the demonstration, "hence, since the prior is in time, but the prior is *consequent* to all motion, it is evident that all mutation and all motion are in time." But to be *consequent* is to *follow*, and to be *predicated*.

the

the earth, in the sea, and in the heavens. / Shall we say it is because time is a certain passive quality or habit of motion, since it is the number of it? But all these things are moveable; for all these are in place: and time and motion subsist together; both according to capacity, and according to energy⁴. It may, however, be doubted, whether if soul were not, time would be or not: for when it is impossible for that which numerates to be, it is also impossible that there should be any thing numerable. So that it is manifest, that neither can there be number: for number is either that which is numbered, or that which is numerable. However, if nothing else than soul, and the intellect of soul are naturally adapted to numerate, it is impossible for time to be, when soul is not, unless time is that which is in reality and in a subject; as for instance, it may be doubted if it be possible for motion to be without soul; but prior and posterior are in motion; and time is

⁴ Aristotle now proposes to investigate two things; one, how time subsists with reference to soul, that is, if it is possible for time to be, soul not having a subsistence; or, in other words, if it is possible for that which is numbered to be, that which numerates not existing, since soul is that which numerates. But the other thing which he proposes is, why time appears to be every where, in the earth, in the sea, and in the heavens. And, in the first place, he assigns the cause of this second object of enquiry, that it is because time being the number of motion, is a certain habit, or passive quality of it; so that it is an accident inseparable from motion: for number also appears to be in things numbered, and to be contained by them. Since, therefore, all these natures in which time is said to be, such as the earth, the sea, and the heavens, are bodies, but every body is in place, and that which is in place is moveable either according to the whole of itself, or according to its parts; and since also that which is moveable possesses, together with motion, that which is an accident to motion, time, as a passive quality, or a habit, it properly follows that in the earth, the sea, and the heavens, in which there is motion, there is also time. Aristotle having concisely concluded thus much, adds, that time and motion subsist together, both according to capacity, and according to energy: for having said that time is consubsistent with motion, he adds, that time every where subsists similarly with motion; so that if motion is in capacity, time also will be in capacity, but if in energy, time likewise will be in energy. Hence, in the inference which he makes, he calls things in place *moveable*, and not *moved*; in order that he may comprehend both, as well things in capacity, as things in energy: for that which is *moved*, and that which is *naturally adapted to be moved*, as for instance, that which is at rest, are *moveable*. But he calls time a *passive quality* of motion as an accident, just as number is a passive quality of things numerable; and he calls it a *habit*, because it is possessed by motion.

these

these, so far as they are numerable ⁵. It may also be doubted, of what kind of motion time is the number, or whether it is the number of every kind of motion: for a thing is generated, corrupted, increased, changed in quality, and borne along, in time. So far, therefore, as each of these is motion, time is the number of every motion. Hence it is sim-

⁵ Aristotle now passes on to the other of the things proposed, and which was the first in order, viz. how time subsists with reference to soul, and which is here more clearly assumed: for it is enquired whether if soul were not, time would be, or not: for since it appears to be reasonable that relatives should be consubsistent and co-subverted with each other, since if the right hand so far as *right* is not, neither will the left hand be, so far as *left*, and that which can numerate, and that which is numerable are relatives, and since also soul, and the intellect of soul are things which can numerate, for we do not numerate with our passive part, but with reason, but time is that which is numerable,—this being the case, if soul were not, neither does it seem that time would be. But Aristotle assumes that number is either that which is numbered, or that which is numerable: for we call number either that which is already numbered, or that which is capable of being numbered. Thus a multitude of soldiers is numerable, because it may be numbered. That also which is numbered is numerable. That which is numerable, therefore, not subsisting, neither will number subsist. Hence the whole inference, according to a deduction through three things, is as follows: If that which can numerate is not, neither will that be which is numerable. If that which is numerable is not, neither will number, as that which is numbered, be. If, therefore, that which can numerate is soul according to the intellect which it contains, but time is number, soul not subsisting, time will not subsist.

It must here, however, be observed, that the nature which numerates being taken away, time also, considered as number which is numerable, is also taken away, but considered as prior and posterior according to the extension of the being of motion, it is not taken away. But time subsists according to this: for to be numerable happens to time, according to prior and posterior. But soul being taken away, which is the principle of generation, and of all motion according to generation, with which time is consubsistent, time also will be taken away. Aristotle, therefore, very properly says, that soul as that which numerates being taken away, time also, as that which is numerable, will be taken away; indicating by the words, “if it be possible for motion to be without soul,” that the principle of generation and motion being taken away, motion and generation also must be taken away. But not only by taking away motion, time also, which is something belonging to motion, will be taken away, but soul being taken away, which is the cause of all generation and motion, time likewise, which essentially subsists in becoming to be, will be taken away. And here we may see how Aristotle accords with his preceptor Plato, when he says, “if it be possible for motion to be without soul,” that is, without that which moves:” for Plato in the *Phædrus* says, that soul is the fountain and principle of motion to such things as are moved, and that every thing which is generated, is produced from this principle.

ply

ply the number of *continued* motion, and not of a certain motion⁶. But it is possible that something else may be now moved, of the motion of each of which there will be a number. Will there then be a different time, and will there be at once two equal times? Or will there not? For all time is one, similar, and at once. But things are one in species which do not subsist at the same time: for, if these should be dogs, but those horses, and both should be seven, there will be the same number. Thus also there is the same time of motions which are finished together; but the one is perhaps swift, and the other not; and the one lation, but the other change according to quality. Time, however, is the same, since the number is equal and subsists at once, both of the change according to quality and the lation. Hence, the motions are different and separate; but time is every where the same, because

⁶ Aristotle very properly says, it may be doubted of what kind of motion time is the number: for time is not the number of motion so far as this is corruption, or change in quality, or some other mutation, but it is the number of motion and mutation so far as they are such. Time, therefore, is similarly the number of every motion; for in all motions the prior and posterior are seen. And time is that which is numbered. But having said that time is the number of motion, he very properly adds, of *continued* motion: for so far as motion is continued, so far it has the prior and posterior, which are numbered according to time; since if motion is assumed as divided, it is not measured by time but by number: for two or three, or more motions are produced, measured by monadic number; since if one is change in quality, but another corruption, and another increase, there being no continuity of them with each other, there will be three motions. But, so far as each of these is continued, the priors and posteriors in it are numbered, no longer by monadic number, but by time.

It may here, however, be doubted, if prior and posterior subsist first in magnitude, and in the interval in which motion is produced, and afterwards subsist in motion and time, how prior and posterior exist in increase and change in quality: for these are not in interval, nor is there a progression from one place to another, but a body is gradually heated *entirely*, and is *entirely* increased and condensed. Whence, therefore, has time in these, the prior and posterior, in the same manner as it has in lation from interval and position? How, also, not having prior and posterior, will it have number according to them? It may be said, indeed, that in increase there is a progression from one place to another; for there is a mutation from a lesser to a greater place. But what shall we say of change in quality, generation, and corruption? We reply, that with respect to prior and posterior which indicate order, one kind of these belongs to time, according to the number and order of the many *nows* which bound the existing time. But another

because the number is one and every where the same of things equal, and which subsist at once⁷. But since there is lation, and motion in a circle belongs to this, and since every thing is numbered by a certain kindred one, as monads by the monad, and horses by a horse,—this being the case, time also is numbered by a certain definite time. But time, as we have said, is measured by motion, and motion by time; and this is because the quantity both of motion and time is measured by a definite motion in time. If, therefore, that which is first is the measure of all kindred natures, equable circulation will be especially a measure; because the number of this is most known. Change, according

ther kind is beheld in position according to order. And this is twofold; one in magnitude, as the *prior* in a road is that part whence our motion commenced, and the *posterior* that part in which our motion ends; and the other in number, and this twofold: for it is either in number which numerates and is monadic, as when we say the monad is *prior* to the duad, and the duad to the triad; or it is in number which is participated and numbered, as intelligibles are *prior* to sensibles, and one pillar is *prior* to another: for incorporeal natures appear to have position, the position being metaphorically ascribed to them. But the third signification of prior and posterior is in energies and motions; one, according to the number of terms bounding the motion which are called *kinemas*, and which are analogous to the points of a line, and the *nows* of time; but another according to the parts of motion, which is from itself continued. But local motion receiving in itself prior and posterior according to position, adapts this to its proper prior and posterior, as to a boundary and a part; as when we say that the *prior* motion of the race is with the champions, but the *posterior*, in the end of the stadium. And this prior and posterior according to position is adapted to local motion. Hence, time imparts also from itself prior and posterior to other motions, which have their being in becoming to be, adapting itself to the prior and posterior of motion: for the *nows* which bound time, according to the boundaries of motion, bound motion by time. Time, therefore, is the measure of motion: for, by adapting its own prior and posterior to the prior and posterior of motion, it measures motion by time. Thus, also, motion becomes the measure of time, when adapting the prior and posterior belonging to motion to the priors and posteriors of time, it bounds time by motion. Thus too, local magnitude measures not every motion but that which is local, when it adapts the prior and posterior, according to position of place, to the prior and posterior of motion. And if Aristotle uses this as common, that motion is measured by magnitude, because it is obvious; hence, also, he dwells much on this, as if discoursing concerning local motion.

⁷ Aristotle mentions a doubt consequent to what has been said concerning time; and also thinks that what he has often said, that the same time is every where at once, deserves to be more fully

according to quality therefore, increase, and generation are not equable; but lation is equable⁸. Hence, time appears to be the motion of

fully explained. But the doubt is as follows: if time is the number of motion, and motion is in that which is moved, as we have learnt it is, but time is in motion, there will be as many times and motions as there are things moved. Many times, therefore, will subsist together at once, not as comprehending and being comprehended; for in this there would be no absurdity. Solving the doubt, therefore, he says, that this is not the case: for many times do not subsist together at once, but every equal time in the present, is one and the same at once in number; but times are the same in species, yet do not exist at once; viz. the past does not co-exist with the future. Having said this, he informs us how there is one time of many motions, though time is the number of motion: for as in monadic number, number is not divided together with the difference of the things numbered; as if the things numbered should be seven horses, or seven dogs, these, indeed, differ from each other, but the number seven is the same in both, since they have not the same number so far as they differ, but from being so many which is common to them,—thus also in motions, and time which is number: for *the now* is the same in all motions and one in number, though one should be lation, and another change in quality. In all of them likewise, there is that which is numbered, and the now assumed as prior and posterior. Hence, if this is the same in all, time also is properly said to be the same in all: for if otherwise, time were an accident to motions, as the hot and the white, it would also be divided together with them. But since it is that which is numbered of them and a quantum, nothing prevents it from being one and the same in many things; just as in monadic number, that which is numbered is the same; as for instance, so much, though the things numbered are many, and different from each other. Thus, also, of motions which subsist together, or at once, there is the same time; but there is not the same swiftness, nor the same place: for motions, neither when numbered according to swiftness and slowness, nor according to the different species of motions, do not make time; as if one should be change in quality, another lation, and another increase; but they produce time according to prior and posterior alone, which are the same in all these at once. If, therefore, the nows are the same with which we number time, time also is the same, which is bounded and comprehended by *nows*: for as the difference of things which are locally moved, that is, their difference according to something else, as for instance, according to colour, or taste, and not according to levity or gravity, does not cause the difference of motions, so neither do the differences of motions produce a different time; since time is not the number of them, so far as they differ, but so far as they contain prior and posterior, which are in them without any difference; for the number of these is without difference. Let, however, what has been before observed be recollected, that time is the number of motion according to that which is common in motion, and according to the extension of being which is every where the same.

⁸ Aristotle having said that time is number as that which is numbered, and a measure as that which is measured, since every thing which is measured and numbered is measured and numbered

of the celestial sphere, because other motions, and time itself are measured by this motion. Hence too, that happens which is usually said: for they say that human affairs are a circle, and also that the generation and lation of other things which have a natural motion is circular.

by something of a kindred nature, as monads by the monad, cubits by the cubit, horses by a horse, and in short, by the most simple proper part of the things it contains; (for, as Plato says, such as are the parts, so many are the measures,)—this being the case, time also is measured by a part of itself. Aristotle, therefore, enquires what will be the first and simple time, which measures every time? If then time is the measure of motion, if some motion should be discovered which is the measure of other motions, the time of this motion will evidently appear to be the measure of time. What motion, therefore, is of this kind? Evidently, that which is the first, and which is equable and known: for that which is not the first, is irregular, unknown, and unadapted to measure. But the motions peculiar to generated natures are, change in quality, increase, diminution, generation, corruption, and motion in a right line, all which are not first motions: for generated are not the first of perpetual natures, nor are such like motions equable, but irregular according to all irregularity: for the mutations in quality, augmentations, and generations which take place in an equal time are not equal, nor are they known; but a circular motion is alone equable and known, so as to be the measure of motion, and, on this account, also of time. But it becomes the measure of motion, being bounded by time, and possessing a certain quantity; as an hour is a part of time. And it bounds so much motion of the circulation of the universe. In like manner a day and a year bounding the motion of the universe and the sun produce the measure of all motions, and of the whole of time: for a prior and a less time measures time; since an hour is the measure of a day, a day of a month, and a month of a year. It also measures hourly and diurnal motion. But if all these are so many circulations of the sun, it is evident that they, on the contrary, are measured by motion. Hence Aristotle says, that time is measured by motion, and motion by time. The time, therefore, which is measured by the circulation which is the first and equable, measures all time. If, therefore, that which is first is every where the measure of things of a kindred nature, it evidently follows that in motion, circulation, which is the first and an equable motion, is, on this account especially, a measure, and because the number of this is most known.

It may here, however, be doubted, and it also appeared to be dubious to Plotinus, if time is the number or measure of equable and continued motion, what will be the measure of irregular and disordered motion? But if time is similarly the number of all motion, how can it be any longer assumed as that which is numbered, and not as that which is separate; just as there is the same decad of elephants and ants, because the decad by which they are numbered is separate from them? The solution of the doubt is this, that as equable, continued, and orderly motion has a precedaneous subsistence, but irregular and disordered motion subsists together with this, so likewise equable motion is *precedaneously* measured by time, and *secondarily* irregular motion: for we measure this by hours and days.

And

And this is because all these things are judged of by time, and receive an end and beginning as it were according to a certain period : for time itself appears to be a certain circle, and this again appears to be so, because time is the measure of a lation of this kind, and is itself measured by such a lation. So that to say that things generated are a circle, is nothing more than to say that there is a certain circle of time; and this because time is measured by circulation : for except that which measures, the whole of that which is measured appears to be nothing else than many measures. It is also rightly said, that the number is the same of sheep and dogs, if each number is equal : but there is not the same decad, nor the same tens ; as neither are the equilateral and the scalene the same triangles, though the figure is the same, because both are triangles : for that is said to be the same, by the difference of which it does not differ, but not that by the difference of which it differs⁹. Thus, for instance, triangle differs by the
 difference

⁹ Aristotle teaches us, says Alexander, in this place, by what we ought to judge of things under the same thing, what those are which differ from, and what those are which are the same with each other : for such things as do not differ by the proper difference of that according to which they are said to be these particular things, these are the same with each other according to this ; but such as differ by the proper difference of that thing, these are different according to this. Thus an equilateral and isosceles triangle are figures, and are also triangles. But, as figures, they are the same with each other : for they do not proximately differ by the difference of figure ; since the differences of figures are the right-lined and the curved-lined. But all triangles are ranged under the same difference of figure ; for they are right-lined. And still further they are contained by three right lines. The triangles, however, are not the same ; since they differ from each other by the difference of triangle : for the difference of triangle so far as triangle, is the equilateral, the isosceles, and the scalene. And the number of things equal according to number, and which do not differ by the difference of number, is the same according to number ; as for instance, seven sheep, and seven dogs : for the difference of number is the odd and the even ; and each of these consists from a certain number of monads. But the number seven which is predicated of them is one and the same, according to its subsistence as number. The things numbered, however, as the seven sheep, and the seven dogs, and the hebdomad of them, are not the same : for the sheep are one thing, and the dogs another, and these are the things numbered. Thus also with respect to man and horse, their essences, as animated beings, are the same : for they do not differ from each other by the difference of essence, which is animate and inanimate.

difference of triangle ; and hence there are different triangles. But figure does not differ by the difference of figure, but is in one and the same division : for a figure of such a nature is a circle ; and such a figure is a triangle. And of this, that which is of such a nature is equilateral, but that which is of a different nature is scalene. Hence this, indeed, is the same figure ; for it is a triangle ; but the triangle is not the same. The number also is the same : for the number of these does not differ by the difference of number. But the decad is not the same ; for the things of which it is said to be the decad differ ; since some of these

But they differ from each other by the difference of animal ; for the rational and irrational are the differences of animal. Again, Plato and Socrates, so far as they are animals, are the same, since they do not differ from each other by the difference of animal ; yet they are not the same men : for so far as they are men, being naturally adapted to differ from each other, according to this they do also mutually differ. In a similar manner ten things are related to ten things : for the number is the same ; since ten things do not differ from ten things by the difference of number ; for they are *even* numbers. Neither do they differ by the difference of the odd number, which will consist in being composed from more or less monads ; nevertheless the subjects of these numbers, and of which they are predicated, and these are the things numbered, are different either in genus, or species, or number. Hence, there is no longer the same decad, nor the same ten things.

The present time too, is every where the same : for it does not differ by the differences of time, subsisting at once in Asia and Europe ; since the only differences of time are the past and the future : for the differences of time are not according to the differences of motions ; because we do not number those which subsist at once as different. The motions, however, of which time is the number are not the same, if one should be change in quality, and another lation : for these are the differences of motions. But it is here requisite to observe in what this rule of sameness and difference differs from that which is usually employed, and which distinguishes things which are the same or different in genus, or species, or number, or which are one and many. We say then that things are one and the same in genus and species, of which the same genus and species are predicated. Thus man and horse are one in genus because both are animals ; but Socrates and Plato are one in species, because both are men. But that is one and the same in number of which the same monad is predicated. In the rule, however, which is now delivered, if the same name is predicated of two or many things, they are said to be the same according to that name, when they do not differ by its differences, but they are said to be different when they do so differ : for an equilateral and scalene triangle are, as to figure, the same, because they do not differ by the differences of figure, which are the right-lined, the curve-lined, and the

these are dogs, and others horses. And thus much concerning time, as well itself, as the things which pertain to, and are peculiar to the consideration of it.

the mixed from both these: for both the triangles are right-lined, or consist from these right lines. The triangles, however, are not the same but different, because they differ by the differences of triangle, which are, the equilateral, isosceles, and the scalene. Hence, a certain difference is here found from the former rule with respect to the same things being predicated according to genus and species, as for instance, triangles; because there sameness was predicated according to the participation of genus or species, and the difference was according to another and another species or genus. But here sameness is according to the being comprehended in the difference itself of that which is predicated in common: for we call all equilateral, the same triangles, and all rational animals, the same animals. But difference according to some particular thing, is when things differ according to the differences of that which is predicated in common: for the isosceles differs from the scalene, as triangle from triangle; because they differ from each other by the differences of triangle. So that there indeed, sameness and difference were according to genus and species; but here according to differences: perhaps too, directly according to species; for various differences together with the same genus, produce also different species.

THE

THE PHYSICS.

B O O K V¹.

CHAPTER I.

EVERY thing, however, which is changed, is changed partly from accident, as when we say, that what is musical walks, because that walks to which the being musical is an accident; and partly because something belonging to this is changed, it is simply said to be changed; as for instance, such things as are said to be changed according to parts; for the body is healed, because the eye or the breast is healed; and these are parts of the whole body. But there is something which is neither moved according to accident, nor because something

¹ Aristotle, says Simplicius, in the third book of this treatise, having taught us concerning motion according to its common acceptation, which is the same with mutation, and having used in common the name of mutation and motion, now wishes to distinguish them, and to show that mutation is more common and universal than motion; and that motion is more partial than mutation, subsisting under it as species under genus: for generation and corruption are, as he will show, mutations, but not motions. But having distinguished motion from mutation, he afterwards delivers the species of motion properly so called. This discussion, therefore, properly depends on the common discussion of mutation, and is connected with it, although between them, an enquiry concerning the infinite, place, a vacuum, and time, is inserted. Hence Aristotle

thing else of it is moved, but because it is itself first moved ; and this is that which is moved by itself. According to a different motion, however, there is a different subject; as for instance, that which is changed according to quality, and the subject of change according to quality, which may be healed or heated is different. The like also takes place in that which moves : for one thing moves according to accident ; but another according to a part, because some one of its parts move ; and another by itself primarily ; as for instance, the physician heals, and the hand strikes. But since there is something which first moves, and there is also something which is moved ; and farther still, time in which it is moved ; and besides these, that from which, and that into which it is moved ; (for all motion is from something and into something ; since that is different which is first moved, and into which and from which it is moved ; as for instance, wood, the hot and the cold : but of these one is *that which*, another, *into which*, and another, *from which*.) —Since this is the case, it is evident that motion is in the wood, and not in the form : for neither form, nor place, nor any definite quantity, either moves or is moved^e ; but there is that which moves, and that

totle, and the associates of Aristotle, con-numerate this book with those books that are denominated Concerning Physical Principles, just as they are accustomed to call the three that follow, Concerning Motion : for after the division of motion according to the three predicaments, quantity, quality, and where, he adds natural theorems in these, instructing us in certain particulars consequent in common to natural things which exist in place, and are locally moved ; such as what it is to subsist *together*, and *apart*, what it is to *touch*, to have an *intermediate* subsistence, to be *successive*, to *adhere*, and to be *continuous* ; and in what kind of things each of these is naturally adapted to exist. He also informs us what one motion is according to all the significations of one. But the one is predicated in a threefold respect in genus, species, and number, and in the end he adds what kind of motion is contrary to motion, and what kind of rest is contrary to rest.

^a Aristotle proposing to show that motion is more partial than mutation, in the first place distinguishes the differences of mutation, and says, that one difference is according to accident, when we say that what is musical walks, because a man to whom it happens to be a musician, walks of himself ; and when we say that a sailor, who is at rest in a ship, moves, because the ship, to which in a certain respect the sailor is an accident, is essentially moved and changed. Some things too, says he, are changed, because they are changed according to parts ; as when

we

that which is moved, and that into which it is moved : for mutation is more denominated from that into which, than from that from which it is moved ; and on this account, corruption is a mutation into non-being ; though also that which is corrupted is changed from being ; and generation is a mutation into being, though it should be from non-being. What motion, therefore, is, has been shown before. But forms, passive qualities, and the place into which things that are moved, are moved, are things immoveable ; such, for instance, as science and heat. Some one, however, may doubt whether passive qualities are motions, and whiteness a passive quality : for in this case there will be a mutation into motion. But perhaps not whiteness is motion, but the

say that the body is healed, because the eye or the breast, which are the parts of it, are healed ; or that a man is moved, because his hand is moved. But the third difference of mutation is, when that which is moved, is neither moved according to accident, nor according to a part ; but precedaneously, and not because something else is moved, which is first opposed to that which is moved according to accident ; and when it is moved according to the whole of itself, which is separated from that which is moved according to a part. And this is that which is of itself moveable or changeable : for Aristotle still speaks of mutation, though the examples he adduces are of motions. But first distinguishing that which is *according to accident*, and that which is *according to a part*, he thus infers that which is *by itself*, or *essential*, because from the subversion of those this is introduced. And he infers, that as there are many species of mutation, in all of them there are the abovementioned three differences of mutation : for a different thing has these differences according to a different species of mutation ; as for instance, that which is changeable in quality, according to a change in quality. Since, however, there are many species of change in quality, and in each there are three differences, he infers, also, that the subject of this change, which may be healed or heated, is according to accident, and according to a part, and *by itself* or *essentially* : for water is heated *essentially* ; but *sweet* water *accidentally* ; and according to a part, when a part of a quart of water being heated, we say, that a quart is heated.

But Aristotle having said, that in every species of that which is moved, there are these differences, infers that in that which moves also there are the same differences : and it is evident, that they subsist according to every species of it : for a musician is restored to health according to accident, when it happens that the physician, who *essentially* acts the part of a physician, is a musician. And an infusion of cold water sometimes heats according to accident, when it accedes to the inward heat. A man also moves according to a part when he moves any thing with his hand. But that moves *essentially*, which neither moves according to accident, nor according to a part, but *by itself* primarily.

2 P

becoming

becoming white⁴. In those also there is a subsistence according to accident, according to a part, according to another, and primarily and not according to another. Thus that which is whitened is changed into that which is intellectually apprehended, according to accident; for it happens to colour to be intellectually perceived: but it is changed into colour, because the white is a part of colour. It is also changed in Europe because Athens is a part of Europe; but it is changed into a white colour essentially. Hence, it is manifest how a thing is moved essentially, how according to accident, and how according to something else; likewise how the same thing is first, as well in that which moves as in that which is moved; and also that motion is not in form,

³ Aristotle having distinguished essential mutation from that which is accidental, and that which is according to a part, in the mover and thing moved, first mentions that mutation which is essential and primary, in order to the distinction of the species of mutation; because all scientific and demonstrative knowledge is collected from things essentially inherent. But, before he delivers the species of mutation and motion, he first shows in what motion is: for since motion does not rank among things which subsist by themselves, but among things which have their being in others, unless it is first evident in what it resides; neither can the nature of it be known, nor its species determined. Prior to this, however, there are certain things which concur with motion; that is, there are certain things which must entirely exist, if motion and mutation exist; so that from these it must be investigated, in what motion subsists. And these things, indeed, Aristotle assumes as evident.

But he says that form, place and magnitude, neither move, nor are moved, viz. with that motion with which that which is changed into the same is moved: for that which is changed in quality is moved according to a change of quality; but the form to which the thing changed in quality is moved, as for instance, the white, is not whitened. But neither is the form, into which that which is generated changes, generated according to that generation: for it is generated, not having a prior subsistence. Simplicius adds, that Strato very properly observes, that motion is not only in that which is moved, but also in that from which, and in that to which, the motion tends: but after a different manner in each: for the subject, says he, is moved, as that which is changed. And, with respect to *that from which*, and *that to which*, the former is moved as being corrupted, and the latter as being generated. But if some forms are said to move, as soul moves the animal, and gravity the stone, Aristotle does not now investigate the cause of motion, such as gravity and soul, but in what motion is. Gravity, however, is not moved precedaneously, but according to accident, as a sailor in a ship. But the definition of motion is sufficient to show that motion is in that which is moved, and not in any thing else: for motion is the entelechia or perfect energy of that which may be moved.

but

but in that which is moved and is moveable in energy⁵. The mutation, therefore, which subsists according to accident we shall omit; for it is in all things and always, and of all things. But that which is not according to accident, is not in all things, but in contraries, in things which have an intermediate subsistence, and in contra-

* Aristotle having shown that there are five things which ought to be if there is motion, viz. that which is moved, the mover, time, that from which the motion proceeds, and that to which it tends, assumes three from the five as useful to his present purpose, viz. the mover, the thing moved, and that to which the motion tends, omitting time as being external. He also himself teaches us, why assuming that to which motion tends, he omits that from which it proceeds: for mutation, says he, is rather denominated from that into which what is changed is changed, than from that from which it is changed: for we call the mutation into non-being, corruption, and the mutation into being, generation; though corruption is from being, and generation from non-being. At the same time, however, mutation is rather denominated from the end. But change in quality which has its name from that to which it tends, especially evinces this: for we say that a thing which proceeds to whiteness becomes white, and that a thing which proceeds to heat becomes hot. Thus also, the being corrupted is rather denominated from non-being, and the being generated, from being. But Aristotle reminds us of the definition of motion given in the third book, and through it shows that motion is in that which is moved: for if motion is the perfect energy of that which is moveable, so far as it is moveable, and this perfect energy since it is form, is in that of which it is the perfect energy, motion is evidently in that which is moved. But it is neither in form, since mutation tends to form, as in things that are generated; nor in passive quality, as in things that are changed in quality; nor in place, as in things that are borne along: because those things in which motion is inherent are moved; but forms, passive qualities, and place, to which motion tends, are, as has been demonstrated, immoveable. He persuades us also of the truth of this, through the examples of science and heat: for if these were things which are moved, the things proceeding to them would not yet be moved, and things which have arrived at them would not be at rest, but would be moved. But having said that forms, passive qualities, and place, and, evidently, quantity also, to which things in motion are moved, are immoveable, he adduces the following doubt to his assertion. If whiteness is a passive quality, and passive quality is motion, the mutation to passive quality will be to motion through motion; and motion will no longer be in that which is moved, but also in that to which motion tends. If this, however, be the case, either a thing when it is changed, will still be moved, if it is changed into motion, or when it has become situated in motion, it will no longer be moved. But he solves the doubt by saying that not *whiteness* is motion, but *the becoming white*; viz. whiteness, which is a passive quality, is not motion, but the becoming white, which is a mutation to whiteness. Hence the thing that suffers, which is the thing that becomes white, is moved, but not whiteness.

diction ; the truth of which is confirmed by induction. But from that which has an intermediate subsistence a thing is changed as from a contrary ; for it uses it as that which is contrary to each extreme : for that which has an intermediate subsistence, is in a certain respect the extremes. Hence, this compared to those, and those to this, are said to be, in a certain respect, contraries. Thus the middle chord compared to the nete is flat, and is sharp compared to the hypate. Thus also, the dark brown compared to the black is white, and compared to the white is black ⁶.

CHAP.

⁶ Aristotle having shown that motion is in that which is moved, and not in any thing else which is con-subsistent with motion, in the next place, having before demonstrated in that which moves, and in that which is moved, that one thing belonging to them is according to accident, another according to a part, and another essentially and primarily, now says that this division is extended to other things con-subsistent with motion, viz. to the three terms *from which*, *in which*, and *to which* : for he signifies these when he says, “ In those also there is a subsistence, &c.” But concerning the term *in which*, which is time, he had demonstrated in his discourse about time. And proposing to speak about the other two, he discusses one of these, viz. that to which the mutation of passive quality, or form, or place tends : for that which is changed into white, which is the thing that becomes white, is changed accidentally into that which is intellectually perceived : for it happens to the white thing to be intellectually perceived. But when it is said to be changed in colour, it is changed according to a part, because whiteness is a part of colour ; for species are, in a certain respect, parts of genera. When, however, that which becomes white is said to be changed into white, it is neither changed according to accident, but essentially, nor according to a part, but primarily. In a similar manner that which has departed to Athens is changed according to place : for it is changed accidentally into that which is intellectually perceived ; because it happens to Athens to be intellectually perceived. But it is changed in Europe according to a part, because Athens is a part of Europe. And it is changed in Athens essentially and primarily. In the term *from which* also, though it is omitted by Aristotle, the same things may in a certain respect be asserted : for that which is changed from whiteness is changed accidentally from that which is intellectually perceived ; but according to a part from colour ; and essentially from whiteness. Afterwards concluding the whole reasoning, through which he had demonstrated what those things are which are co-subsistent with motion, and that in all of them there are the essential and primary, and still farther, the accidental and according to a part, and that motion is in the thing moved, and not in form, in which it would appear to be the most of all things ; for it is neither in the mover, nor in place, since these are immovable, nor much more in the term *from which*, he says it is evident that motion is in that which is moved. But he transfers that which is moved into that which is moveable in energy, that

CHAPTER II.

SINCE, however, all mutation is from *something* into something (but this is evident from the name ; for it denotes something after another ; and the one signifies prior, but the other posterior)—hence that which is changed may be changed in a fourfold respect : for it may be changed either from a subject into a subject ; or from a non-subject into a non-subject ; or from a non-subject into a subject ; or from a subject into a non-subject. But I call the subject that which is rendered manifest by affirmation. Hence it is necessary, from what has been said, that there should be three mutations, that which is from a subject into a subject, that which is from a subject into a non-subject, and that which is from a non-subject into a subject ; for that which is from a non-subject into a non-subject, is not mutation, because it is not according to opposition ; since they are neither contraries, nor is there contradiction ⁷. The mutation, therefore, which
is

that he may remind us of the definition of motion : for if motion is the *entelechia*, or *perfect energy* of that which is moveable, that which is moved, is moveable in energy.

⁶ Aristotle here rejects the accidental in which also he assumes a subsistence according to a part, as infinite and indefinite. And that this is the case, he shows from mutation according to accident being in all things, and always, and of all things. It is in all things, because mutation according to accident, is in the ten predicaments : for, in consequence of essence or substance being moved, we may also say that every thing else which is an accident to essence is moved, when essence, which is their subject, is of itself moved. But it is likewise *of all things*, either because it is possible to predicate of all things moveable and immoveable, *to move*, and *to be moved*, when we predicate according to accident, as for instance, of the soul : for soul being naturally immoveable according to corporeal motion, may be said to be moved accidentally. Or it is *of all things*, i. e. *to all things* : for we may say that what is white is changed *to* what is musical

is from a non-subject into a subject, according to contradiction, is generation; the simple indeed, that which simply is; but a certain mutation, that which is of a certain thing. Thus the mutation which is from non-white into white is the generation of white; but the mutation from non-being simply into essence, is generation simply, according to which we say, a thing is simply generated, and is not generated some particular thing. But the mutation from a subject into a non-subject is corruption; simply indeed, the mutation from essence into non-being; but a certain mutation, that which is into the opposite negation, as was also said in generation⁸. If, therefore, non-being is predicated multifariously, and neither that which is according to composition or division can be moved, nor that which is according to capacity, which is opposed to being simply considered according to energy; (for that

sical according to accident, and that which is sweet *to* that which is upwards. But it is requisite to understand the terms *in all*, and *of all*, as belonging to natural things, which may be *accidentally* moved: for things above nature, which are primarily motive, are not only essentially immoveable, but cannot be shown to be moveable, even accidentally. But the term *always* signifies that when a thing is not moved of itself, it is possible it may be moved accidentally, in consequence of being in that which is moved; as a man who is at rest in a ship when sailing. Or it may signify that it is possible to predicate the being moved, of things which no longer exist: for the verb *to be moved* may be predicated of Socrates when he is no longer in existence, when the body and the matter which once belonged to Socrates are moved: for that which *happened* to be Socrates is moved. If, therefore, a subsistence according to accident is thus infinite and indefinite, but no science is conversant with the infinite and indefinite, Aristotle very properly rejects mutation according to accident.

But it is truly said by Aristotle, that a mutation from that which has an intermediate subsistence is effected as from a contrary: for if a dark brown colour is mingled from black and white, it is changed into a white colour according to the black which it contains; but this is contrary to white. And again, it is changed into black according to the white which it contains.

⁷ Simplicius justly observes, that the term *something* with Aristotle signifies *a subject*. Though Aristotle, however, here says, that what is changed may be changed in a fourfold respect, yet he does not assert this as if mutation were in all the sections of the division: for one of the four, *viz.* that from a non-subject into a non-subject, is not mutation. But Eudemus says, that privations also may be assimilated to subjects: for that which is blind, and that which has not eyes, are not similarly predicated; nor that which is bald, and that which has not hairs. He says, therefore, that things of this kind are subjects, but not similarly with affirmations.

which

which is not white, or not good, may at the same time be moved according to accident, since that which is not white may be man ; but that which is simply not this particular thing, can by no means be moved ; since it is impossible for that which is not to be moved ;)—if this be the case, it is also impossible for generation to be motion ; because that is generated which is not : for though it should be especially generated according to accident, yet, at the same time, of that which is simply in generation, or becoming to be, it is true to say that it is non-being. In a similar manner also with respect to being at rest. But all these absurdities happen from admitting that non-being is moved. And if every thing which is moved is in place ; but non-being is not in place ; for it would be somewhere ; hence, neither is corruption motion : for either motion or rest is contrary to motion ; but corruption is contrary to generation⁹. Since, however, all motion is a certain mutation ; and there are three

⁸ Aristotle having rejected the mutation from a non-subject into a non-subject, because it is neither contrary nor in contradiction, subjects the remaining three to the species of mutation. And, in the first place he says, that the mutation from a non-subject into a subject, which subsists according to contradiction, is generation, very properly adding, *according to contradiction* : for mutation is not from that which is non-white to that which is white, except according to accident ; but it is necessary that all essential mutation from a non-subject to a subject, should subsist according to contradiction. Since, however, generation is predicated in a twofold respect, the one *simply*, but the other being a *particular* generation,—generation is simply predicated of essences, when mutation is simply effected from non-being ; but a *particular* or *certain* generation is predicated of other things, when a mutation is effected from a certain non-being into the opposite of it. Thus for instance, the generation from a man not white, into a white man, is a *certain* generation ; since it is neither simply generation, nor a generation of essence ; for it is not from simply non-being. But Aristotle does not mean by *simply non-being*, that which *never and in no respect is being* ; for nothing is generated from such a non-being as this ; but he means that which is indeed non-being in energy, but being in capacity : for that is simply *non-being*, which is *simply not this particular thing*. And that is *simply not this particular thing*, which is *not that thing in energy*.

But it may be asked how essence is from that which is simply non-being, but that which is white from a certain non-being. The interpreters solve this question by saying that essence is not generated from a contrary, but from privation : for essence or substance has not a contrary. But white is from black, or from that which has an intermediate subsistence, as black. Hence, by that by which privation differs from contrary, by that, what is now simply called non-being, from

three mutations, which we have enumerated, but of these, the mutations according to generation and corruption, are not motions; and these are those which subsist according to contradiction;—this being the case, it is necessary that the mutation which is from a subject into a subject, should alone be motion. But the subjects are either contraries, or have an intermediate subsistence: for privation is supposed to be a contrary; and it is manifested by affirmation, as the naked, the white, and the black¹.

from which the generation of essence is effected, differs from a certain non-being, from which the generation of other things is effected; and which is not simply called generation, but a certain generation. And so far indeed, as it is from this non-particular thing, it also is generation, but so far as it is from this particular thing and contrary, it is change in quality. Besides this, also, in a still more appropriate manner, the interpreters say that the mutation into essence is effected without any subject being in energy, and abiding, of which we may be able to predicate that what is changed is this particular thing. But in the mutation into essence, the subject itself becomes different at different times, as is evident in seed. Hence the mutation into essence is said to be from that which is simply non-being; but the mutations according to contrary accidents have a certain subject in energy, which abides the same, to which contraries happen, and of which the being changed in quality is predicated. Thus man, remaining man, or this particular body, becomes black, and does not become any thing else, as seed does, which, not remaining seed, but always becoming something else, is changed into man. And Aspasius very properly adds this, in order to distinguish generation, simply so called, from some particular generation; that simple generation is denominated without addition; for man and horse are said to have been made; but whiteness is predicated with addition; for we say that a man is made white.

But Aristotle having spoken concerning the mutation from a non-subject to a subject, which is simply generation, in the next place speaks of the mutation opposite to this, which is from a subject to a non-subject, and says that such a mutation is corruption; *simple* corruption, being a mutation from essence to non-being, and *particular* corruption, being a mutation to the opposite negation: for the mutation from sweetness to that which is not white, is not a certain definite corruption, but the mutation into its proper negation, according to contradiction, as he also said of generation: for it is the same thing to say according to contradiction, as to say opposite negation. But if corruption is a mutation from being to non-being, and all mutation is from that which is in capacity to that which is in energy, there will be that which is being in capacity, and that which is being in energy. Or that which is changed from being to non-being, so far as it is non-being in capacity, and is naturally adapted to become non-being, according to this it changes into non-being, which is non-being in energy.

CHAP.

CHAPTER III.

IF, therefore, the categories are divided by essence or substance, quality, the where, relation, and quantity, action and passion²; it is necessary

¹ The thing now proposed by Aristotle is to show, that neither generation nor corruption are motions. But since generation is a mutation from non-being to being, and corruption is a mutation from being to non-being, and non-being is multifariously predicated, Aristotle, in the first place, enumerates its significations; and shows how it is impossible for that which is called non-being, and which is adapted to generation and corruption, to be moved. That, however, which is in such a manner non-being, as to be never and in no respect being, he omits, as perfectly inefficacious. But he gives a triple division to that which is in any respect non-being in subsistence: for of non-being one kind is as the false, which is in composition and division: for a man either composes things which are not composites, as he who says whiteness has horns; or he divides things which are not divided, as when he says, Aristoxenus is not a musician. Composition and division, however, are properly predicated of bodies, but metaphorically of that which subsists and does not subsist, that is, in affirmation and negation: for affirmation is composition, and negation division; and in these there is the false and the true: for an enunciative sentence has these. Aristotle says, therefore, that neither non-being which is according to composition and division, that is, the false which is according to affirmation and negation, is moved; for neither a false assertion nor opinion, when they are changed to true are moved, as he shows in the categories; nor that which is non-being according to capacity, that is non-being as in capacity, which is opposed to being in energy. Neither, therefore, says he, is it possible for this to be moved; because motion, though it is an imperfect energy, yet is, in a certain respect, energy. And it is requisite that what is moved, should be moved, as being something in energy, and this particular thing, and retaining its nature. But that which is thus called non-being, is no one of beings in energy: for neither is seed, remaining seed, changed into a plant or animal, in the same manner as man, remaining man, is moved according to some one of the things accidental to him, changing from non-white to white, and from non-good to good. Hence, things changed in quality are said to be moved, and not to be changed only, because remaining something in energy, they energize according to motion.

² Aristotle having given a fourfold division to mutation, into that which is from a subject to a subject, into that which is from a non-subject to a subject, into that which is from a subject

necessary that there should be three motions, that which is of quantity, that which is of quality, and that which is according to place. But there is not motion according to essence, because nothing among beings

to a non-subject, and into that which is from a non-subject, and having rejected the last division, demonstrates that neither of two of the mutations is motion; viz. neither the mutation from a non-subject to a subject, which is generation, nor that which is from a subject to a non-subject, which is corruption. He afterwards adds, that the remaining mutation, viz. from a subject to a subject, is alone motion; and that the subjects from which, and to which mutations are produced, are either contraries, or have an intermediate subsistence. And he has said that things which have an intermediate subsistence are changed into the extremes as contraries.

Since, however, mutation is effected from privation, it may be enquired whether such a mutation is as from a subject to a subject, or is according to contradiction. And he says, that it is as from a subject to a subject: for he says, privation is supposed to be a contrary. But if it is a contrary, it is evident that it is rendered manifest by affirmation; and he had before observed, that the thing which is rendered manifest by affirmation is a subject. Hence, privation is a subject, and that which is changed from privation into habit, is changed as from a subject to a subject. But Aristotle assuming the naked as an example of privation being indeed manifest by affirmation, he also adds the white and the black, indicating that as these are rendered manifest by affirmation, so likewise the naked. It may also be said that he indicates something else through this, viz. that contraries being generated from each other, are not only generated as from contraries, but also as from negations: for the white is generated from the black, because the black *is not* white. It is also generated as from privation: for a body which has been for some time black, has an absence of white, at the same time that it is naturally adapted to receive whiteness. But privation is nothing else than the absence of that which is naturally adapted to be inherent: the naked, however, is not properly an example of privation: for privation never returns into habit, as the naked to the being clothed. Thus, therefore, Aristotle says that a certain motion is mutation, mutation being more extended than motion; and hence, he asserts that generation and corruption are mutations, but not motions.

Plato, however, on the contrary, appears to say that motion is more extended than mutation: for he mentions the same mutations as Aristotle, but is of opinion that they are motions. Thus in the tenth book of his *Laws*, he con-numerates generation and corruption with physical motions: but he denominates the energy of intellect, motion, assimilating the convertive motion of intellect to the revolution of a sphere. The discord, however, between Plato and Aristotle is here, as usual, only in names: for each of them similarly admits mutation in all things which are changed according to time. But Plato considering every departure from being as motion, very properly

beings is contrary to essence². Neither is there motion in relation because it is possible that one of the relatives being changed, the other may

properly calls all mutations motions. He likewise does not refuse to call immutable energies, and which have an invariable sameness of subsistence, motions, through the *progression* of energy from being: for *energy is a departure from being, becoming again firmly established in being*. But Aristotle philosophizing in a manner commensurate to the conceptions of the multitude, and guarding against their depravity of doctrine, carefully avoided calling the energy of intellect, which is immutable, motion; or which, as he still more venerably asserts of it, is the same with the essence of intellect: for the vulgar on hearing the word motion, immediately conceive mutation, suspect that the thing which is moved is passive, and directly introduce time together with the motion. If, therefore, Plato admits the word *motion* according to another signification, calling the departure from being, motion, but Aristotle calls mutable energy, motion, according to the common assumptions of names, and does not thus denominate the perfectly immutable energy of intellect, nor yet the mutation which really subsists according to a certain passive quality alone, and which has the smallest portion, or nothing of the energetic, the dissonance between these two philosophers is in the name, and not in the thing.

² Aristotle having divided mutation into generation and corruption, and motion, and having shown that the mutation according to essence is generation and corruption, but that which is according to something accidental, motion, and having also divided generation and corruption into that which is *simply*, and that which is *particular*, now likewise divides motion according to the categories: for in as many of the categories as it can be shown there is motion, so many species also will there be of motion. But since motion is a mutation from a subject to a subject, and from a contrary to a contrary, having enumerated seven categories in which motion appears to subsist, and shown that motion is not in four of these, it remains that it is in three of them, *quantity*, *quality*, and *where*. Hence all motions are generically three.

But Aristotle appears to have omitted in his enumeration the three categories *when*, *position*, and *habit*, for the same cause that he omits the doctrine concerning them in his categories, being satisfied with the description alone of the thing signified. But the reason of this is, that these are not properly categories like the rest: for essence or substance essentializes the subject, and imparts to it the whole of its existence. Hence, the mutation according to it is generation or corruption. But of the other categories, some dispose in a certain respect the subject essence; and others are certain debile habitudes: for Aristotle appears to have considered time as in a certain respect inefficacious; since he does not seem to call it the cause of generation, but speaks of it as alone the cause of corruption; and not even of this properly, "but when," says he, "we do not see any other cause." Of place, however, he saw an abundant power; since, as he says, the generation of fire is a motion upwards. Hence, natural bodies spontaneously aspire after their proper places. But position and habit appear to produce no disposition in bodies worthy of notice. These categories, therefore, both now and then, Aristotle perhaps omits,

may be truly predicated, though in no respect changed; so that the motion of these is according to accident⁴. Neither, therefore, is motion

through their imbecility. He very properly, however, thinks fit to mention relation because it comprehends every habitude.

³ Aristotle having enumerated the categories which deserve to be mentioned, says, that motion is in three of them, viz. in *quantity*, *quality*, and *where*. And in the first place, he shows that motion is not in the other categories, neither in essence, nor in relation, nor in action and passion: and then he shows that it is in the abovementioned three. And that motion, indeed, is not in essence he shows through motion being a mutation from a contrary to a contrary, and that nothing is contrary to essence: for if any thing were contrary to it, the mutation into essence would be effected from a contrary; for in those things in which there are contraries, from these and to these, mutations are produced. The mutation, therefore, into essence is not produced from a contrary essence, but from privation. And again, the mutation from essence is not into essence, but into privation and corruption: for there is not any thing contrary to man as there is to whiteness. If, therefore, motion is in contraries, but essence is not in contraries, motion is not in essence: for a mutation into essence is not effected from a subject to a subject, nor from this particular thing being in energy, and remaining, but it is effected according to contradiction: for from that which is not this particular thing, this particular thing and essence are produced; as he shows in the first book of this treatise, when he says, that essence is produced from privation; and he there asserts, in a more common manner, that privation is contrary to form. If, therefore, privation is absence and non-being, but non-being is not rendered manifest either by essence or affirmation, it is evident that essence is not generated from a contrary essence.

If some one, however, perceiving that seed, from which man is produced, is essence, should say, that the mutation into essence is from essence, and, on this account, should think that motion is in essence, he does not perceive that man is from seed, not so far as seed is essence, but so far as it is man in capacity; viz. it is from the privation of man, and from non-being. If, therefore, he says that such a mutation is motion, what will that be which is moved in it, and which is in energy and remains? for it is not man, because he yet is not: for he is generated. Nor is it the seed; for it is not preserved. But the subject of the seed is matter, which is indeed *being* in capacity, but non-being in energy. And it is impossible for that which is non-being in energy to be moved. But if motion is from a contrary to a contrary, and seed is not contrary to that which is generated, the mutation from seed will not be motion.

Here, however, some one may enquire how fire and water are not essences contrary to each other, so as that essence may be contrary to essence. And if this be the case, how can it be said that the mutation of fire and water into each other, since it is from a contrary into a contrary, is not motion? To this it may be replied, that in fire and water, there are certain contrary qualities, the hot and the cold, the moist and the dry; and that the essence of fire does

tion of agent and patient, nor of any thing moved and moving, because there is not motion of motion, nor generation of generation, nor in short, mutation of mutation. For, in the first place, there may be a motion of motion in a twofold respect. Either as of a subject; as for instance, a man is moved, because he is changed from white into black. Is motion, therefore, thus heated or refrigerated, or does it change its place, or is it increased, or diminished? But this is impossible; because mutation is not any subject. Or there may be a motion of motion, because some other subject is changed from the mutation into another form; as for instance, a man from disease into health. But neither is this possible, except according to accident: for this motion is a mutation from one form into another; and in a similar manner generation and corruption; except that these mutations are thus into opposites, but this is not the case with motion. At the same time, therefore, he is changed from health into disease, and from this very mutation into another. It is manifest, however, that when he is diseased, he will now have been changed into a certain disease; for he may rest, or remain in that disease. Besides, he who is moved to disease, is not always moved to any casual motion, and that from some one to some other. So that the motion will be opposite, viz. the becoming well; but this, because it so happened; just as if from reminiscence he should be changed into oblivion, because that in which

does not alone consist in the hot and the dry, but also in levity and splendor*, according to which earth rather than water will appear to be contrary to fire. But the form of fire is in all these qualities, and in the essence which is the subject of the qualities. Hence, to fire simply considered nothing is contrary, although the qualities of fire and water are contrary to each other. And even though it should be granted that fire and water are contrary to each other, yet the mutation of them into each other will not be motion: for what is that which is moved, when water is changed into fire? It is not the water; for it is corrupted: nor the fire; for it is not yet. But that which, after the motion is finished, has been moved, this it is which is moved. It is requisite, however, to observe that Aristotle, from what he now says, denies *motion*, but not *mutation* of the other categories: for generation and corruption are a *mutation* in essence.

* See the Introduction to my Translation of the *Timæus* of Plato.

these

these are inherent is changed, at one time into science, and at another into health⁵. Farther still, there would be a progression to infinity, if there should be a mutation of mutation, and generation of generation. It is necessary, therefore, that the former should be, if the latter will be. Thus, if simple generation should at any time be generated, that also which is generated will be generated. Hence that which was simply generated was not yet, but there was something which was generated, and which is now generated, and this again was once generated. Hence, that which was then generated was not yet. Since, however, there is not any thing first in infinites, there will not be that which was first generated; so that neither will that be which is consequent to this. Neither, therefore, is it possible for any thing to be generated, or moved, or changed⁶. Again, contrary motion is of the same thing; and

⁴ Aristotle in the next place shows, that neither is motion of itself in relation: for relatives do not always happen according to a proper mutation: but other things being moved, they subsist differently at different times, without being, in any respect, moved themselves; so that relative mutation does not subsist through motion. But it is necessary that things which are moved should be changed themselves by themselves; as for instance, things changed in quality, increased, and corrupted. That, however, which was before on the right hand, becomes on the left, something else being moved: and the same thing without being at all changed, is greater and lesser, double and half. The same assertion likewise is at one time true, and at another false, the thing of which the assertion is made being changed. If, therefore, any thing is changed according to relation which is not moved, the mutation according to relation is not motion, except according to accident: for that is changed by itself, and not this to which it happens to be on the right hand. And thus this becomes from the right on the left hand. Things also which are themselves by themselves moved, and through their proper motion change a certain habitude to a certain thing, or are locally moved, do this; as he who becomes from the right on the left hand. Or this is effected according to *quality*; as he who becomes similar from being dissimilar. Or according to *quantity*; as he who becomes equal from unequal. And hence, the permutation of habitude is effected according to the relative motion of these. We must not, however, here direct our attention to that which possesses habitude, but to habitude itself, whether it be proper to say that it is moved by itself, or accidentally: for that when habitude is of itself moved, the things also which possess the habitude, possess essentially motion according to the habitude, seems to be evident.

⁵ In the next place, Aristotle shows that neither is motion according to *acting and suffering*, transferring

and likewise rest, generation and corruption. Hence, that which is generated, is then corrupted when it becomes that which is generated:
for

transferring action and passion into agent and patient : for if motion is according to action and passion, it is so in consequence of the agent and patient changing according to *action* and *passion*; just as it is also according to quality, because the body with a certain quality is changed according to the quality which it contains. But there will be a change of the agent according to the agent, when the agent is changed from action into some other action; and there will be a change of the patient, when the patient, from passion, is changed from one passion to another. But of the two arguments which are here employed by Aristotle, the first, which is assumed from a necessary division, is as follows : If there is a motion of motion, motion is either a certain subject as being itself moved according to a certain form of motion, as when we speak of the motion of a man who changes, either according to quality, or according to quantity, or according to place. But if this be the case, motion will be heated or increased, or will be changed according to some other mutation, in order that there may be a motion of motion. Motion, however, is not a subject ; for it is neither said to be heated, nor refrigerated ; because these are the peculiarities of essence. But motion is not essence, since it possesses its being in that which is moved, as in a subject and essence. If, therefore, there is not a motion of motion in this manner, it remains, that if it at all is, it is so as that motion being in a subject, the subject is changed from one motion into another ; as when we say, there is a change from white to black, because the subject of these qualities, as for instance, man, is changed from one of them to the other.

But neither, says he, can it be said there is a motion of motion, as if another certain subject were changed from a certain motion to another motion, viz. from one form to another, except according to accident. Aristotle, however, informs us how it is possible to change according to accident from motion to motion : for when any one is changed from oblivion to reminiscence, the mutation appears to be from motion to motion : for reminiscence and oblivion are certain motions. There seems, however, to be a motion of motion according to accident, because he to whom it happens to forget, is changed to recollection. In like manner, a man is changed from being diseased to being well : for he says, he is changed from disease to health, in such a manner as from motion to motion. But the words "*into another form*," are properly added : and Aristotle subjoins the cause, when he says, *motion itself is a mutation from one form to another*. And not only motion but also generation and corruption subsist in a similar manner : for in those also there is a mutation from one form to another : for every mutation is from an opposite to an opposite ; except that generation and corruption indeed are mutations into opposites, according to *contradiction*; but motion is into opposites as into *contraries*. And this Aristotle evinces when he says, "*except that these mutations*," that is generation and corruption, "*are into opposites, thus*," i. e. according to contradiction, "*but this is not the case with motion*," viz. motion is into contraries. But he shows by an example, that every mutation is from one form into another, when he says, "*as for instance, a man from disease into health*:" for as in
this

for neither immediately when it is generated is it then corrupted, nor afterwards ; since it is necessary that what is corrupted should have a

this instance that from which, and that to which are different, so likewise if any thing is moved from motion to motion, that from which, and that to which will be different : for the mutation from a slower to a swifter motion, is perhaps itself from an opposite to an opposite form ; but perhaps is not from motion to motion. For there is one motion to the same thing ; and an intension is produced from that which has an intermediate subsistence, and as from permanency and rest : for a slow motion is mingled with rest, and has the same relation to a swift motion as a dark brown to white. *According to accident*, therefore, as has been observed, it is possible that there may be a motion of motion, when the subject is changed from one motion to another ; but *essentially* this is impossible. And Aristotle adduces the consequent absurdity when he says, “ *at the same time, therefore, he is changed from health into disease, and from this very mutation into another :*” for if the mutation or motion itself from health to disease should be said to be moved, that which is moved from health to disease, will at the same time be moved according to this motion, and from this very motion will be changed into another, as for instance, into the becoming white, if motion is moved. At the same time, therefore, he will be changed into disease, and into that which is the end of the mutation, into which he is changed from the mutation from health to disease, as for instance, into white. When, therefore, he is in disease, he will evidently be changed into disease, and into something else to which there was motion, and into which the former motion was changed. But since this something else was not defined, hence Aristotle says when he is diseased, he will be changed from this very mutation into another.

But how reminiscence is changed according to accident into oblivion, Aristotle manifests by saying, “ *because that in which these are inherent is changed,*” viz. man or soul is changed according to these. If, therefore, it is necessary, either that motion should be a subject, or in a subject ; but it is neither a subject, nor when in a subject can be moved, according to neither mode will there be a motion of motion. Simplicius adds, it is here, however, worth while to observe, that Aristotle does not deny all mutation of motion, but motion alone : for to the being at the same time changed from health to disease, and from this very mutation to another, which he adduces as absurd, it follows, that motion is moved : for that which is moved, is moved remaining what it is. If, therefore, *to be diseased* is moved, remaining what it is, it is changed into its opposite *to be well* ; so that the same thing will be diseased and in health. But this absurdity is not consequent to generation : for a thing is not generated remaining that which it is, in the same manner as a thing remaining what it is, is moved : for generation is not from being into being, but from non-being into being, and from a non-subject into a subject. But though generation is from non-being into being, if any one should say there is a mutation of this mutation, since that which is changed is changed from an opposite into an opposite, yet at the same time it is changed from non-being to being, and from being to non-being, so that so far as it is generated, it is also corrupted.

subsistence :

subsistence⁷. Farther still, it is necessary that matter should subsist under that which is in generation or becoming to be, and under that which

⁶ Aristotle having shown that there is not a motion of motion, that is, that motion is not moved, demonstrates the problem still more universally, that there is not, in short, a mutation of mutation. But he shows this through a deduction to an absurdity, syllogizing as follows: If there is a motion of motion, or generation of generation, or, in short, a mutation of mutation, there is neither motion, nor generation, nor mutation: but these not being, it is not possible that any thing should be generated, or moved, or changed; and if these are not, there will neither be things that are moved, nor things that are changed. But he demonstrates that which is conjoined with this, through two middle terms: for if there is a generation of generation, or a mutation of mutation, it is necessary to proceed to infinity; and if this be the case, there will neither be a first, nor a last; so that there will neither be generation nor mutation. But that it is necessary there should be a progression to infinity, if there is a mutation of mutation, he demonstrates from this, that if there is, in short, a mutation of mutation, there will not only be a mutation of this mutation which is produced, but also of that from which it was generated into this. And again, there will be another generation of this, and it will be always necessary to assume some other mutation, which has an existence prior to the assumed mutation. And if this be the case, it will be necessary always to proceed to infinity assuming one mutation prior to another. But if this be admitted, that which is next to this in order will follow: for there not being a first mutation, neither will the mutation be which is posterior to this; nor that which is next in order to this; nor, in short, any other as far as to the last. So that if there is a mutation of mutation, there will not be mutation.

It must here, however, be observed, that when Aristotle says, there is not a first in infinities, and therefore, not that which is next to this in order, he does not assert this of all infinities, but of the progression to infinity of generation and mutation: for if simple generation, according to Aristotle, is not a generation of generation, but of something else, as, for instance, of man, if this were at any time generated, as those assert who admit a generation of a generation, then that which is generated, was generated: for since generation has its being in becoming to be, if generation were generated then that which is generated is becoming to be, and is not yet generated. And, it is evident that the generation of this also was generated, and was not yet: for it has the being generated or becoming to be; but to be that which is generated, it has not yet. And, if this takes place to infinity, and it belongs in common to all progressions to infinity that a first cannot be assumed, for there is always one thing prior to another, but it is peculiar to these that no one of the things assumed is that which it is said to be, since it is not generation, but is generated, if there is a generation of generation;—if this be the case, and there is not, in short, a certain generation from which it is possible to begin, neither will there be that which is consequent to this, that is, neither will there be another generation in a following order, because there is not a generation prior to it, by which it may be generated: for the generation prior to this

which is changing. What then will it be? As that which is changed in quality, is either body or soul, so that which is becoming to be, is either motion or generation. And again, what is that into which it is moved? For it is necessary that there should be motion and generation of this, from this into this^a. At the same time, however, how will

was generated. And that which is now generated is becoming to be, since generation has its being in becoming to be. Neither, therefore, have the successive generations any existence, since they are supposed to subsist in becoming to be, but there is no pre-existing generation of them, according to those who assert that there is a generation of generation. Hence Aristotle adduces this absurdity, that it is not possible for any thing to be generated, or moved, or changed; which is consequent to the hypothesis of those who assert that there is generation of generation, and mutation of mutation to infinity. He, however, who asserts that there is man prior to man to infinity, does not fall into this absurdity: for though there should not be a first man, yet every assumed man now is, so as to be able to produce man, and not man subsisting in becoming to be, as generation was yet becoming to be, and actually was not.

⁷ Through another argument, also leading to an absurdity, Aristotle shows that there is not a generation of generation, that is to say, that what is generated when it is generated would then be corrupted; and thus it is absurd that a thing should be at once moved with contrary motions. But he shows this, previously assuming as an axiom that contrary motions are of the same thing, and both are evidently not at once, nor are both entirely according to nature; but that a thing which is moved with any motion, is also moveable with a motion contrary to this. In like manner he previously assumes, that of that of which there is a certain motion, there is also rest contrary to that motion: for these assertions are true in change according to quality, in increase and lation, and in generation and corruption. If, therefore, there is a generation of generation, so as for generation to be something generated, it is evident that it will also be corrupted; for generation and corruption are of the same thing. At some time or other, therefore, this which is generated, viz. generation, will be corrupted: for if neither in the beginning of being generated or becoming to be, it is corrupted, which Aristotle calls, *immediately when it is generated*, for it is not yet generated, nor after it is generated, for generation subsisting in becoming to be, and being no longer after it is generated, it will not then be corrupted, because it is necessary there should be that which may be corrupted, in order that generation may be corrupted, but generation is no longer after it is generated, in the same manner as motion no longer is, after that which is moveable according to it has been moved. If, therefore, generation is neither corrupted immediately as it is becoming to be, nor after it is generated, it is necessary that it should then be corrupted when it is generated: for Socrates indeed, when he ceases to be generated, or to subsist in becoming to be, and is now that which is generated, is then corrupted; but generation, if it were generated when it is generated, no longer is; so that neither is it then corrupted; for
it

will it be? for the generation of discipline will not be discipline; so that neither will there be generation of generation, nor a certain generation of a certain generation⁹. Again, if there are three species of motion,

it is necessary there should be that which may be corrupted. So that generation, if it were generated, would then be corrupted when it is becoming to be generated,—which is absurd; since it is impossible for the same thing to be at once generated and corrupted: for if generation were generated, it would also be corrupted, through the axiom previously assumed, that of the same thing there are contrary motions.

Another conclusion also appears to result from what has been said: for if generation is not corrupted, neither immediately on its commencement, nor after it is generated, because at its commencement it is not yet, and when generated no longer is, nor yet when it is generating, lest it should be at once moved with contrary motions, it will evidently not be at all corrupted. And if it is not corrupted, neither will it be generated according to the axiom previously assumed, viz. that there is a contrary motion of the same thing. The axiom also, that there is rest of the same thing, is useful to Aristotle in this demonstration. But it is well observed by the interpreters, that through rest he indicates that the same reasoning is likewise adapted to motion: for if motion were moved, and that which is moveable according to a certain motion is also naturally adapted to rest with a rest opposite to that motion, it is evident that motion also, while it is motion, will be at rest, which is absurd. And it is still more absurd, that it should at once both be moved and be at rest: for if it is necessary there should be that which is at rest, as there is also that which is corruptible, and if motion, immediately at its commencement, is not yet; and when it ceases no longer is, but has its being in becoming to be moved, it is evident that it will at the same time be moved and be at rest. And from the other axiom, which says there are contrary motions of the same thing, the absurdity is also inferred in motion: for if motion subsists only in becoming to be moved, just as generation subsists in becoming to be, and is neither prior nor posterior to this; if motion were moved, since it is moved to a contrary, remaining that which it was, it will at the same time be moved with contrary motions.

⁹ This is a common argument in all mutation: for if there is a generation of generation, and in short a mutation of mutation, since every thing which is generated is generated from a certain subject and a certain matter, which when it receives form becomes that which it is becoming to be; and if generation should be said to be generated, and mutation to be changed, there will be a certain subject from which generation and mutation are produced: for as to fire, when it is in generation or becoming to be, there is a certain matter spread under it, from which it is generated; and, as brass is the subject matter of a statue, and body or soul, of change in quality; so likewise there is a certain matter spread under that which is generated, and not only under that which is *simply* generated, but also under a *particular* generation and motion, and, in short, mutation: for, for the sake of this, Aristotle uses the example of change in quality; since if nothing subsists as a subject, neither will any thing be generated. If, therefore, generation is

motion, it is necessary that some one of these should be the subject nature, and to which they are moved. Thus, it is necessary that lation should be changed in quality, or borne along¹. In short,

generated, and generation is that which is generated, it is entirely necessary that there should be matter as the subject of its generation, which is generated by the participation of generation. And if motion is moved, in a similar manner there will be a certain subject which is moved according to the motion, from this to this, that is, from one form to another, into which that being changed which is the subject in the thing moved and generated, motion and generation are generated; just as in that which becomes white, the subject being changed according to a tendency to whiteness, is changed into white. If, therefore, it is necessary that what is generated should be a certain subject, and this is neither motion nor generation, but something different from motion and generation, what will this be? Just as that which is changed in quality, is either body or soul, which are different from change in quality. But if motion is moved, and generation is generated, and there is not any subject of these as matter, that which is absurd and impossible must ensue, since it is necessary that matter should be the subject of that which is moved and generated. This absurdity, therefore, Aristotle concisely infers through the enquiry what will be the subject matter, in the same manner as that which is changed in quality is either body or soul.

But he infers another absurdity from it being necessary that that to which things moveable are moved should be something different from these. Thus, if a body is whitened, there is a certain whiteness different from the body, to which the body is moved; but in the things proposed, there is nothing else besides these: for if motion is moved, and generation generated, what other thing will there be besides motion and generation, to which motion will be moved and generation generated? Just as whiteness and science, to which body and soul are moved, are different from body and soul. If, therefore, in these there is not any thing else to which they are moved, and it is entirely necessary that there should be in that which is moved and generated, it is evident that neither motion is moved, nor generation generated.

⁹ This is a fifth argument, showing that there is neither a generation of generation, nor a motion of motion: and he also deduces this to an absurdity. But he demonstrates this also from a similar apposition: for as, says he, the generation of discipline is not discipline, since, if this were the case, discipline would be before it is generated, so neither is there a generation of generation: for if generation is that which is generating, if there is a generation of generation, but that which is generating is not yet, generation will not be the *becoming to be generation** of generation. Farther still, if that which is changed in quality is one thing, and the change of it

* For generation is not a *becoming to be generation* (γενεσθαι γενεσε) since it is generation; i. e. it is *becoming to be something else*, and not generation.

another,

short, since every thing which is moved, is moved in three ways, viz. either according to accident, or according to a part, or from itself, mutation can alone be changed according to accident; as if he who is restored to health should run, or learn. Mutation, however, according to accident, we have already omitted². But, since motion neither belongs to substance or essence, nor to relation, nor to action and pas-

another, and that which learns is one thing, and the learning of it another, and if, also, that which is generating is one thing, and the generation of it another, if generation is that which is generating, the generation of generation will not be generation, nor will the motion of motion be motion.

Aristotle also adds, "neither will there be a certain generation of a certain generation:" lest some one should think that there is not indeed a generation of universal generation, but that there may be some particular generation of a particular generation: for, in short, that which is generated is one thing, both in genus and species, and the generation of it another.

¹ Aristotle rightly says from the hypothesis, if there are three species of motion; for it was proposed to demonstrate this, that motion is in three categories alone, i. e. in *quantity*, *quality*, and *where*; and that it is not in the others, nor in action and passion, because there is not a motion of motion, against which the abovementioned arguments, and what is now asserted, are directed. Aristotle, therefore, demonstrates the proposition that there is not a motion of motion, by adopting the hypothesis that there are three species of motion, and adding, that it is necessary every thing which is moved, should be moved according to some one of these species of motion. Hence, the subject nature which we say is moved, is either change in quality, or lation, or a mutation according to quantity. But it is not only necessary that motion which we say is moved, and which is the subject of motion, according to which it is said to be moved, should be some one of these three, but also the things to which it is moved: for they are either *quantity*, or *quality*, or *where*; since motion either tends to *whiteness*, or to a *greater quantity*, or *upwards*, or to *things allied to these*. This being the case, assuming the necessary in common, he adds, it is necessary that lation, if it should be the motion which we say is moved, should be either changed in quality, or borne along, or changed in quantity. But it appears to be ridiculous and is impossible that lation should become white, or become hot.

² It is alone possible that there can be a motion of motion, according to accident: for it cannot be essentially, as has been before shown, nor according to a part: for as universal change in quality cannot be locally moved, so neither that which is particular. If, therefore, there can alone be a motion of motion according to accident, but a subsistence according to accident is exploded, as unadapted to science, it follows, that there is not a motion of motion; from which it is manifest, that motion is not in the category of *action* and *passion*, which it was proposed to demonstrate. But Aristotle considers that which is passive alone, because the energy being one it is from the agent in the patient.

sion ;

sion ; it remains, that it alone subsists according to quality, quantity, and situation : for in each of these there is contrariety³. Let, therefore, the motion which subsists according to quality be alliation ; for this common name is adapted to it. But I mean by quality, not that which is in essence ; for difference also is quality, but that which is passive, according to which it is said to suffer, or to be impassive. But the motion according to quantity, with respect to a common name is anonymous ; but when it is divided into two species, it is increase, and diminution ; the increase which tends to the perfect being magnitude ; but that which is from this, diminution. And the motion according to place, with respect to the peculiar and the common, is anonymous ; but let it be called, in common, lation ; though those things alone are properly said to be borne along, which, when they change their place, cannot of themselves stop, and which do not move themselves according to place⁴. But the change to the more and the less in the same form

³ Aristotle surveying motion as a mutation of a subject according to disposition, denies it of all the categories which subsist according to habitude, and are but in a small degree efficacious, and which do not obviously affect their subject : for *situation* and *habit* do not appear to produce any firm disposition in their subject : for what difference is produced in a body from its being in a prone or supine position ; or in a ring, whether it is placed round the finger, or not ? Aristotle also appears to have surveyed time as inefficacious. Hence, he says, it is by no means the cause of generation, but seems to be the cause of corruption alone ; and of this, because he could not perceive any other cause. But *quality*, *quantity*, and the mutation according to these, turn and dispose differently at different times their subject essences. In like manner place also, according to Aristotle, has no casual power, since he was of opinion, that the generation of the elements is their lation to their proper places. But he did not consider motion as belonging to the category of *action* and *passion*, because these are motion ; but there is not a motion of motion, though there may be a generation and corruption of it. And there is not a generation of generation, though there is a mutation of it. Nor is there a mutation of mutation, though there is another certain mode, according to which mutation proceeds from non-being to being, and from being to non-being. Through these differences, therefore, Aristotle denies that motion is in the abovementioned categories, but entirely admits that mutation is in them, since they are not perpetual.

⁴ Aristotle having distinguished the predicaments in which it is requisite essential motion should subsist, viz. *quantity*, *quality*, and *where*, now teaches us what the motion is in each of these

form is alliation: for motion is from the contrary to the contrary, either simply, or in a certain respect: for the alliation which proceeds to the less is said to be changed into the contrary, but that which proceeds to the more, is moved as from the contrary to it. But it is of no consequence, whether it is in a certain respect changed, or simply; except that it is necessary that the terms should be contrary. But it is more and less, because more or less of the contrary is inherent, and is not inherent. That there are these three motions alone therefore, is from these things manifest ⁵.

these, what their differences are, and what their appellations. Since, however, essential differences also are called qualities, as *rational* and *binnible**, and passive properties likewise are called qualities, such as heat and dryness, according to which we say a thing is passive or impassive, Aristotle very properly asserts that we should call the mutation according to these qualities motion, and that we should denominate it *alliation*: for the mutation according to essential differences, is not called motion, but generation and corruption. Hence, it is not *alliation* but rather *generation*: for that which is generated appears to be another thing, and not to be changed in quality. But it is not motion, because no subject being in energy, and remaining the same, is changed from rational to irrational, or in short, from a contrary to a contrary. But the differences constitutive of species are called qualities, though they are essences, because they define or bound quality about essence.

Aristotle also, here shows what is the contrariety according to quantity. That in every thing which is naturally adapted to be increased, there is a perfect and an imperfect magnitude; but the mutation according to quality has that which is denominated in *common*, and the mutation according to quantity has *peculiar* appellations. The motion, however, according to place, is, says he, according to both anonymous. But he calls it in common *lotion*, perhaps because he found it to be so called, which indicates it is not properly denominated; since we say that things inanimate, such as have a natural subsistence, and such as are moved by violence, are alone *properly borne along*. We no longer, however, say that animated beings, and which have soul in themselves as the principle of being moved and standing still, are *properly borne along*; but we alone assert this of such things, as neither themselves locally move themselves, nor when they are moved have the power to stop themselves. Eudemus adds here, that all motions and mutations are rather denominated from that to which they tend, than from that from which they proceed; *increase* indeed from tending to *the great*, but *diminution* from tending to *the small*. In *alliation* also, discipline and becoming well; and in local motions, *to Athens* rather than *from Corinth*, or the contrary.

* i. e. The quality of neighing.

CHAPTER IV.

BUT that is immoveable, which is entirely incapable of being moved, just as sound is invisible; and also that which is scarcely moved in a long time, or which begins to be moved slowly, and which is called difficult-to-be-moved. That likewise is immoveable, which is naturally adapted and able to be moved, but is not then moved when it is naturally

⁵ Aristotle having said that the motion according to quality, has a common name, alliation, but that the motion according to quantity, has not indeed a *common* name, but has a *peculiar* name, *i. e.* increase and diminution, and that the motion according to place, has neither a common nor a peculiar name; and since things which are changed according to quality, at one time are changed from one form to another, as from black to white, but at another, remaining in the same form, make their mutation into the more and the less of it,—this being the case, he very properly observes, that the mutation according to the more and the less in the same form, is alliation; and it is not requisite to investigate another name in it. But that this is true, he demonstrates from it having been shown that all motion which is from a contrary to a contrary, subsists either *simply, or in a certain respect*. But motion which subsists in a certain respect, is that which is produced from the intermediate according to intension in the same species. And it has been shown that the mutation which is from the intermediate to the intermediate, is from a contrary to a contrary. If, therefore, the white becoming less white, is changed into the intermediate, as into its contrary, it is evidently changed as into black: for that which is less white becomes such through the mixture of black. Hence motion proceeding to the less must be said to be changed into the contrary; but it is changed into the more, when it becomes more white: so that it changes from the less white, as from a white contrary to itself, so far as black has an intermediate subsistence. If, therefore, to proceed to the more and the less, is to be moved as to that which has an intermediate subsistence, and as from the intermediate; and if that which is intermediate is, in a certain respect, contrary; the motion also to the more and the less, as being in a certain respect to a contrary, and from a contrary, is in a similar manner to be called alliation; just as the motion which is to the simply contrary, black itself, and the motion from black itself, are denominated alliations: for it makes no difference, so far as pertains to the denomination of alliation, whether a thing is changed in a certain respect, or simply; viz. whether it changed to things

turally adapted, and where, and as it is naturally adapted ; which alone among things immoveable, I denominate to be at rest : for rest is contrary to motion ⁶ ; so that it will be a privation of that motion of which it is capable. What motion therefore is, and also rest, how many mutations there are, and what kind of mutations are motions, is evident from what has been said ⁷.

things intermediate, and from these, or to extremes and from them. But Aristotle having said that it is of no consequence whether a thing is changed in a certain respect, or simply, cautiously adds, "except that it is necessary that the terms should be contrary:" for the intermediate from which and to which the mutation which subsists in a certain respect is produced, is not simply contrary to each of the extremes, but in a certain respect contrary, and in a certain respect not. Hence it is not simply contrary. And, in consequence of this intermediate nature, being in a certain respect contrary, and in a certain respect not, and at one time having more, and at another less of contrary, the more and the less also happens to the mutations from this, and to this. If, therefore, the nature of the more and the less is through the intermediate, it follows that the motion to the intermediate makes that which is moved in the same species less, but the motion from the intermediate makes it more.

⁶ Should it be enquired why rest is a privation of motion, but motion is not a privation of rest? the solution is, that nature is precedaneously the cause of motion, which is energy, though an imperfect energy ; but privations are the absences of habits and energies. Rest, also, is not permanency in energy : for permanency is energy, and also the form which is co-ordinate with motion is energy ; but rest is not energy, but the absence alone of motion : for rest is not such a privation as blindness ; since such privations as this, are not only absences of energies, but are also dispositions of habits and essences, contrary to nature. Hence they do not reciprocate, as rest, which is a privation of that which is capable of receiving motion.

⁷ Aristotle concludes the whole problem, by separating motion from the other mutations, and by distinguishing the categories in which motion is, and demonstrating how rest subsists with respect to motion. What motion, therefore, is, he informed us when he said, it is a mutation from a contrary to a contrary, the subject remaining, and being changed. He has also informed us what rest is, that it is the privation of that which is naturally adapted to be moved, when it is naturally adapted, and where, and as it is naturally adapted. He has likewise unfolded, how many mutations there are ; that all of them are progressions from a subsistence in capacity to a subsistence in energy, that which is in capacity still remaining ; and that the motions of these are, as has been said, from a contrary to a contrary ; but that others, which are according to contradiction, are generations and corruptions : for that motion is in three categories, *quantity*, *quality*, and *whers*, he concluded when he said, "that there are these three motions alone therefore, is from these things manifest."

CHAPTER V.

IN the next place, let us show what *the subsistence together, or at once*, (*το αμα*), and *separately*, is, also what *to touch* is, and *to have an intermediate subsistence*; and what *the successive* is, *the adhering*, and *the continuous*, and in what things each of these is naturally adapted to subsist⁸. Such things, therefore, are said to subsist together, or at once, according to place, as are in *one place primarily*. But things subsist separately which are in different places⁹. Those things are said to touch.

⁸ Since the scope of the five first books of the Physics is to teach concerning physical principles, and those particulars which follow in common all natural things, this fifth book gives completion to the discussion of mutation: for in the third book Aristotle delivered that which is common to all mutation, denominating it motion; but here, resuming the discussion, he divides the genus of mutation into its proper species, and demonstrates that motion is one of them. He likewise informs us in what motion differs from other mutations, and in what genera of being it is allotted a subsistence. But here he teaches us concerning those particulars which follow in common natural things that have their subsistence in place. Simplicius adds, it also appears to me, that what is here said concerning mutations, give completion to what is said in the third book concerning motion; and that which is here about to be said, is consequent to the discussion of place, which Aristotle concluded in the beginning of the fourth book. But these things are useful partly to what will be said in the three following books concerning motion, and partly to the demonstration that no continued quantity can be produced from impartibles, or things without parts. Hence, in the beginning of the sixth book he discourses about these, as of things already demonstrated.

⁹ The one place of things which are said to subsist together, or at once, according to place, is that which proximately comprehends them when separated from each other; as a city, if they are in a city, and a vestibule, if they are in a vestibule. But the word *primarily* is added, as explanatory of the proximately proper place of things which are said to subsist together in place: for these are the things which properly subsist together according to place; since, things in the same house,

touch each other, the extremities of which are together¹. But that has an intermediate subsistence, to which the thing that is changed is naturally adapted to arrive, before it comes to the extreme into which it is changed; when it is continually changed according to nature. The least intermediate subsistence, however, is in three things: for the contrary is the extremity of mutation. But that is continually moved, which intermits nothing, or the smallest portion of the thing, but not of time: for nothing hinders but that an intermission taking place, and immediately after the *hypate* or the highest chord, the *neate* or lowest chord may sound. This, however, is an intermission of the thing, in which motion is produced. And this is evident in mutations according to place, and in other mutations. But the contrary according to place, is that which is very much distant in a right line: for the smallest right line is bounded; and that which is bounded is a measure². That is *successive*, between which and that to which it is successive,

house, in the same theatre, in the same city, and in the world, are said in a more common way to subsist together in place. But there is neither properly one place of things which are thus said to subsist together, nor a proximate and appropriate place, since it contains many other things in itself. Things also are said to subsist together in time, which are in the same individual time, which evidently is both one and proximate. But the subsisting *separately* is manifest from the subsisting together: for things which are in different times and places, are separate from each other, both according to time, and according to place.

¹ Things comprehended by one proximate place, when they approach to each other, so as to conjoin their superficies, and become fitly united to each other in superficies, are then said to touch each other; as when two superficies become one, then they mutually touch. But it is evident that this is the case from hence, that things which touch entirely subsist together, but things which subsist together, do not also entirely touch.

² Aristotle says that the least intermediate subsistence is in three things, because it is possible that more than three may be assumed between certain things. The extremes, however, are the things *from which*, and the things *to which*, which are immediate contraries: for motion, according to nature, is from a contrary to a contrary; for if the extremity of the mutation, in which the mutation ends, is contrary, and the contrary is contrary to a contrary, the first thing also from which mutation proceeds is contrary. But that which subsists between contraries, physically indeed, according to place, is that which is between *above* and *beneath*. That which has an intermediate subsistence according to quality, is the middle of immediate contraries according to contrariety; but that which has an intermediate subsistence according to quantity, is the middle of a perfect and imperfect magnitude

cessive, there is nothing of the same genus ; when it is alone after the beginning, either by position, or nature, or is thus defined in some other way. I say, for instance, as a line or lines between a line ; or the monad or monads between the monad ; or a house between a house. Nothing, however, hinders but that something else may subsist between : for that which is successive is successive to something, and is something posterior : for one is not successive to two, nor the first day of the month to the second ; but the latter are successive to the former³.

But

nitude ; *from which*, and *to which* that which is increased and diminished, being still preserved, is changed : for the magnitudes of every thing which has a natural subsistence, are bounded. But things which are otherwise said to have an intermediate subsistence, are not properly intermediate, but are said to be so, from a similitude to these.

³ The *successive* is successive to something which has the relation of a principle to it : for that which is after the principle, being homogeneous to the principle, or rather possessing a form similar to it, is successive to the principle ; when there is nothing homogeneous, or of a similar form between it, and the principle. Thus a house is successive to a house, the second to the first, when there is no other house between them. But the principle of its being successive, and the successive itself, are multifariously predicated : for they are either by position, or order, or species, or passive quality, or time, or generation, or number, or something else of this kind. By *position* indeed, such things are successive as are situated somewhere, as if we should describe many lines, or assume many houses or cities. By *order* indeed, as the proœmium of a narration, and the beginning of the games. By *species*, as when we assume colours successively, one by one, beginning from white as far as to black, whether these are seven, or whether they are more than seven. But Aristotle enumerates them in his books on Sensibles. By *passive quality*, if we conceive a mutation from cold regularly proceeding to the milky and the tepid, the hot and the fervid. But things are successive according to *time*, when we denominate the first, second, third, and following days of the month. By *generation*, when we say, that in animals the heart is first produced, afterwards the lungs, then the spleen, and then the kidneys ; but in plants, first the root, afterwards the trunk, then the branches, and the rest in a following order. And by *number*, when we say, in succession, the monad, duad, triad.

It is here, however, requisite to observe, that things *successive* must necessarily be *homogeneous*, and that the homogeneous is manifold : for if we say, that male children when standing together are successive, we predicate the homogeneous as in *boys* ; but if men are mingled together with them we predicate it as the *male* ; and if women, we predicate the homogeneous of them as *men*. If, also, we add to them irrational animals, we predicate the homogeneous of them as *animals*, and so of other things. It is also evident, that in things which have their principle from nature, the successive also is from nature, and is not convertible : for two is suc-

cessive

But the *adhering* is said to be that which, being successive, touches⁴. Since, however, all mutation is in opposites, and opposites are contraries, and things which subsist according to contradiction, and there is no medium of contradiction; it is evident that in contraries there will be that which has an intermediate subsistence⁵. The *continuous* is something belonging to the cohering. But I say that the continuous is when the boundaries of things by which each touches the other become one and the same, and as the name signifies, are *held together*. But this being determined, it is evident that the continuous is in those things from which one thing is naturally adapted to be produced according to contact; and so that what is connected may at length become one.

cessive to one, but one is not successive to two. But in things which subsist from position, in whatever way we define the principle, in that way also does the successive subsist, whether we define the cold or the fervid to be the principle.

⁴ Aristotle very properly says, that the *adbering* is that which being successive touches: for the successive alone is not sufficient to the adhering; since numbers, though successive, are not said to adhere to each other, because they do not touch. Nor is touching alone sufficient to adhering; for a shirt touches the body, yet because it is not successive, it is not said to adhere to it. But a house, when it is successive to a house, and when also they touch each other, then they adhere: and this also is true of the rings of a chain: for it is necessary that things which adhere should be homogeneous, and have nothing between them, neither of an homogeneous, nor of an heterogeneous nature.

⁵ Aristotle has already informed us what the *intermediate* is, that it is that to which every thing that is changed naturally first arrives, before it comes to the extremity; adding also, that the extremity of mutation is the contrary. Conformably, therefore, to what he had before observed, he now shows that the intermediate is in contraries. But he demonstrates it as follows: that which is intermediate is in mutation. All mutation is from the opposite to the opposite. All mutation from the opposite to the opposite, is either from contradiction, or from a contrary: for privation is, in a certain respect, contrary, as he says; and some relatives are contrary. If, therefore, the mutation according to contradiction is according to generation and corruption, but in generation and corruption there is not that which is intermediate, because the intermediate is between certain things which have a subsistence, and in generation and corruption the extremes do not subsist, but in generation, there is alone *that to which*, and in corruption alone *that from which*, for other things belonging to them are not subjects, but are rendered manifest by negation,—this being the case, it is necessary that the intermediate should be in contraries. He does not, however, say that it is in all contraries; for some contraries are immediate; but that it is in the genus of contraries.

Thus

Thus also, the whole will be one; as for instance, either by a nail, or by glue, or by contact, or by natural conjunction. It is also evident, that what is successive is first, for it is necessary that what touches should be successive; but not that every thing which is successive should touch. Hence also in things which are prior by definition, there is the successive; as for instance, in numbers: but there is not contact. And if a thing indeed is continuous, it is necessary that it should touch; but if it touches, it is not yet continuous: for it is not necessary that their extremes should be one, if they subsist together; but if the extremes are one, it is necessary that they should subsist together. So that natural conjunction is last according to generation. For it is necessary to be in contact, if the extremes are naturally conjoined; but not all things which are in contact are naturally connected. But it is manifest that in those things in which there is not contact, there is not natural conjunction. Hence, if the point, and the monad have, as some say, a separate subsistence, it is not possible that the point and the monad should be the same: for with points contact is present; but with monads the successive; and with the former something may be intermediate; since every line subsists between points; but it is not necessary that there should be something intermediate with the latter; for nothing is intermediate between two and one. And thus we have shown what the subsisting separately and together is; also what it is to touch, and to have an intermediate subsistence, and what the successive is, the adhering and the continuous, and in what kind of things each of these subsists ⁶.

CHAP.

⁶ As the adhering is produced from the successive and touching, so likewise the continued is produced from the adhering, when the contact of things which adhere becomes union. And this takes place, when the extremities of the things which touch, being two, become one, through natural conjunction; for then they no longer remain touching. But it is necessary that things, which are to touch each other, should be continued; for they are partible, because impartible natures do not touch each other. It is evident, therefore, that the continued is in those things, from which one certain thing is naturally adapted to be produced according to contact. But some things are naturally adapted to become one, by natural conjunction, as plants rooted in the earth;

CHAPTER VI.

BUT one motion is predicated in many ways; for the one is multifariously predicated. Motion, therefore, is one in genus according to the figures of category: for lation with all lation is one motion in genus; but change, according to quality, differs in genus from lation. And motion is one in species, when being one in genus, it is also in an individual species. Thus, there are differences of colour; and therefore, denigration and dealbation differ in species. Hence, every dealbation will be the same in species with every dealbation; and every denigration, with every denigration, but not with every dealbation. On this account, dealbation is one motion in species with every dealbation. But if there are certain things, which are at the same time both genera and species; it is manifest that there will be, in a certain respect, one motion in species, but simply, that there will not be one in species; as for instance, discipline, if science is a species of hypolepsis, but the genus of the sciences⁷. Some one, however, may doubt
if

earth: and others by contact, and apt composition, as a ship. Of some things, however, the cause of their being one, is more abundant than that which subsists according to contact, but is more imperfect than natural conjunction; as is evident in air and water: for these being dissolved, their parts are no less united, and preserve the same nature with the whole. But some things are one through a bond, as a bundle; others by weaving, as a garment: and others by the parts being linked, as a chain. Some things again are one, by sewing, as shoes; others by conglutination, as paper; others by mixture, as mellicrate; (or a liquor made from honey and water) others by a particular composition, as a heap; others by co-ordination, as an army; and others by copulation, as propositions which are not simple.

⁷ Aristotle, after having separated motion from generation and corruption, and unfolded the categories.

if there is one motion in species, when the same thing is changed from the same to the same; as for instance, one point, from this place to that, again and again. But if there is, circulation will be the same with rectilinear motion; and rolling with walking. Or is it determined

categories in which motion subsists, very properly adds, what he now says concerning motion; viz. what one motion is, and that the one is triply predicated, either in genus, or species, or number, as also he elsewhere asserts. He also shows what the motion is which is one in genus, what that is which is one in species, and what the motion is which is one in number, and which he also shows is properly one. But because motion which is one is continued, and the continued is one, it is necessary previously to know what the continued is, in order that we may be able to know it in motion. Since also the continued is something adhering, and the adhering is something successive, and which touches, and it is requisite that these should subsist together, and the intermediate is surveyed together with these, hence the doctrine concerning these is very properly delivered prior to what he now says.

This problem indeed, which shows what the motion is which is one, is of itself most adapted to the physical theory, as will be evident from what will be said concerning it; and it also contributes to the most principal end of the whole physical discussion: for, from this it is shown what the one and continued motion in the world is, viz. that it is circulation; and also what that is which proximately moves this, that it is an immoveable, impartible, and perpetual cause. But he now says that the motion which is one is predicated in a three-fold respect, in the same manner as the one, viz. either in genus, or species, or number. The motion, therefore, is one in genus which is in the same category; as all lation, with respect to all lation, is one in genus: for all lations are in the category *where*, which is one in genus. Alliation also, is one in genus with alliation; for it is in the category *quality*. In like manner increase with respect to increase, and diminution with respect to diminution; for all of them are in the category *quantity*. If, therefore, motions are different in genus, motion is not predicated of many motions as a certain common genus, so that neither is the definition of it as of one genus and one nature. But many motions are one in species, when being in the same genus, they are also in the same category, and in the same species, which is under the same genus, and is an individual species, and not divided into species. Thus, all dealbations are one in genus, for they are colours and qualities, and are also one in species. But dealbation and denigration are the same in genus, but different in species.

Aristotle also adduces science as an example of species which are under each other; science, indeed, being a species of *hypolepsis*, viz. of *knowledge*, but the genus of the other sciences, such as geometry, arithmetic, music, medicine, and the rest. If, therefore, discipline is a resumption of science, and a motion according to science, as science, it is indeed, in a certain respect, as one species, because it is divided from the genus of knowledge, but simply, it is not one species, because it is not an individual species.

that

that motion is different if that in which it is, is different in species? But the circular is different in species from the right-lined. Thus, therefore, there is one motion both in genus and species⁸. But the motion is simply one, which is one in essence, and in number. And what a motion of this kind is, will be manifest from division: for there are three things in number, about which we say, there is one motion, viz. *that which*, and *in which*, and *when*. I say *that which*, because it is necessary that there should be something which is moved; as for instance, man, or gold. And this must be moved *in something*; as in place, or in passive quality. There must also be *when* it is moved: for every thing is moved in time. But of these that motion is one in genus or in species, is caused by the thing in which it is moved; but the coherence is the effect of time; and that it is simply one is produced by all these: for that in which the motion is, ought to be one and an individual; as for instance, form. And again, the *when*; as that the time should be one and uninterrupted. It is also necessary that the thing moved should be one, not according to accident, (as when that which is white becomes black, and Coriscus walks; and Coriscus and that which is white are one, but according to accident) nor according to that which is common: for two men may at the same time be cured by the same method of cure, for instance, of an ophthalmy; but this

⁸ Aristotle having said that the motion is one in species, which is accomplished according to the same species, doubts whether it be requisite to call the motion of the same moveable, one in species, and which is moved again and again, from the same to the same; assuming, indeed, as an instance, a point; but the one species of motion from the same to the same, rectilinear motion. And he says, that if it should be asserted, that this motion is one in species, circulation will be the same in species with rectilinear motion: for it is possible that the same thing may be moved from the same to the same, at one time in a right line, and at another in a circle; and circulation will be the same in species with a right-lined motion. In like manner, rolling will be the same with walking. But he solves the doubt by saying, that it has been determined that motion is one in species, when the species, according to which it is produced, is an individual, or, as he says, in which it is produced; but if the species is different, that the motion also is different. But the circular is different from the right-lined in species, whether that in which the motion is assumed, as a right and circular line, or the mode according to which the motion is produced, as rolling and walking.

is not one motion simply, but one in species. Suppose, however, that Socrates is changed, in quality, according to the same species of change in quality, but in another time, and again in another; if then it is possible that what is corrupted, may again become one in number, this motion also will be one; but if this is not possible, there will, indeed, be the same motion, but not one motion⁹. There is also a doubt similar to this, whether there is one health essentially, and, in short, whether habits and passions are in essence, in bodies: for the possessors of these appear to be moved and to flow. If, however, the health is one and the same, which was in the morning, and now is, why, when a man recovers the health which he had lost, is not this one and the same in number? For the reason is the same; except that it differs in this; that if two things are, on this account, as one in number, it is also necessary that habits should be one in number; for one energy in number is of one thing in number. But if habit is one, perhaps it may not yet appear to some one, that there is also one energy: for when a man ceases to walk, there is no longer walking; but when

⁹ Aristotle having informed us what the motion is which is one in genus, and what that is, which is properly one in species, and also in what respect it is, and in what respect it is not, in the next place informs us what the motion is which is one in number, which he says is simply, and properly, and in essence one: for that is properly one, which is one in number, because that which is one in genus and in species, is rather many than one. But he says that the motion is one in number, which has each of the three things about which motion is conversant. And these three things are, the moveable thing itself, as for instance, Socrates; that in which, or the species according to which the moveable thing is moved, as for instance, walking; and the time when, in which the moveable thing is moved: for every thing which is moved, is moved in time. But of these three, that in which motion is essentially, Aristotle indicates to be one motion in species: for circulation is one in genus with a right-lined motion, because a right-line is the same in genus with a circumference; since both are lines. But every right-lined motion is the same in species; and in like manner, every circular motion; since every right line is the same in species with every right line, and every circle with every circle. But, continued time of itself makes different motions to cohere, though that which is moveable is the same, or though it should be different, in consequence of the time not failing. When, however, that which is moved, is one and the same in number, as for instance, Socrates, and the species of motion is one, as for instance, walking, and the time is one and continued as a day, then the motion becomes one according to number.

he

he again walks, there will be walking. If, therefore, there is one and the same energy, one and the same thing may often perish, and often exist. These doubts, however, are foreign from the present speculation¹. But since all motion is continued, it is also necessary that the
 motion

¹Aristotle having said that an intermission of time taking place, there will not be one motion in number, unless that which is corrupted and generated were one in species or in number, and, evincing this to be impossible, and wishing to adduce a certain doubt, which appears to show that nothing hinders corruptible and generable motion from becoming one in number, he transfers the doubt from motions to habits, as being more persuasive in the latter. But he uses the assertion of Heraclitus, that all things flow and are never the same. And he says, that if health is one and the same in number from the morning to the evening, time being continued, though bodies, habits, and all passive qualities are in a flux, as Heraclitus says, why, when a man receives the health which he had lost, is he not said to have recovered the same health in number? For Socrates returning from a journey, is one and the same in number, that he was before he took the journey; and the same health and science appear to belong to the same person; just as beds, which are disjointed and again conjoined, are the same, though their fabric is frequently dissolved, and again composed. To this it may be replied, that the beds are indeed the same, but the compositions and dissolutions are not the same in number. If, therefore, the habit is one, though there should be an intermission of time, why is not the motion, or the energy, one which results from the habit? But that which is said of habit, may also be said of passive qualities; that if the fever is one, or the ophthalmy one, or the colour one, from morning to evening, why also, when there is an intermission of time, are they not one? And, if these are one in number, why also are not the motions and energies? Aristotle having said this, observes, in opposition to the mutation from energies to habits, that there is a certain difference of energies, with respect to habits and passive qualities: for if the energy is one, it is also necessary that the habit should be one, and still prior to this, the subject: for there is one energy in number, of one habit in number; and of one habit in number, there is one subject. The contrary, however, is not true: for when the subject is one, it is not necessary that the habit also should be one; nor when the habit is one, is it necessary that the energy should be one: for it is possible that the subject may have many habits; and the habit being one, many energies may be assigned, intervals of time intervening, and the energies becoming thus multiplied. But what has been said of habits, may also be asserted of passive qualities: for each are dispositions of the soul and body. Passive quality, however, is a disposition easily rejected, but habit is a stable disposition. But how, if there is the same habit and the same passive quality, there is not also one and the same motion or energy from the same habit, if it is produced with intervals of time, for the same thing may often be corrupted, and often again exist,—these doubts, says he, are foreign from the present speculation.

motion which is simply one, should be continued ; if all motion is divisible, and if it is continued, it is one : for not every motion can be continuous to every motion ; as neither can any thing else, to any thing else ; but those things only are continued, whose extremes are one. Extremes, however, do not belong to some things, but not to others, being different in species, and homonymous : for how can the extremity of a line, and of walking, touch each other, or become one ? Motions, therefore, may be coherent, which are neither the same in species, nor in genus : for some one who is running, may immediately have a fever ; and lation adheres, like a lamp, from succession ; but is not continued : for it is admitted, that the continued is that, the extremes of which are one. So that motions adhere, and are successive, because time is continued ; but they are continued, because the extremes of both become one. Hence, it is necessary, that the motion which is simply continued and one, should be the same in species, and of one thing, and in one time. In one time indeed, that a cessation of motion may not intervene ; for in a cessation of motion, it is necessary to rest. Between many motions, therefore, and not one motion, there is rest. So that if any motion is stopped by permanency, it is neither one, nor a continued motion : but it is stopped if time intervenes. But that motion, which is not one in species, cannot be called one, though there should not be an intermission of time : for the time indeed is one, but the motion is different in species : for it is necessary that the motion, which is one, should also be one in species ; but it is not necessary that this should be simply one. And thus we have shown what the motion is which is simply one². Farther still, the motion
also

But the words "*if two things,*" are, on account of their brevity, obscure. Aristotle, therefore, says that the same reasoning is adapted to habits and motions, except that what is asserted of habits thus much differs from what is asserted of motions, that if the habits which accede from an interval of time, are two, on this account also the energies and motions arising from the habits are two.

² Aristotle having shown what motion which is one is, from the three things with which motion is conversant, viz. from the thing moved, that according to which the motion is produced;
and

also is said to be one which is perfect, whether it be according to genus, or according to species, or according to essence; just as in other things the perfect and the whole are of one thing. Sometimes, however; though motion is imperfect it is said to be one, if it be only continued³. Again, after another manner, besides the modes which have been

and the time in which it is produced, each of which, as it is naturally adapted to be, ought to be one in number, if the motion is to be properly one, now adds certain other things essentially belonging to the motion which is one. And of these, the first is that the one motion ought to be continued. But he demonstrates this, from every assumed motion, though it should be a part of motion, being naturally continued; not that every motion is continued to every motion, but that each subsists by itself. But if this be true, because it is necessary that all motion should be divisible, and that which is divisible is continued, it is necessary that the motion which is simply one should be demonstrated to be continued to itself being one, as also each part of the motion. And, if it is continued, it is also one; so that they convert with each other.

But when Aristotle says, "*lacion adberes like a lamp from succession,*" he does not mean by a *lamp a torch*, but the illumination from and pervading motion of light: for he calls the motion which is according to the same species, a lamp. Simplicius adds, that Aristotle, perhaps, alludes to the lamp in the Pyræum in the Bendidian festival, and which is mentioned by Plato in the beginning of his Republic.

³ Aristotle here adds a second peculiarity of motion which is one, viz. the perfect, which not only pertains to the motion which is one according to number, and which is alone properly one, but also to that which is said to be one, both according to species, and according to genus: for local motion is motion according to genus, and when it becomes perfect, i. e. when the thing in motion arrives at that to which it hastens, and the motion is finished, then we say, it is one. But the motion upward from beneath, and downward from on high, is local motion according to species. And local motion according to number, which Aristotle calls according to essence, is the motion of this fire, and of this clod of earth. Each of these, therefore, when it becomes perfect, is then properly one motion. But Alexander observes that Aristotle here follows the Pythagoreans and Platonists, who conceiving *the one* to be the most excellent of things, ascribe it to the perfect and entire, and, on this account, assert it to be the principle of things, as predicating *the one* of things perfect and whole, from the common acceptation of the word. It is fit, however, as Simplicius justly adds, that both Aristotle and Alexander should look to what is said in the second hypothesis of the Parmenides of Plato, in which having demonstrated that *the one being** is a whole, he also shows that it is perfect, and has a beginning, middle, and end, syllogizing from those things by which the perfect is

* That is, being which is characterized by *the one*, or which is wholly of *the one*, being, as it were, vanquished by, and absorbed in it. See my translation of the Parmenides.

characterized.

been enumerated, the motion is said to be one which is equable: for the motion which is anomalous, in a certain respect does not appear to be one, but rather that which is equable, as a right line; for the anomalous is divisible. They appear, however, to differ, in the same manner as the more and the less. But in all motion there is either the equable, or the anomalous: for it may be equably varied, and borne along in an equable space, as for instance, in a circle, or a right line: and the like also may be said concerning increase, and diminution. But the difference of the inequability, is at one time in that in which a thing is moved; for it is impossible that motion should be equable, upon a magnitude which is not equable; as for instance, the motion in a fractured, or spiral line, or in any other magnitude, every part of which does not accord with every part. But at another time, the inequability, is neither in the *where*, nor in the *when*, nor in that *to which* the motion tends, but in the manner: for sometimes it is defined by swiftness and slowness: for that motion, the celerity of which is the same, is equable; but that, of which the celerity is not the same, is anomalous. Hence, swiftness and slowness are neither species, nor differences of motion, because they are consequent to all motions which are different in species. Hence, neither do gravity and levity, which tend to the same thing, differ in species; as of earth to itself, or of fire

characterized. But he there says, in his conclusion concerning the whole, "that which is one therefore, is a whole, and has parts." And, concerning the perfect, he says, "What then, if it be a whole, will it not have a beginning, middle, and end? Or, is it possible it can be a whole without these three?" Aristotle adds, that the motion which is continued, is, indeed, more properly one, when it is also perfect; but that imperfect motion is also one, if it be only continued. It is necessary, however, to observe, that he says the continued alone pertains to the motion which is one according to number, which also, he says, is properly one; but he asserts that the perfect is also participated by those motions which have the one, both according to genus, and according to species; because the continued is not present with them, when they are divided into their proper multitudes, which are not continuous with each other: for neither are a multitude of men in continuity with each other, in which there is one man participated by them in common, nor a multitude of animals. But each species and genus is perfect by the assumption of its proper character: for though a thing should be something common and not an individual, yet this also being specifically defined, will have its proper perfection.

to

to itself. Anomalous motion, therefore, is one because it is continued; but it is less one than equable motion; which, indeed, happens to fractured lation: but the less has always a mixture of the contrary. If, however, every motion which is one may be equable and not equable, motions which do not adhere according to species, cannot be one and continued: for how can the motion be equable, which is composed from change according to quality and lation? for it would be necessary that they should accord⁴.

⁴ Aristotle adds this third thing the *equable*, as belonging to the motion which is one, and capable of being adapted to the motion which is according to genus, to that which is according to species, and to that which is according to number; just as the *anomalous* is adapted to the motion opposite to this. And every where, the same things existing, equable motion appears to be more one than the anomalous; because the anomalous appears, in a certain respect, to be divisible according to the differences in the unequability. But Aristotle first informs us what equable motion is, and what the anomalous. And, according to Alexander, he adduces a *right line* as an example of the equable, because all the parts of the motion in a right line are similar, and perfectly accord with each other, in the same manner as the parts of the right line, in which a motion of this kind is produced. A circle also, says he, subsists similarly, and the motion in a circle: for this motion, likewise, is equable, through every where revolving similarly round the circular line. But fractured lines, and which are not similarly rolled round, are anomalous, so as that every part may be adapted to every part, and also the motions in such lines. Perhaps, however, the words, "as a right line," do not indicate the motion in a right line, but that all equable motion subsists according to every species of motion, not only lation, but also change in quality and increase, in the same manner as a right line subsists: for this is equable, because every part accords with every part. Every motion, therefore, whether in a right line, or in a circle, whether according to change in quality, or according to increase, when it is equable, subsists in the same manner as a right line: for it is possible that a thing may be moved anomalously in a right line, when the same motion is not disposed similarly to the right line, so as that every part may be similar to every part.

But Aristotle says that the equable differs from the anomalous according to the more and the less, viz. with reference to the species in which the motions are. That if the equable and anomalous are according to a right line, or a circle, the equable is more similar to a right line and a circle, than the anomalous. But if, according to dealbation or calefaction, that the equable motion is more dealbation and calefaction than the anomalous. And, in a similar manner, if according to augmentation. Hence he adds, that the equable is in every motion.

CHAP.

CHAPTER VII.

AGAIN, it is requisite to define what kind of motion is contrary to motion ; and after the same manner concerning permanency. But, in the first place, we must determine whether the motion which is from the same, is contrary to that motion which is to the same ; as for instance, whether the motion which is from health, is contrary to that which tends to health, as appears to be the case with generation and corruption ; or whether this is true of the motion which is from contraries, so that the motion, which is from health, is contrary to that which is from disease ; or if this is the case with the motion that tends to contraries, so that the motion tending to health is contrary to that which tends to disease ; or if the motion from a contrary to a contrary, is contrary to that from a contrary to a contrary ; as for instance, if the motion from health to disease, is contrary to the motion from disease to health : for it is necessary, that there should either be one, or many of these modes ; since it is not possible otherwise to oppose ⁵. But, the motion

⁵ To the abovementioned problems concerning motion and mutation, Aristotle adds this also, as necessary, what kind of motion is contrary to motion. He likewise makes the same enquiries concerning permanency or rest ; and the problem is necessary : for from this, natural motions also are exhibited ; the contrariety of the elements to each other ; which are produced from which, and many other things pertaining to physiology. But since motion is a mutation from something to something, and from a contrary to a contrary, he lays down the modes according to which it is possible there may be two contrary motions ; and he distinguishes what are contrary motions in these. Since, therefore, he asserts that it is not possible for things which are changed from one thing to another to be opposed otherwise than according to the modes which he mentions, let us endeavour by division to discover those modes, which he appears to have used.

Since

motion which is from a contrary, is not contrary to that which tends to a contrary. Thus the motion from health is not contrary to the motion to disease; for it is one and the same. They have not, however, the same essence; as neither is it the same thing to be changed from health, and to be changed into disease. Nor is the motion from one contrary, contrary to that which is from another: for at the same time it would happen that the motion would be from a contrary, and to a contrary, or to that which is intermediate. Concerning this, however, we shall speak hereafter. But the being changed to a contrary may appear to be the cause of contrariety, rather than the being changed from a contrary: for the one is a liberation from, but the other an assumption of, contrariety. And every motion is denominated rather from that into which it is changed, than from that from which it is changed. Thus that is called *a becoming well* (*υγιασις*) which tends to health, but *a becoming ill* (*νοσασις*) which tends to disease. There remains, therefore, the motion which is to contraries, and that which is to contraries from contraries. Perhaps, therefore, it happens

Since, therefore, mutation is from something to something, and from a contrary to a contrary, it is necessary that contrary motions should be characterized, either from one of two contraries, or from the two contraries. Either, therefore, both motions will be characterized from one and the same, when the one is from the same, and the other to the same. Thus, the mutation from disease, is contrary to the mutation to disease, or the mutation from health to the mutation to health; as generation and corruption appear to be opposed to each other: for generation is a mutation *to* being, but corruption *from* being; so that the mutation *to* being is contrary to the mutation *from* being: for the mutation *from* the same to a mutation *from* the same, or a mutation *to* the same to a mutation *to* the same, do not appear to suffer contrariety. Or again, each is characterized from each, and this in a threefold respect: for, either as *from* a contrary, as the mutation from health to the mutation from disease; or as *to* a contrary, as the mutation to health to the mutation to disease. Or when the one is *from* a contrary, but the other *to* a contrary, as the mutation from health to the mutation to disease. Or both are characterized from both, having oppositely that *from which*, and that *to which*, when each is produced from a contrary to a contrary. After this manner, the mutation from health to disease is contrary to the mutation from disease to health. And thus dividing, Aristotle adds, that it is necessary there should either be one or many of these modes, according to which motion becomes contrary to motion; because it is not possible that opposite mutations can be in any other way opposed.

2 U

that

that the motions which are to contraries, are also from contraries ; but their essence, perhaps, is not the same. I mean, for instance, the motion to health, when referred to that which is from disease, and the motion from health referred to that which tends to disease. But since mutation differs from motion, for the mutation from a certain subject to a certain subject, is motion ;—this being the case, the motion which is from a contrary to a contrary, is contrary to that which is from a contrary to a contrary. Thus the motion which is from health to disease, is contrary to the motion from disease to health. But it is manifest from induction, what kind of things those appear to be which are contraries : for to become diseased is contrary to the being made well ; and to learn is contrary to the being deceived, not through oneself ; since they tend to contraries : for as science, so likewise deception may be obtained, both through oneself and through another. Lation, upward also, is contrary to that which is downward ; for these are contrary in length. And the motion to the right hand, is contrary to that which is to the left ; for these are contrary in breadth. The motion too, which tends to the anterior part, is contrary to that which tends to the posterior part : for these are contrary in depth. But the tendency which is to a contrary alone, is not motion, but mutation ; such, for instance, as becoming to be white, but not from a certain thing⁶.

In

⁶ From a division thus perfect, Aristotle assuming the oppositions, in the next place by treating of each, shows of what kind contrary motions are ; and first, that the motion from a contrary, is not contrary to the motion to a contrary ; as the motion from health is not contrary to the motion to disease ; since the motion is one and the same : for motion from a contrary to a contrary, becomes the mutation from health to disease ; and entirely the motion to disease from health. So that it is one motion, and neither contrary, nor many motions. The motion, however, says he, from a contrary has not the same essence or definition with the motion to a contrary ; because the motion from a contrary signifies a mutation *from which*, but the motion to a contrary, a mutation *to which*. And, according to each progression, one of the contraries has a precedaneous, but the other an accidental signification. And universally, the motion from a contrary, is not entirely the same with the motion to a contrary.

In the next place, he considers the second opposition, viz. the opposition arising from a motion from a contrary to the motion from a contrary, according, indeed, to the mutation from contraries

In things, however, to which there is not any thing contrary, the mutation which is from the same, is contrary to the mutation which is to the same. Hence generation is contrary to corruption, and rejection to assumption. But these are mutations, and not motions. The motions, however, to that which has an intermediate subsistence, between which being contraries something intervenes, are to be considered in a certain respect as tending to contraries; for motion uses that which is intermediate as a contrary, into which ever part it may be changed; for instance, from a dark brown to white, as from black; and from white to a dark brown, as to black; but from black to a dark brown, as to white: for the dark brown which is a medium, is, in a certain respect, referred to each of the extremes, as was before observed. Motion, therefore, is thus contrary to motion; viz. the mo-

traries appearing to be contrary, but yet not containing contrary motions: because every motion has not only that *from which*, but also that *to which*: for that which is moved from health, manifests whence the motion begins, but does not unfold the motion to which. But Aristotle first shows that the motion is the same with that which is asserted of both: for it happens at the same time, for motion to be from a contrary, and to a contrary, or to that which has an intermediate subsistence; and this as contrary. Hence the opposition is from a contrary to a contrary; in which alone, as he proceeds, he shows the contrariety of motions; and, on this account, he omits it at present.

Aristotle, therefore, assuming the motions which are acknowledged to be contrary, viz. the becoming diseased, and the being made well, finds these to be produced from contraries to contraries. Of this kind also, says he, is to learn, and to be deceived by another: for as he who learns at one time passes from falsehood to truth, and at another time forming no conception about the thing proposed, as to its truth or falsehood, obtains the science of it, thus also, he who is deceived, either is changed from truth to falsehood, or immediately has a false opinion from the person who deceives him. But there being these two things, *to learn*, and *to discover*, the former externally, and the latter internally imparting science, and deception from another is opposed to *learning*, but deception from oneself to *discovery* or *invention*; hence Aristotle, very properly, does not *simply* oppose deception to learning, but deception *from another*; not as entirely transferring from truth to falsehood, but as changing from the non-possession of false opinion; whether he who is deceived happens previously to have opined something true about the thing proposed, or whether he has not opined at all. But the opposition of learning to the being deceived, not by oneself, is an opposition of the motion from ignorance to knowledge, to the motion from knowledge to ignorance.

tion from a contrary to a contrary, is contrary to that from a contrary to a contrary⁷.

CHAPTER VIII.

SINCE, however, not only motion but rest seems to be contrary to motion, this must be determined: for motion is simply contrary to motion; but rest is also opposed; for it is privation; and privation, in a certain respect, is said to be contrary. But what kind to what kind? For instance, is local rest contrary to local motion? But this is now simply asserted: for whether is the motion which is from this, or the motion which is to this, opposed to the permanency which is in this? But it is evident, since motion is in two subjects, that the permanency which is in this, is opposed to the motion which is from this to a contrary; and that the permanency, which is in a contrary, is op-

⁷ One opposition remained, which Aristotle first enumerated in the division, viz. the opposition of motion from the same, to motion to the same. He says, therefore, concerning this also, that as the tendencies to contraries which have not the terms from which opposites, are mutations but not motions, so likewise the tendencies from the same to the same, which receive one subject alone, viz. that from which and that to which as the same thing, but omit the contrary to it, are contrary mutations, but not motions: for motion is from a contrary to a contrary; but the tendency from the same to the same, pertains to generation and corruption; since generation proceeds to that from which corruption is changed; and corruption tends to that from which generation proceeds. In a similar manner rejection subsists with respect to assumption: for the assumption of the same thing subsists in a mode contrary to the rejection of the same thing: for assumption is of that of which there is a rejection; and rejection is of that of which there is assumption. But Aristotle having before observed, that it happens at the same time that mutation is from a contrary and to a contrary, or to that which is intermediate, now shows that mutations to that which is intermediate, and from things intermediate, are produced as to contraries, and from contraries, in consequence of that which is intermediate having the relation of a contrary to each of the extremes: for, as was before observed, things intermediate subsist from the mixture of contraries.

posed

posed to the motion which is from a contrary into this. At the same time, however, these permanencies or abidings are contrary to each other: for it would be absurd if motions are contrary, that the rests opposed to them should not also be contrary. But these rests and motions are in contrary terms. Thus, the rest which is in health, is opposed to the rest which is in disease, and to the motion from health to disease: for it is irrational to suppose that this rest is contrary to the motion which is from disease to health: for the motion to that in which it was established is rather a resting, so far as it happens to be at the same time produced with motion. But it is necessary, that either this or that should take place: for the rest which is in whiteness, is not contrary to the rest which is in health^s. But of such things as have not contraries,

^s Aristotle having shown what kind of motions are contrary to each other, since rest also is opposed to motion, and appears to be contrary to it, he also enquires concerning this, in the first place, how rest is simply opposed to motion, and in the next place what kinds of rest and motion are opposed to each other; since rest is both prior to and posterior to motion. And he says, that properly indeed, motion is contrary to motion; for both are forms, and are changed into each other. Rest, however, is opposed indeed to motion, but is rather opposed as privation, and not as properly a contrary, because it is not a certain form as motion is, but is alone the absence of motion. Privation, however, is, says he, in a certain respect, said to be contrary, in common indeed, all privation, so far as it is opposed to form, or habit, or energy; and opposition appears to be contrariety. But this privation is according to rest, and possesses something else, according to which it is said to be contrary, rather than other privations: for things which have other privations, are not changed into habits or forms. Thus, a dead body, and a blind man are not changed into life, and the ability of seeing; but things which at any time are at rest, are again naturally adapted to be moved: for rest is the immobility of that which is naturally adapted to be moved. And this privation appears to be similar to the privation of matter when surveyed together with its aptitude to the participation of form.

In the next place, Aristotle enquires what rests are opposed to each other. And, here it must be observed, that those rests are contrary to each other, which are in contrary places, and in contrary qualities and quantities. Thus rest in the upward, is contrary to rest in the downward region; rest in the white, to rest in the black; and rest in health to rest in disease. The rest, however, in health is opposed to the motion from health, and not the rest which is in disease: for it is reasonable that it should be opposed to the motion from health to disease; and Aristotle now clearly assigns the cause: for he says, that the motion according to nature to that in which that which is naturally moved rests, having that rest as the object to which it tends, and

contraries, the mutation is indeed opposite, viz. the mutation from the same to the mutation to the same; but the motion is not. Thus, the mutation from being is opposite to the mutation into being; and there is not a permanency of these, but immobility. And, if, indeed, non-being were a certain subject, the immobility which is in being, would be contrary to that which is in non-being. But if non-being is not any thing, it may be doubted to what the immobility in being is contrary, and if it is rest. If, however, it be, either not all rest is contrary to motion, or generation and corruption will be motion. It is evident, therefore, that it must not be called rest, unless these also are called motions; but it must be denominated something similar, and immutability. But it is contrary, either to nothing, or to that privation of mutation which is in non-being, or to corruption: for this is from that; but generation into that⁹.

CHAP.

and through which it subsists, is after a manner the generation of rest, and is a *resting*; so that there is an abundant alliance between the motion in which it rests, and the rest in it. But, if allied, it is not contrary. If, therefore, it is necessary that the rest *from which*, or the rest *to which*, should be contrary to motion, for rest from one genus will not be contrary to the motion in another genus, and it is impossible that those which tend *to which*, should be contrary to each other,—if this be the case, it is necessary that rest *in which*, should be contrary to the motion *from which*: for if motion from this particular thing is according to nature to that which is moved, rest in this will become contrary to nature to it. If, however, some one should doubt how, if one thing is contrary to one, both motion and rest are opposed to motion, and, in a similar manner, both rest and motion are said to be contrary to rest,—the solution is this; that rest and motion are not properly contraries, neither is rest such a privation as Aristotle mentions in the Categories, which does not return to form; but rest and motion seem to be opposed to each other according to a certain middle form of privation and contrariety.

⁹ Aristotle having said that the rest which is in one of the contraries is contrary to the motion from it, enquires whether, in the mutations from a contrary to a contrary, and which, on this account, are not mutations of motion, as was observed of generation and corruption, there is a certain rest in these mutations contrary to the motion from the same to the same: for these were opposite mutations, as generation and corruption; corruption being a mutation from being to non-being, and generation a mutation from non-being to being. Or, whether there is not an opposite rest in them, because they are not called motions, but mutations alone; but rest is opposed to motion. What then, is not permanency in form a certain boundary of generation, just

as

CHAPTER IX.

It may, however, be doubted why permanencies and motions are in the mutation according to place, both according to, and contrary to nature, but are not in other mutations. Thus, with respect to change in quality, one kind is according to, and another contrary to nature: for a tendency to health is not more according to or contrary to nature, than a tendency to disease; nor a tendency to whiteness than a tendency to blackness. The like also takes place in increase and diminution; for neither are these contrary to each other, as if by nature, or contrary to nature; nor increase to increase. And there is the same reasoning with respect to generation and corruption: for neither is generation according to nature; but corruption contrary to nature; since to grow old is according to nature. Nor do we see that generation is partly

as permanency in the downward region is the boundary of the motion from on high downward? It is indeed, yet it must not be called rest, but rather immutability, because the absence of motion is called rest, but of mutation, immutability. Let it, however, be called immutability, of what will it be the immutability, and to what mutability will this immutability be contrary? May we not say, that non-being is a certain subject, being, as it were, matter, and therefore the immutability in being will be contrary to the immutability in non-being, and to the mutation from being? But if non-being, says he, is not any thing, it may be doubted to what immutability the immutability in being is contrary. He adds, and it may also be doubted whether it be proper to call the immutability in being rest, on account of the consequent absurdities: for if any one should call the rest in generation and corruption, immutability in being, one of two things is necessary; for either not all rest will be contrary to motion, if the immutability in being is rest, and is opposed to the mutation from being; and this is not motion, as has been before shown, because it is not from a subject to a subject. Or if all rest is opposed to motion, corruption also will be motion; and, in a similar manner, generation. It has, however, been demonstrated,

partly according, and partly contrary to nature. If, however, that which is by violence, is contrary to nature, the corruption which is violent will be contrary to that which is not violent, in the same manner as that which is contrary to that which is according to nature. There are, therefore, certain generations which are violent and not fatal, to which those that are according to nature are contrary: and there are violent augmentations and diminutions, to which those according to nature are contrary; such as the augmentations of those who, through luxury swiftly arrive at puberty; and corn, which rapidly becomes ripe, and without constipation. But how does this take place in change according to quality? Shall we say, after the same manner? For some of the changes will be violent, and others natural. Thus, some are liberated from disease, not in critical days, and others in critical days; of whom, the former are changed in quality contrary to, and the latter according to, nature. But corruptions will be contrary to each other, and not to generation alone. And what should hinder? For this takes place in a certain respect; viz. if the one is pleasant, and the other painful. So that corruption is not simply contrary to corruption; but so far as one of them is of this kind, and the other of that¹. In short, therefore, motions and rests are contrary in the

demonstrated, that these are not motions. That neither of these absurdities, therefore, may happen, the permanency in being must not be called rest, but it must be denominated something similar to rest. And this immutability must be said to be a privation, not of motion, but of mutation. But the immutability itself in being, is either contrary to nothing; for rest and not immutability was supposed to be contrary to something: or, if it is contrary to any thing, it will either be contrary to the immutability in non-being, if non-being is something, or to corruption, which is a mutation from non-being; for to this as to mutation, it will be opposed, though non-being should not be any thing.

¹ Aristotle having informed us what motions and rests are naturally contrary to each other, since not only those which are according to nature, are opposed to those which are according to nature, as the upward motion of fire from beneath, to the motion downward from on high of earth, but also the motion of the same thing contrary to nature, is opposed to the motion of the same thing according to nature, as the motion of earth upward from beneath to its motion downward from on high,—this being the case, Aristotle now intends to speak concerning these oppositions.

the manner we have mentioned ; as, for instance, the upward to the downward ; for these are contrarieties of place. But fire is naturally borne along by that lation which tends upward ; and earth by that which tends downward : and these lations are contrary. But fire is carried upward naturally, and downward unnaturally : and its natural motion is contrary to that which is unnatural. And permanencies in a similar manner : for permanency above, is contrary to the motion from above to below. This permanency, however, would be to the earth contrary to nature, and that motion would be to it according to nature. So that permanency is contrary to motion ; viz. the permanency which is contrary to nature, to the motion which is according to nature of the same thing, for the motion of the same thing is thus contrary ; for one of them will be according to nature, which is upward or downward ; but the other contrary to nature². There is, however, a doubt, whether there is a
generation

sitions. And, in the first place, he doubts why, in local mutation, there are both motions and permanencies contrary, and according to nature. He admits, therefore, that both the opposite mutations, as, for instance, a tendency to whiteness, and a tendency to blackness, increase and diminution, generation and corruption, are according to nature : for in the mutation according to place upward and downward are both of them naturally opposed. But in the mutation of the same form, as of increase, or generation and corruption, one kind is according, and the other contrary to nature, as he shows in upward or downward motion, from the violent being seen in all motions, and the violent being contrary to nature. Corruption, therefore, will be contrary to corruption, the violent to that which is according to nature. But in corruption indeed, the violent is manifest. There are also violent generations, and which are not produced according to the series of nature. These Aristotle calls not fatal ; as when any thing is generated before its proper time. And here the interpreters remark, that Aristotle places fate in things which have a natural subsistence, since he calls violent motions, and which are contrary to nature, not fatal.

Simplicius adds, that corn rapidly grows and increases through heat, in the gardens as they called of Adonis, prior to its being rooted and constipated in the earth.

² Aristotle having shown that contrariety according to and contrary to nature, is in motions, in the next place shows that contrariety does not exist in motions in any other mode than that which has been already mentioned. But there is the same mode of contrariety : for when it is the same thing which is moved with contrary motions, that is, with motions from contraries and to contraries, when one of the motions is natural to it, then the other becomes unnatural to it :

generation of all rest which has not a perpetual subsistence, and whether this is to stand still. Of the rest, therefore, which abides contrary to nature, as of the rest of earth when on high, there will be a generation. Hence earth, when it is violently driven on high, will stand still. But that which is capable of standing still always appears to be borne along swifter; but, on the contrary, that which is moved by violence. Hence, not having been made quiescent, it will be quiescent. Again, to stand still seems to be properly asserted of that which is naturally borne along to its own place; i. e. it either seems to be wholly this, or at least it at the same time happens to be so³. But there is a doubt,

for fire is naturally borne along with a lation which tends upward, and earth with a lation which tends downward: and their lations are contrary. But fire is moved upward according to nature, and downward contrary to nature; and the lation of it according is contrary to its lation contrary to nature; because these motions are from contraries, and to contraries. In a similar manner also, permanencies; for permanency on high is contrary to the motion from on high downward. But permanency on high is to earth contrary to nature, and the motion downward according to nature; so that the unnatural permanency of the same thing is contrary to the motion of it. To the natural motion, therefore, of each of the elements, the motion unnatural to it is contrary. Since, however, the permanency in that from which any thing is moved, either according to, or contrary to nature, is opposed to the motion from it, it is evident that to simple bodies, permanencies in those things from which they are moved according to nature, are contrary to nature. Hence the unnatural permanencies and rests of the same thing are contrary to its natural motions.

³ Aristotle now doubts whether or not there is a generation of all rest; for it is impossible that there should not; and he briefly indicates the cause, by the words "all rest which has not a perpetual subsistence." For rest is a privation of motion in that which was once moved; but rest in that which was once moved is not perpetual, since it was once moved. That which was not always, was generated, and that which was generated has generation: for according to generation it is said to be generated; just as that which is moved is said to be moved according to motion. But Aristotle is satisfied with this, that rest is not perpetual, because beings are either perpetual beings, or generated at a certain time. Aristotle, therefore, showing the necessity that all rest should have a generation, and adding, that the generation of rest is to *stand still*, which is *to be at rest*: for to be at rest is to stand still; but the generation of *having stood still*, is *to stand still*, just as the generation of *having been moved*, is *to be moved*,—having shown this, he adds the doubt which endeavours to subvert the assertion that all rest has a generation, by showing that violent rest has not a generation: for it has not *to stand still*: for if violent rest

on

doubt, whether the permanency which is here, is contrary to the motion which is here : for when a thing is moved from this, or abandons rest, it still appears to possess that which is abandoned. So that if this rest is contrary to the motion which is from hence to the contrary, contraries will be at the same time inherent. Or will it, in a certain respect, be at rest, or will it still abide? And, in short, that which is in motion, is partly here, and partly in that into which it changes. Hence, motion is more than rest contrary to motion⁴. And thus, concerning

on high, and the having stood still of earth on high by violence, have a generation, they would also have to stand still violently, that is to be borne along violently to the having stood still. If, therefore, in short, to stand still cannot be asserted of a violent tendency to the having stood still, it is evident that there will not be a generation of violent rest.

⁴ Aristotle having before observed, that to the motion from a contrary to a contrary, the permanency in this is opposed, but to the motion from a contrary to this, the permanency in a contrary, now doubts with respect to this, and says that the rest which is here, is contrary to the motion which is here, as was before observed, since that which is beginning to be moved here, is still here, but being here it is at rest; for this is to it to be here. Hence it happens, that the same thing is at the same time as rest and moved with motions and rests contrary to each other: for the motion to which is not contrary to the permanency in it. Hence, he omits the discussion of these. But it is impossible for contraries to happen at the same time about the same thing. And that a thing which is beginning to be moved here, is still here, he shows from the assertion, that of that which is moved, something belonging to it is there from which it is moved, and something is there to which it is moved: for just as if we conceive something white becoming black, and, therefore, not yet perfectly black, it still abides, possessing something of white, and according to so much as it possesses of whiteness is at rest in the white; in like manner local motion, still possessing something of a disposition to rest, may be said to have not yet perfectly abandoned rest. But Aristotle solves the doubt by saying, that the assertion will be attended with no absurdity, if contraries are about the same thing, yet not according to the same, but according to another and another: for the same thing may be white and black according to another and another part, in that which is beginning to be moved: for it is not at rest and in motion according to the same, but according to another and another: for one part of it is there, and another part is not; since that which is moved is not impartible. And it will be shown that nothing impartible can be moved. But there is no absurdity that something should be in contraries according to another and another. This, therefore, Aristotle briefly indicates by saying, "or will it, in a certain respect, be at rest; or will it still abide?" That is, if it is at rest according to something, or abides according to something, because it does not properly introduce a
2 x 2
resting

concerning motion and rest, we have shown how each is one, and what those motions and rests are, which are contrary to each other. Some one however may doubt concerning *standing still*, whether any rest is opposed to such motions as are contrary to nature. It is absurd, therefore, if there will not be; for it abides, but by violence. So that there will be something at rest, which is not always at rest without the generation of rest. But it is evident that there will be: for as some thing may be moved contrary to nature, so also it may be at rest contrary to nature. Since, however, to some things there is a motion according to, and contrary to nature; as to fire, a motion upward is according to nature, but downward, contrary to nature, whether is this contrary, or the motion of earth? for this is borne downwards according to nature. Or is it not evident that both these motions are contrary, yet not after the same manner; but the one as that which is according to nature, to that which is according to nature. But the upward to the downward motion of fire, is as a motion according, to a motion contrary to nature. The like also must be said respecting permanencies. And thus concerning motion and rest we have shown how each is one, and what those motions and rests are which are contrary to each other.

resting contrary to motion; for it is rather privation. But motion is properly contrary to motion, that from a contrary to a contrary to that from a contrary to a contrary, as has been before observed: for in such motions it does not happen that the same thing is in contraries.

Simplicius informs us that what follows to the end of the book, except the words, "concerning motion and rest, therefore, how each of them is one, &c." was neither seen by Porphyry, nor paraphrased by Themistius; and that Alexander, though he comments on it, remarks, that in some copies it is not to be found. Simplicius farther observes, that this addition is evidently superfluous from the repetition of the conclusion.

THE

THE PHYSICS.

B O O K VI¹.

CHAPTER I.

IF then there is that which is continued, that which touches, and that which is successive, as was before defined, (viz. that those things are continued whose extremes are one, that those touch whose extremes are together, and that those are successive, between which there is nothing of the same kind,)—if this be the case, it is impossible that any thing

¹ It was usual with the Peripatetics, says Simplicius, to inscribe Aristotle's books according to the order of the letters of the alphabet. Hence, they very properly inscribe the Sixth book of the Physics Z, which in numbers signifies the seventh, but in the letters of the alphabet is the sixth in order. But the antient Peripatetics called the five books prior to this **PHYSICAL**; but the remaining three **CONCERNING MOTION**. For such is the arrangement of Andronicus, in the third book of Aristotle, Concerning Motion; and Theophrastus considers the fifth book as belonging to the Physics. Aristotle also himself, in the beginning of the eighth book, says, "We shall begin, in the first place, from what has been definitely unfolded by us in the Physics; but we say that motion is the energy of that which is moveable, so far as it is moveable." But he said this in the third book. And again, "for in the Physics, it was asserted that nature is the principle of motion and rest." But this was asserted by him in the second book. At the end.

thing continuous should be composed from indivisibles ; as, for instance, a line from points, since a line is a continued quantity, but a point is indivisible : for neither are the extremities of points one ; since of that which is indivisible, one thing is not the extreme, and another some other part. Nor do the extremes subsist together ; for there is no extremity of that which is without parts : for the extremity is different from that of which it is the extremity². Farther still, it is necessary
either

end also of the eighth book he says, " That there cannot, therefore, be an infinite magnitude has been before shown in the Physics." And this is discussed by him in the third book. Hence, from what has been said, it is evident that the Peripatetics call the first five books, Physical.

But that the last books are Concerning Motion, Aristotle himself clearly evinces in the first of his books, On the Heaven : for he there says, " But this also is manifest, that the infinite cannot be passed through in a finite time. It will, therefore, be passed through in an infinite time : for this has been already shown in our books Concerning Motion." And again, " That nothing finite has an infinite power, and nothing infinite a finite power, has been asserted in the books Concerning Motion. But these things have been spoken of in the three books." But that three of the books are Concerning Motion, and five of them physical, is testified also by Damas, who wrote the life of Eudemus, who there says, " Three of the books of the physical discussion of Aristotle are about Motion."—But he calls not only the eight books physical, but also those concerning the Heaven, and concerning the Soul, and many others. He peculiarly, however, denominates five of the books, CONCERNING PHYSICAL HEARING. But that the present book is the next in order after the fifth, Eudemus also evinces, who conjoins what is here said by Aristotle to what is said in the fifth book, viz. " that no continued quantity is composed from impartibles." And Andronicus assigns this order to these books, Aristotle himself also, directly in the beginning of this book, employs what he had before discussed in the fifth book, viz. the continued, that which touches, and the successive. And that this book is prior to the seventh, is evident from what is demonstrated at the end of this book ; for Aristotle uses in the book inscribed H, which being the next to this is the seventh, what is there demonstrated, viz. that nothing impartible is moved, and that no mutation is infinite. In like manner he demonstrates in this book, that there is not an infinite motion in a finite time, whether that which is moved be infinite or finite. But he uses this in the seventh book as demonstrated.

² Since there are five magnitudes, viz. line, superficies, body, motion, and time, that each of these is composed from the parts into which it may also be divided, appears to be a conception universally admitted. Some, however, have thought that every assumed magnitude may be infinitely divided into magnitudes, so as that the division will never end in things impartible

or

either that the points from which the continued quantity consists should be continued, or touch each other. The same reasoning also applies to all indivisibles. They will not, therefore, be continued, for the reason already assigned. But every thing touches, either the whole the whole, or a part a part, or a part the whole. Since, however, an indivisible is without parts, it is necessary that the whole should touch the whole. But the whole which touches the whole will not be continued; since the continued has different parts, and is divided into parts that are thus different and separated by place³. Neither will a
point

or without parts; and, on this account, they say that magnitudes are composed from parts, and not from impartibles. But others rejecting a division to infinity, because we are not able to divide to infinity, have asserted that bodies are composed from indivisibles, and may be divided into indivisibles. Except that Leucippus and Democritus conceived that not only impassivity is the cause to the first bodies of their not being divided, but also their smallness and impartibility. But Epicurus afterwards was not of opinion that they are impartible, but asserted that they are atoms through their impassivity. And, in many places indeed, Aristotle confutes the opinion of Democritus and Leucippus; and it was, perhaps, owing to those arguments of Aristotle against the impartible, that Epicurus, consenting with the opinion of Democritus and Leucippus about the first bodies, defended their impassivity, but rejected their impartibility. Now, however, Aristotle proposes to show universally, that magnitudes are not composed from impartibles, since continued quantities possess interval. And, in the first place, he shows this in the magnitudes of body; and afterwards in motion and time. But as there are some magnitudes which are composed from certain things that touch each other, as a house and a heap, he at the same time demonstrates, that neither can such magnitudes as these be composed from impartibles. If, therefore, every magnitude is either composed from continued parts, or from such as touch each other, but impartibles can neither become continued, nor tangents to each other, no magnitude will be composed from impartibles.

³ Since some magnitudes appear to become continued, from things that are not continued but tangent, as a wall from bricks, Aristotle shows that neither is it thus possible for any magnitude to be composed from points, or in short, from impartibles: for this purpose he previously assumes, that if any magnitude is composed from points, it must necessarily be composed from them in continuity with, or touching each other. And that they cannot be continued is evident from what has been already demonstrated. He therefore adds, that neither will points touching each other produce any continued quantity. And it was easy to show, that neither can points touch each other, because those things touch whose extremes subsist together; but points being themselves extremes, have no extremity. But Aristotle enumerates the modes from division,
according

point be successive to a point, or the now to the now, so as that a length or time will consist from these: for things are successive, between which there is nothing of the same kind; but between points there is always a line; and between *nows*, time ⁴. Again, if this were the case, continued quantity might be divided into divisibles, since every thing may be divided into those things from which it consists; but nothing continued can be divided into impartibles. Nor can any other genus subsist between points and nows: for if this were possible, it is evident that it would be either divisible or indivisible. And if divisible, it will either be divisible into indivisibles, or into things always divisible. But this is something continued ⁵. It is also evident that every

according to which certain things may be said to touch each other, and says, that either the whole touches the whole, as a point a point; or they are adapted to each other as lines; or the one touches according to a part, but the other according to the whole, as a line touches a point; or they touch according to parts, as a line touches a line according to a point, for, in a certain respect, a point is a part of the whole. Aristotle, therefore, having made this division, adds, that points being impartible, neither touch according to parts, nor according to the whole and a part; but if they do touch, the whole touches the whole, so as to be adapted to each other. These, however, cannot be properly said to touch each other, since those things are tangents, the extremes of which are adapted to each other, and not the wholes to the wholes.

⁴ Since Aristotle says that things are successive between which there is nothing of *the same kind*; but between points there is always a line, and between *nows* time, it may be asked how a point is of *the same kind* with a line? Shall we say, as a boundary or extreme to that of which it is the extreme; just as he shows in his Ethics that appropriate pleasure is allied to energy, of which it is the end? But if a point indeed is of the same kind with a line, and *the now* with time, but a line and time are quantities, a point and the now will also be quantities. Unless, therefore, these are under quantity, as the boundaries of quantity: for under what other category will they be, since it is requisite that every thing which is in subsistence should be reduced under some one of the ten categories? And if in all time there is *the now*, and in every line a point, between which are a line and time, between these there will be a point and *the now*. Unless indeed a point is in capacity, and not in energy in a line, and *the now* in time. Or being in capacity, it is also able to subsist in energy.

⁵ Alexander says, Simplicius adds the following arguments, which he received from Eudemus. If magnitude consists from impartibles, a line will be greater than a line by a point. But if this be admitted, either every line cannot be bisected, or if it can, the line which exceeds another line

every thing which is continued is divisible into things always divisible: for if into indivisibles, the indivisible would be touched by the indivisible; since the extreme of things continued is one, and touches⁶. But there is the same reasoning with respect to magnitude, time, and motion; for either each, or no one of these consists from indivisibles, and is divided into indivisibles. And this is evident from the following considerations: for if magnitude were composed from indivisibles, the motion also through the space of this magnitude would be composed from equal indivisible motions. Thus, if the magnitude A B C were composed from the indivisibles A B C the motion also D E F, with which O is moved through the interval A B C, will have each of its parts an indivisible. But if motion being present, it is necessary something should be moved, and if it is necessary that motion should be present if something is moved; if this be the case, to be moved also will consist of indivisibles. Hence O is moved through A, when it is moved with the motion D; and through B with the motion E; and in like manner through G with the motion F. If, therefore, it is necessary that what is moved, should be moved from one place to another, and not at the same time be moved and have been moved, whither it was moved when it was moved; (just as if any one walks to Thebes, it is impossible that he should at the same time walk to Thebes and have walked to Thebes,)—if this be the case, O was moved through A, which is without parts, so far as the motion D was present to it. So that if it

line by a point, may also be bisected; and in this case, the point likewise will be divided. In short, if one line is greater than another by a point, one circle will also be greater than another by a point; so that the one will consist of an even number and the other of an odd. Either, therefore, we cannot divide the circle, which consists of an odd number, into semicircles, or we shall bisect a point. But Aristotle makes the division of that which may be divided, either into indivisibles, or into things always divisible, in order that he may circumscribe the continued in that which is divisible into things always divisible.

⁶ It must here be observed that Aristotle does not say that the continued is that which is composed from things touching each other; but that the extremity of things continued which produce from themselves a certain greater continued quantity, is one. But if one, it is also necessary that it should be touched; since, without previous contact, it would not be one.

2 Y

should

should pass through after it has passed through, it will be divisible : for when it was passing through, it was neither at rest, nor had passed through, but was between both. But if, at the same time, it both passes through and had passed through, that which proceeds when it proceeds, will be there, and will be moved to whither it is moved. And if any thing should be moved through the whole length A B C, and the motion with which it is moved is D E F; but nothing moves but has been moved through that which is without parts A ;—if this be admitted, motion will consist not from motions, but from the boundaries of motions (*ὀρίσματα*) and something will have been moved which was not in motion ; for it will have passed through A by not passing through it. Hence there will be something which has proceeded, though it has never at any time proceeded ; for it has proceeded through this, not proceeding through it. If, therefore, it is necessary that every thing should either be at rest, or be in motion, but it is at rest in each of the parts A B C, there will be something which is at the same time continually at rest, and continually moved : for it was moved through the whole magnitude A B C, and was at rest in every part of it, and therefore in the whole. And if the indivisible parts of D E F, are motions, it is possible that when motion is present, a thing may not be moved, but be at rest. But if they are not motions, it will come to pass that motion is not composed from motions. In like manner it is necessary, that as length, so time, should be indivisible and be composed from *nows*, which are indivisible : for if all motion is divisible, but that which is equally swift passes through a less space in a less time, time also will be divisible. And if the time is divisible in which any thing is borne along through A, A also will be divisible⁷. But since every magnitude

⁷ Aristotle having proposed to show that magnitude, motion and time subsist similarly with respect to the being composed from divisibles or indivisibles, and having first demonstrated that as magnitude so motion subsists, and that each of them consists of divisible parts, now adds, it is necessary that time should subsist similarly to magnitude, upon which motion is made, and also to motion, with respect to consisting or not consisting of indivisibles : for if those are from indivisibles,

magnitude is divisible into magnitudes (for it has been shown that it is impossible for any thing continued to be composed from indivisibles ; and every magnitude is continued) it is necessary that what is swifter should pass through a greater space in an equal time, an equal space in a less time, and a greater in a less time, just as some define that which is swifter: for let A be swifter than B. Since, therefore, that which is first changed is more swift; hence in the time in which A is changed from C to D, as for instance, in the time F G, in this time B will not have yet arrived at D, but will fall short of it. So that what is swifter will pass through more space in an equal time. In a less time also it will pass through more space than that which is slower: for in the time in which A arrives at D, B will arrive at E, since it is slower. Hence, because A arrived at D, in the whole time F G; it will arrive at H in a less time than this, and it will arrive at it in the time F G. The space, therefore, C H, which A will pass through, is greater than C E. But the time F K is less than the whole time F G; so that it passes through a greater space in a less time. Hence also, it is evident that what is swifter passes through an equal space in a less time: for since it passes through a greater length in a less time than that which is slower, but when considered itself by itself, it passes through a greater length in a less time; as, for instance, the length L M, which is greater than the length L X; hence the time P R, in which it passes through the length L M, is greater than the time P S, in which it passes through the length L X. So that if the time P R, is less than the time P T, in which the slower moveable quantity passes through the length L X,

indivisibles, time also will be from *nows*, which are indivisibles. Simplicius also observes, that it is usual with Aristotle to denominate magnitudes in the feminine gender, in consequence of adverting a line instead of magnitude. If, therefore, a line or motion is divisible, since that which is moved with an equal velocity passes through a lesser magnitude, or a lesser part of motion in a lesser time,—this being the case, time also will be co-divided with the motion, or the magnitude. He very properly, therefore, adds, that time also will be divisible. And thus having shown from magnitude that time is divisible, he likewise shows in the same way from time that magnitude is divisible.

the time also P S, is less than the time P T; for it is less than P R. But that which is less than the less, is itself less; so that in a less time, it will have moved through an equal space: farther still, if it is necessary that every thing in motion should be moved either in an equal or in a less, or in a greater time; and that which is moved in a greater time is slower; in an equal time, equally swift; and if that which is swifter is neither equally swift, nor slower; if this be the case, that which is swifter is neither moved in an equal nor in a greater time. It remains, therefore, that it is moved in a less time. Hence it is necessary that the swifter should pass through an equal magnitude in a less time⁶. But since every motion is in time, and in every time it is possible for something to be moved, but every thing which is moved, may be moved swifter and slower; hence in every time it is possible for a thing to be moved swifter and slower. But this being the case, it is necessary that time should be continued. And I call that continued which is divisible into parts that are always divisible: for the continued being admitted to be this, it is necessary that time should be continued: for since it has been shown that what is more swift, passes through an equal space in a less time, let A be that which moves with a greater velocity, but B that which moves with a less. And let that which moves with a less velocity, or the slower, pass through the magnitude C D in

⁶ Aristotle here precedaneously demonstrates that time is divisible, and together with time, magnitude. But to the demonstration of this he previously assumes that the swifter must necessarily be moved through a greater space in an equal time, and be more moved in a lesser time. He also demonstrates this through the definition of that which is swifter: for we call that swifter which passes through a greater space in an equal time, and is more moved in a lesser time. But he likewise demonstrates it from this, that from every magnitude being divisible it follows, that a thing which is moved swifter is more moved, and a thing which is moved slower is less moved, in an equal time: for if every magnitude were not divisible, it would not be possible for a thing which is slower to be always less moved in an equal time, than a thing which is swifter: for an atom, and that which is impartible, pass through a space swifter and slower, in the same time; since, if they passed through it in a greater time, something less than an impartible would pass through it in an equal time. Hence the Epicureans are of opinion, that all things are moved with equal celerity through impartibles, lest their atoms, being divisible, should no longer be atoms. But from the definition of the swifter, it is evident that every magnitude is necessarily divisible into magnitudes.

the

the time F G. It is evident, therefore, that the swifter will pass through the same magnitude in a less time than this; and let this time be F H. Again, because the swifter passes through the whole length C D, in the time F H; the slower in the same time will pass through a lesser length. Let this, therefore, be C K. But since the slower B passes through the length C K in the time F H, the swifter will pass through it in a less time. So that again, the time F H will be divided. But this being divided, the magnitude also C K will be divided in the same ratio. And if the magnitude, also the time; and this will always be the case if we assume a progression from the swifter to the slower, and from the slower to the swifter, and make use of that which has been demonstrated: for the swifter divides the time, and the slower the length. If, therefore, conversion is always true, and division is always produced by conversion; it is evident that all time is continued. But at the same time it is also manifest, that every magnitude is continued; for time and magnitude are divided according to the same and equal divisions⁹. Again, from what is usually asserted, it is evident, that if time is continued, magnitude is likewise; since in the half of a certain time the half of a certain space is passed through; and in short, a less space in a less time: for there will be the same divisions of time and magnitude. And if the one is infinite, the other is also. As likewise is the one, so is the other: for instance, if time is infinite in the extremes, length also will be infinite in the extremes. And if time is infinite in

⁹ Aristotle having shown that a swifter thing moves through an equal interval in a lesser time, and a slower thing a lesser interval in an equal time, now demonstrates through this, that time is not composed from *nows* which are impartible, but is continued, and is divisible into things always divisible. And the swifter indeed, divides time, but the slower, magnitude. But lest some one should say, that not every motion is in time, and that there is not in every motion the swifter and the slower, and if this be the case, that neither will every time be divided by the swifter, he reminds us of these things, as having been already demonstrated and acknowledged: for it has been shown, that all motion is produced in time, and that in all time there is motion; since time is something belonging to motion. Hence, where there is motion, there is also time; and where there is time, there also there is motion. In this likewise he assumes that every thing which is moved, may be moved swifter and slower.

division,

division, this also will be the case with length ; but if time is infinite in both these, length likewise will be infinite in both ¹. Hence the reasoning of Zeno assumes that which is false, viz. that it is not possible to pass through infinites, or touch infinites one by one, in a finite time : for length, and time, and in short every thing continued, are said to be infinite in a twofold respect, viz. either according to division, or from the extremes. Things, therefore, that are infinite according to quantity, cannot be touched in a finite time. But things according to division may ; for time is thus infinite. So that it happens that the infinite may be passed through in an infinite, and not in a finite time, and that

¹ Aristotle having shown that magnitude is co-divided with the division of time, says, that the same thing also may be demonstrated from other arguments, which are usually adduced by those who treat of these particulars. But the reasoning which is assumed from things that are moved with an equal velocity, is as follows : If that which is moved with an equal velocity proceeds through the half of a given space in the half of a given time, and always proceeds through a lesser space in a lesser time, and which is lesser in the same ratio, it follows, since time is divisible to infinity, that magnitude also, ~~in which the motion is made,~~ is divisible to infinity : for there are the same divisions of both. ~~But if they~~ subsist similarly to each other, it is evident that, if the one is infinite, the other also will be infinite. Since, however, the infinite in continued quantities is twofold, or may be conceived in a twofold respect ; for it is either in extremes ; (and the infinite in extremes is that which has not extremes, but can never be passed through) or it is in division, in consequence of the part which is always assumed being divisible ; or the infinite subsists according to both these : for, as time, says he, possesses the infinite, so likewise does magnitude possess it. But that as time being continued, is divisible to infinity, so also magnitude is evident ; since magnitude is continued, and every thing continued is divisible to infinity.

Since, however, time is infinite in the extremes, neither having a beginning nor an end, as is demonstrated at the end of this treatise, how is it true that magnitude also is thus infinite ? for the very contrary to this is demonstrated in the third book of this treatise ; viz. that magnitude is not infinite in the extremes. To this it may be replied, that as time is twofold, the one being infinite in the extremes, which measures the circular motion, which is without beginning and without end, but the other being finite indeed in the extremes, and possessing the infinite in division alone, as the partial time, which measures the motions in a right line, thus also magnitude is twofold : for the one is infinite in the extremes, not as indefinite, which Aristotle rejects in the third book, but as circular, and neither having a beginning nor an end, but the other having both a beginning and an end, such as the magnitudes in generation, and which are divisible to

that infinites may touch infinites in infinite, and not in finite, times². Neither, therefore, can the infinite be passed through in a finite time,

to infinity, in consequence of being continued quantities. The whole of time, however, or the *wholeness* of all time, and a circulating body contain the infinity of both these: for being without beginning and end, and being also continued, they are divisible to infinity. It is likewise evident, that though Aristotle only mentions here time and magnitude, it is necessary that the same things should be understood concerning motion: for as is time, so also is motion, of which time is a part.

² Aristotle having shown that the infinite subsists similarly in time and in magnitude, employing this demonstration, solves certain arguments adduced by the Eleatic Zeno, in order to subvert the existence of motion. But the reasoning of Zeno is as follows: If motion is, it will be possible for infinite things to be passed through in a finite time, each of them being touched. But this is impossible. Motion, therefore, is not. And he endeavours to show that infinite things will be passed through in a finite time, by using the infinite divisibility of magnitudes: for, if every magnitude is divisible to infinity, it will be composed from things infinite in number; so that a thing which is moved and passes through any magnitude whatever, will be moved and pass through the infinite, and will touch infinites in a finite time, in which it passes through the finite whole. But he says it will touch infinites in passing through each part, because a thing may appear to have passed through infinites by proceeding above them. But he proves the assumption, which says it is impossible for infinites to be passed through and touched in a finite time, from the impossibility of passing through the infinite, and of infinites being touched in a finite time, if at different times that which is moved touches the parts of the subject. But he says it is impossible for each of the infinite parts to be touched, because, by being touched, they are as if they were numbered; and it is impossible for infinites to be numbered.

Aristotle, however, condemns the assumption; since it is not impossible for infinites to be passed through in a finite time: for the infinite being predicated in a twofold respect, the one, indeed, according to the extremes, and the other by division, the infinite according to quantity, the parts of which are infinite in multitude in energy, because the magnitude is infinite, cannot be passed through in a finite time. But the infinite according to division, and which is in capacity, and not in energy, may be passed through: for the assumed finite time is infinite according to division. The infinite, therefore, is not in the finite, but in the similarly infinite. Hence, infinites in capacity are touched, but not the parts of the subject severally divided in energy, by that which is moved in similarly infinite parts of time, or in the parts of the same time: for that which is moved being a continued quantity, is divisible to infinity. The sophism, therefore, of Zeno is founded on an equivocation of the infinite, and on transferring the infinite according to division to the infinite in extremes: for it is impossible for this infinite to be passed through in a finite time, and for parts, thus infinite, to be touched. But there is no absurdity in admitting, that magnitude, infinite according to division, may be passed through in a time infinite according to division. Zeno, however, assumes that magnitude is divisible to infinity, but not time, though it subsists similarly to magnitude.

nor

nor the finite in an infinite time ; but if time is infinite, magnitude also will be infinite ; and if magnitude, likewise time : for let there be a finite magnitude A B, and an infinite time C. Let also some finite part of this time be assumed, as C D. In this time, therefore, it will pass through some part of the magnitude ; and let it have passed through the part B E. But this part will either measure the magnitude A B, or will be deficient or exceed in measuring it. This, however, is of no consequence : for if it always passes through a magnitude equal to the part B E, and this measures the whole magnitude, the whole time in which it passes through will be finite ; for it will be divided into equal parts, as also the magnitude³. Farther still, if it does not pass through the whole magnitude in an infinite time, but is able to pass through some portion of it in a finite time, as for instance, the part B E, and this measures the whole ;—if this be the case, it will pass through an equal part in an equal time ; so that the time will be finite. But that it does not pass through the part B E in an infinite time, will be evident if a finite time is assumed from the other part : for if it passes through a part in a less time, it is necessary that this part should be finite, since the other boundary is present. There is the same demonstration if the length is supposed to be infinite, but the time finite. It is evident, therefore, from what has been said, that neither a line, nor a superficies, nor, in short, any continued quantity, is indivisible, not only in consequence of what has been now said, but because it will happen that an indivisible will be divided : for since in all time there is the swifter and the slower, but the swifter passes through a greater space in an equal time, it is possible for it to pass

³ Aristotle having demonstrated that time and magnitude are similarly continued quantities, and are similarly divisible to infinity, and having also, from this similitude dissolved the argument of Zeno, adds something to what has been previously demonstrated, as a thing consequent and exhibited from it, viz. that neither can any thing be moved through an infinite interval, (though it should be supposed to exist) in a finite time, nor a finite interval in an infinite time. But the infinite which he now assumes is that which is properly the infinite in energy, and which he calls infinite in the extremes.

through

through a double or sesquialter length ; for this may be the ratio of the celerity. Let that which moves swifter then pass through a sesquialter length in the same time : and let the magnitudes be divided ; that which moves swifter, into A B, B C, C D, three indivisibles ; but that which moves slower into two, E F, F G. The time, therefore, will also be divided into three indivisibles ; for it passes through an equal space in an equal time. Let the time then be divided into K L, L M, M N. But again, since that which moves more slow passes through E F, F G ; hence the time will be cut into two parts. An indivisible, therefore, will be divided ; and that which is without parts will not pass through in an indivisible, but in a longer time. Hence it is evident that nothing continued is without parts⁴.

CHAP.

⁴ Aristotle having shown that it is not possible for any continued quantity to be composed from impartibles, neither magnitude, nor motion, nor time, and also that every continued magnitude is divisible into parts which are perpetually divisible, and having likewise shown that time and magnitude, similarly possess the infinite and the finite, from which also he solves the question of Zeno concerning the non-existence of motion,—now says, that it having been demonstrated by us that continued quantities are not divisible into atoms, it is evident from this that no part of continued quantities is an atom and indivisible, since continued quantities are not divisible into atoms. But his reasoning demonstrates of parts themselves, that it is impossible for them to be atoms, in the first place of the parts of magnitude, and in the next place of the parts of time. This demonstration, however, differs from the former, because that demonstrated that parts themselves are not indivisible, but this precedaneously shows that they are divisible, and demonstrates the necessity of the division. Before too, from the nature of that which is continued, it was demonstrated that the parts of it are divisible ; but now the parts themselves are demonstrated to be such by themselves. But he calls the part of a line, a line, the part of a superficies, a superficies, and the part of time, time ; and in short, the part of continued quantity, continued : for his intention now, is to show that the parts of continued quantity are not indivisible, which he first demonstrates of magnitude, and afterwards of time, employing, for this purpose, the similitude of time and magnitude on which motion is made, to each other.

But he shows this by a deduction to an impossibility, reasoning as follows, according to the second of hypothetic syllogisms : If a part of a magnitude is an atom, an atom will be divided ; for a part of a magnitude may be divided. But it is impossible for an atom to be divided ; and consequently a part of a magnitude is not an atom. He also demonstrates the conjoined assertion, or that a part of a magnitude may be divided, using for this purpose, as evident and previously assumed, the assertion that in all time there is the swifter and the slower ; since in all time

CHAPTER II.

BUT it is necessary that *the now*, which is so called, not through another, but by itself and primarily, should be indivisible; and likewise that such a now should be inherent in all time: for it is a certain extremity of the past, beyond which there is nothing of the future; and again, it is a certain extremity of the future, beyond which there is nothing of the past. It is also, that which we say is the boundary of both. And, if it can be shown that *the now* is a thing of this kind in itself, and the same, it will at the same time be evident that it is indivisible. It is necessary, therefore, that *the now* should be the same, which is the extremity of both times: for if it were different, the one would not be successive to the other, because that which is continued is not composed from impartibles⁵. But if each is separate, there will be

there is motion, and in all motion there is the swifter and the slower. He likewise employs for this purpose, the proposition, that that which is moved swifter in an equal time is moved through a greater interval, than that which is moved slower. And these things being admitted, he assumes in the third place, that motions may be taken in any ratio, both the motion of that which is swifter and the motion of that which is slower, so that the swifter may be moved in the same time, through a space double or sesquialter of the slower.

⁵ *The now* being twofold, one subsisting as the beginning and end of time, which is analogous to a point in a line, but the other subsisting according to the present time which receives a division opposite to the past and the future, *the now*, which exists as a beginning and end, and which is also indivisible, Aristotle says is called *the now essentially* and *primarily*; but the other *now* has neither an essential nor a primary subsistence; but is only said thus to subsist, so far as it contains in itself the primary and the essential. Thus also, in place one thing is said to be essentially and primarily which is in the boundary of that which proximately contains; but another thing is not so; as when a thing is in a house, because the boundary of that which proximately

be time between them; for every thing continued is of such a kind, that there is something synonymous between the extremes. If time, however, is that which is between, it will be divisible; for it has been shown that all time is divisible. So that *the now* will be divisible. But if *the now* is divisible, there will be something of the past in the future, and something of the future in the past; for that according to which it is divided, will separate the present and future time⁶. At the same time, however, *the now* will not be a boundary of itself, but through

mately contains it is in the house. Hence, Aristotle says, that *the now* which is predicated essentially and primarily is indivisible, and one and the same in number, being the boundary of the past and the beginning of the future; another and another *now* not being these. This *now*, therefore, is not a part of time, since it subsists the same in all time, being a beginning and end; just as a point is in every line, when the line is assumed as one and continued: for it is entirely divisible, and the division is according to a point.

⁶ Aristotle having shown that the extremes of time cannot be another and another, so as to touch each other, in the next place shows, that neither in short will the two extremes of time subsist so as to be separated and distant from each other: for if they were, there must necessarily be time between them: for in every thing continued, that which subsists between the boundaries is synonymous with those things to which the boundaries belong. Thus that which is between the boundaries of lines will be a line; for that which is between all points, is a line. But lines are synonymous to each other. And if the boundaries were lines, that which is between the lines would be a superficies, for lines are the boundaries of superficies. In the continuity of a superficies, therefore, two separate lines being assumed, that which is between them is entirely a superficies. And in body, that which is between two superficies is a body. But in this, though we should assume superficies, bodies being separated, that which is between must necessarily be body, because there is no vacuum. There is likewise the same reasoning in motion: for between the boundaries of motion, which when the motion is continued are called *kinemata*, it is necessary there should be motion. In a similar manner also in time: for this is continued, and the boundaries of it are *nows*: for time has this prerogative beyond other continued quantities, that the whole is so continued that there can be no divulsion from it, as a line can be divulsed from a line, and a superficies from a superficies, when these are considered as existing in different bodies. Hence time is between all the boundaries of time.

But Aspasius infers as follows, the absurdity mentioned by Aristotle. Since the division of that which is between, produces on one side the past, and on the other the future, if each of the sections of the present time were divided, each would be again divided into the past and future; and there will be in the past something of the future, and in the future something of the past.

2 z 2

another

another: for the division is not of that which subsists by itself⁷. To which we may add, that of *the now* there will be something which will be past, and something which will be future; and not always the same past or future. Neither, therefore, is *the now* the same; for time is multifariously divisible. So that if these things cannot be inherent in *the now*, it is necessary that the same now should be in each⁸. But if the same, it is also evident that it is indivisible: for if it were divisible, the same things would happen as have been already mentioned in the former argument. From what has been said, therefore, it is evident that there is something in time indivisible, which we say is *the now*. But that nothing is moved in the now is manifest from the following considerations: for if any thing is so moved, it may be moved in it swifter and slower. Let *the now*, therefore, be N, and let that which is swifter

⁷ This is a second argument solving a certain objection, which says there is no absurdity in admitting, that *the now*, as present time, may subsist between the past and the future. Aristotle, therefore, says that this which subsists between is not the essential *now*: for *the now*, which is essential, or subsists by itself, is impartible; but this *now* is divisible, because it is time. Hence though it is called *the now*, yet it is not so denominated as if the name belonged to it essentially, but as belonging to it according to something else, because the essential is in it. But that this *now* is not essential, such as it is requisite the proper *now* should be which exists between the past and the future, is evident from division: for division is not of the essential *now*, but of that which is denominated with a certain latitude, and according to something else.

Simplicius adds, that another copy has, *η γαρ διαιρεσις καὶ αὐτο*, "for the division is essential." That is, this which is between is a *now* according to something else: for the division is the essential *now*, but not that which is divided.

⁸ Aristotle having before demonstrated, that to those who say that the boundary of the past, and the beginning of the future, is not one and the same in number, but has time between, it follows, that there will be something of the future time in the past, and something of the past in the future, now shows that of this very *now*, which is admitted to be between the past and the future, one thing will be the past, and another the future: for the time between the extremes which appears to be *the now*, since it is neither past nor future, will evidently, when divided, have for its parts *nows*: for the whole was a *now*. But the division of all time, makes one part to be past, and another to be future; so that one part of *the now* being itself a *now* will be something past, and another past, something future. It is absurd, however, to say of the present now, that one part is past and another future. To him, indeed, who speaks of *the now* with a certain latitude, something belonging to it will be the past, and something the future; since that which is properly *the now* being impartible, separates and bounds the past and the future.

bc

be moved in it through the length A B. Hence that which is slower, will be moved in the same, through a length less than A B, as for instance, through A C. But since that which is slower is moved in the whole now through A C, that which is swifter will be moved in less than this. So that *the now* will be divided. But it was indivisible. It is not possible, therefore, for a thing to be moved in *the now*. But neither can a thing be at rest in *the now*: for we say that a thing is at rest which is naturally adapted to be moved, but is not moved when it is naturally adapted, and where, and as it is naturally adapted to be moved. So that since nothing is naturally adapted to be moved in *the now*, it is evident that it possesses no natural aptitude to be at rest in *the now*. Again, if there is the same moment in both times; but it is possible to be moved in the whole of the one, and to be at rest in the whole of the other; and if that which is moved in the whole time, may be moved in any part of this time, in which it is naturally adapted to be moved; and that which is at rest may similarly be at rest;—if this be the case, it will happen, that the same thing may at the same time be at rest, and be moved; for the same thing, that is, *the now*, is the extremity of both times⁹. Farther still,
we

⁹ This is the second argument, demonstrating that in *the now*, properly so called, it is not possible for any thing either to be moved, or to be at rest. But Aristotle demonstrates this according to the second mode of hypothetic syllogisms, deducing to an impossibility, for the same thing to be at the same time moved and at rest: for taking for granted what has been previously demonstrated, that *the now* being one and the same in number, is the boundary of the past, and the beginning of the future, he says, that if any thing is assumed the whole of which has been moved in the past time, it will also have been moved in any part of it according to which it is naturally adapted to be moved. If, therefore, it is naturally adapted to be moved in the end of *the now*, as the assertion supposes, it will evidently be moved in it. But if the same thing is admitted to be at rest in the whole of the future time, for this may be supposed, it will also be at rest in any one of those things in which it is naturally adapted to be at rest. If, therefore, it is naturally adapted to be at rest in *the now* which exists at the beginning of the future, that also will be at rest in it which is at rest in the whole of the future. Hence, in the same *now*, which is the end of the past and the beginning of the future, something will be moved, and at the same time be at rest, according to the same: for *the now* is indivisible. It will not, therefore, be moved in this part of it, and be at rest in that. But Aristotle adds the words, “according to which it is naturally adapted

we say that a thing is at rest, which subsists similarly, both itself, and its parts, now, and formerly. But in *the now* there is not the prior; so that neither can any thing be at rest in *the now*. It is necessary, therefore, that what is moved should be moved in time, and that what is at rest should be at rest in time¹.

CHAPTER III.

But it is necessary that every thing which is changed, should be divisible: for since all mutation is from something to something; and when a thing is in that into which it is changed, it is no longer changed; but when it is in that from which it is changed, both itself and its parts are not yet changed; (for that which subsists similarly, is neither itself changed, nor its parts),—this being the case, it is necessary that one part of that which is changed should be in this, but another part in the other: for neither is it possible that the whole can be in both, nor in neither. But I mean in that into which it is changed, viz. that which is first according to mutation; as for instance, the dark brown from the white, and not the black: for it is not necessary that what is

adapted to be moved," because, in the parts of time indeed, things moveable are naturally adapted to be moved, but not so in things. If, however, it is supposed that they are also moved in these, the absurdity which is shown will follow.

¹ In the third place Aristotle infers, that it is not possible to be at rest in *the now*. But the syllogism will be categoric in the second figure, as follows: to be at rest is for a thing and its parts to subsist similarly, both *now* and *formerly*. In *the now*, since it is indivisible, there is not *now* and *formerly*. It is not possible, therefore, to be at rest in *the now*. Having, therefore, thus clearly demonstrated the thing proposed, he very properly adds, that it is necessary for that which is moved to be moved in time, and for that which is at rest to be at rest in time; since it is not possible either to be moved, or to be at rest in *the now*.

changed

changed should be in either of the extremes. It is evident, therefore, that every thing which is changed will be divisible ².

CHAP.

² Aristotle having before shown that magnitude in which motion subsists, is divisible into things perpetually divisible, and that this is also true of motion and time, now demonstrates that it is impossible for the thing itself which is moved to be without magnitude and indivisible. And what is now said, is connected in a consequent order with what has just been asserted: for having shown that in the impartible now of time, nothing can either be moved, or be at rest, but in divisible time, that both moveable things are moved, and things capable of being at rest, are at rest; he now shows, that not only time in which motion exists, is divisible, but that this is also true of the moveable thing itself, of motion, of the being moved, and of the magnitude in which motion exists: for all these subsist similarly, because one of them being divided, the rest also will be divided. Now, however, he at length demonstrates that that which is moveable is divisible, previously assuming as a thing acknowledged, that all mutation is from something to something, and as reasoning from this division, he says, since that which changes, changes from something into something, it is necessary that in changing, it should either still be in that from which both it and its parts change, or in that into which it changes, or in both these. Or, again, it is necessary that both it and its parts should be in neither of these; or, again, that one part of it should be in that from which it changes, and another in that into which it changes. And besides these, there does not appear to be any other member of the division. If, therefore, he shows that no one of the other sections is sane, and adopts that section which says, that one part of the thing is in that from which it changes, and another part in that into which it changes, that which is changed, will evidently appear to be divisible. But indeed, that when the thing to be changed is in that from which it changes, it does not change, is evident; for it is then at rest, and does not yet change. Neither does it change when it is in that into which it changes; for it will then be changed, and does not change. Neither can the whole of it be in both, viz. in that from which it changes, and in that into which it changes: for in this case, it would be separate from itself, and at the same time would be that which is changed separate from change. But neither can it subsist in such a manner, as that neither it nor its parts should be in neither. And it is said to be in neither, so as not to be in that which is between, as will be manifest. This, however, is the most impossible of all things. It remains, therefore, that of a thing which changes, something belonging to it must be in that from which it changes, and something in that into which it changes. But if this be the case, it will be divisible.

It must here, however, be observed, that when a thing changes from white to black, one part of it is not in white, and another in black; for it is necessary that it should *first* be in the *dark brown*. Hence Aristotle adds, "I say that into which it *first* changes according to mutation, as for instance, from white to the dark brown, and not to black." But the intermediate is the *first* of that which is *to which*, as the end; and the first of the black is the dark brown: for through this a thing proceeds to the black from the white.

Here,

CHAPTER IV.

BUT motion is divisible in a twofold respect; in one way by time; in another, according to the motions of the parts of that which is moved. Thus, if the whole A C is moved, the part also A B will be moved, and the part B C. Let, therefore, D E be the motion of the part A B, and E F, the motion of the part B C. Hence it is necessary

Here, however, Simplicius observes, that Alexander drawing every thing to his own hypothesis about the soul, viz. that it is inseparable from the body*, says that this is evident from what is now asserted by Aristotle; since the soul is incorporeal and impartible, but the impartible is not moved, if it is necessary that of that which is moved, there should be something from which it is moved, and something to which it is moved, and if that which is not moved, is not separated. To avoid this absurdity, says he, some connect with the soul a certain body as a vehicle, not perceiving that if this were admitted, either body must proceed through body, if the soul is united with every body, when it subsists together with body, or the soul must be separated from this vehicle, and be moved by itself when it is inserted into bodies.

To this, however, Simplicius justly replies, that with respect to the soul, which is impartible, being moved, it is not moved with a corporeal motion; but it is moved with motions adapted to soul when it deliberates, energizes dianoetically, judges and contemplates. He adds, The definition of motion which is given by Aristotle, may, I think, be also adapted to the motions of the soul, either to all, or to most of them, since in being moved they have something in capacity. But even though this definition should not be adapted, yet these energies of the soul may be defined according to another species of motion. This also was the opinion of Theophrastus the coryphæus of the familiars of Aristotle, who, in his first book concerning Motion, says, "Appetites indeed, desires, and angers, are corporeal motions, and from the body have their beginning; out judgments and contemplations cannot be referred to any thing else than the soul, but, both the energy and the end of these are in the soul. And this must be admitted, if intellect

* Alexander says this in his first book Concerning the Soul. P. 126.

also

sary that the whole D F should be the motion of A C: for it will be moved according to this motion; since each of the parts is moved according

also is a certain more excellent and divine part, as externally * acceding to us, and being all-perfect." To this also Theophrastus adds, "it must, therefore, be considered whether it should be asserted in the definition of soul, that it has a certain separation, since it is acknowledged that these are motions." Straton Lampsacenus also, who was an auditor of Theophrastus, and who is numbered with the best of the Peripatetics, acknowledges that the soul is moved, not only the irrational, but likewise the rational soul, and calls the energies of the soul motions. Hence, in his book *On Motion*, besides many other things, he says the following: "The soul always intellectually perceiving is moved, just as he who sees, and hears, and smells, is moved: for intelligence is the energy of the dianoetic power, just as seeing is of the sight." And, prior to this, he observes, "that there are many causes, therefore, of the motions according to which the soul dianoetically energizing is moved by herself, and to which she was first excited by the senses, is evident: for such things as she has not previously seen, these she is incapable of understanding, such as places, or ports, pictures, or statues, or men, or any thing else of this kind." But that the soul, according to the best of the Peripatetics is moved, though not with a corporeal motion, is from hence evident. Aristotle also himself, in the last book of this treatise, says, that phantasy and opinion appear to be certain motions.

Simplicius adds, in answer to what is said by Alexander about the vehicle of the soul, It must be observed, that we do not say this vehicle is suspended from the soul, in consequence of the soul being separated from it; for the soul being in this vehicle, is essentially separated from it: for if the soul has energies separated from it, much more will it have a separated essence, as Aristotle asserts in his books *On the Soul*. The soul, however, is not said to be locally in this corporeal vehicle, as in a vessel, but according to habitude, proximity, or alliance. In order, therefore, to its separate subsistence, it does not require another body which is locally moved; for the inaptitude of body is sufficient to its not receiving the illumination of soul. And this it is for the soul to be separated. But that vehicle is shown to be suspended from the soul, because the soul being mundane, and conversant with different parts of the world, has a vehicle which it animates, entirely adapted to that part with which it is conversant. When, therefore, the soul lives in the air, the vehicle depending from its essence is pneumatic; just as when it lives here, it is connected with this shelly body. If then this is the cause of the different vehicles of the soul, it is not perhaps necessary, that, when in the present body, it should also have the pneumatic body. And even if it has, it is not necessary that it should be in this vehicle, so as for body to proceed through body. Neither is this absurd, that things of a superior and more attenuated nature, and which are not of a kindred essence, should pervade through such as are more gross and material: for the solar light, even according to those who say that it is a body, is admitted

* This is asserted of intellect by Aristotle, in his second book *On the Generation of Animals*.

according to each, and nothing is moved according to the motion of another thing. So that the whole motion is the motion of the whole magnitude³. Farther still, if all motion is the motion of something; but the whole motion D F is neither the motion of either of the parts, (for each part is the motion of each part) nor of any thing else, (for where there is a whole motion of the whole of a thing, the parts of that motion will be the motions of the parts of the thing; but the parts of the motion D F are the motions of the parts A B C, and not of other things; for there is not one motion of many things;—if this be the case, the whole motion will be the motion of the magnitude A C. Besides, if there is another motion of the whole, as for instance H I, the motion of each of the parts will be taken from it; but these will be equal to the motions D E, E F; for there is one motion of one thing. So that if the whole motion H I, is divided into the motions of the parts, the motion H I, will be equal to the motion D F. But if any thing remains, as for instance K I, this will not be the motion of any thing: for it will neither be the motion of the whole, nor of the parts, because there is one motion of one part; nor will it be the motion of any thing else, because the motion of any continued quantities is continued.

to pervade through the whole air; and the celestial spheres, which are perfect spheres, and not arches only, since they are continued as far as to the centre, proceed through the whole of the natures which are in a consequent order.

³ Aristotle having shown that every thing which is moved is divisible, now demonstrates that motion also is divisible; and that it will be divisible in a twofold respect. And, in one way indeed, it will be divisible from time; because all motion is in time, and all time is divisible. But Aristotle now demonstrates the other mode of the division according to motion, and which subsists according to the division of that which is moved: for since that which is moved being divisible, has a certain interval and length, it is also necessary that the motion of it which is in the whole interval of the thing moved, should have the same interval as the thing moved. If, therefore, the interval of the motion is equal to the interval of the thing moved, and which is divided into parts, the motion also will be divided after the same manner with the parts of the thing moved. The whole reasoning, therefore, is as follows: if there is the same motion of the whole, which there is admitted to be of the parts, the motion will be divided according to the magnitude which is moved. If, therefore, the antecedent is true, the consequent also will be true.

This

This also will be the case, if it should surpass according to division. So that if this is impossible, it is necessary that it should be the same and equal. This, therefore, is the division according to the motions of the parts, and it is necessary that it should be the division of every thing which consists of parts. But another division takes place, according to time: for since all motion is in time, all time is divisible, and there is less motion in a less time; it is necessary that all motion should be divided according to time⁴.

CHAPTER V.

But since every thing which is moved, is moved in something, and in a certain time, and since there is a motion of every thing which is moved, it is necessary that there should be the same divisions of time and motion, of the being moved, and of that which is moved, and of that in which motion is effected; except that there is not similarly a division of all things in which motion is; but of quantity the division is essential, and of quality according to accident: for let the time in which any thing is moved be A, and the motion B. If, therefore, it accomplishes the whole motion in the whole time, it will certainly

⁴ Aristotle having said that all motion is divisible in a twofold respect, in one way from time, and in another according to the magnitude which is moved, and having also shown according to these modes, that it is divisible according to the magnitude which is moved, concisely and clearly demonstrates that motion is also divisible according to time: for all motion is in time, and all time is divisible. That also which is equably moved, is moved half in half a time, and a third in a third part of a time; and in short, it is moved more in a greater time, and less in a less time. But if the motion is more in a greater time, and less in a less time, and according to the same ratio, all motion will be divided according to time.

effect a less motion in half the time ; and this again being divided, it will effect a motion less than this ; and thus perpetually. In like manner, if motion is divisible, time also is divisible : for if it accomplishes the whole motion in the whole time, it will accomplish half in half the time ; and again, less than half, in less than half the time ⁵. After the same manner also, the being moved will be divided : for let the being moved be C. According to the half of the motion, therefore, it will be less than the whole ; and again, according to the half of the half ; and thus perpetually. It is possible also, admitting the being moved to be according to each of the motions, as for instance, according to D C and C E, to say that the whole will be moved according to the whole motion : for if something else corresponds to the whole motion, there will be many things of which the being moved may be asserted, according to the same motion ; just as we have shown that motion is divisible into the motions of the parts : for if the being moved is assumed according to each motion, the whole will be continued ⁶. In a similar manner also, it may be shown that length is divisible, and, in short,

⁵ Aristotle having shown that all continued quantities, viz. the magnitude which is moved, that according to which motion is produced, whether according to quantity or quality, likewise motion, the being moved, and time, are divisible into things perpetually divisible, and that no one of them consists from indivisibles, now shows that there are the same divisions of all these, and that all are similarly co-divided with each other. Having said, therefore, that there is the same division of all these, since that which possesses quality does not appear to receive a division into parts according to the same, because it is not quantity, on this account he adds, that all things in which there is motion, are not similarly divided : for place, according to which local motion subsists, and magnitude according to which increase and diminution subsist, being quantities, may be divided essentially. But that which possesses quality, according to which alliation subsists, can no longer be divided essentially, but according to accident : for, because the body is divided in which the quality subsists, the quality also is itself divided.

⁶ Aristotle having shown that time and motion are divided similarly to each other, demonstrates that to be moved also, which is energy, or passive quality, according to motion, is divided similarly with motion : for if *to be moved* is the presence of motion, it is evident that, with the presence of a greater quantity of motion, there will be more of *to be moved*, but less with the presence of a less quantity. So that with motion, *to be moved*, which is the presence of motion, will be co-divided.

every

every thing in which there is mutation (except that some things are divided according to accident) because that which is changed is divisible; for one part being divided, all the parts will be divided. And so far as pertains to their being finite or infinite, the thing will similarly take place in all of them⁷. But it especially follows, that all may be divided, and this to infinity, from that which is changed; for in that which is changed, the divisible and the infinite are immediately inherent. That the divisible, indeed, is inherent, has been shown before; but that the infinite is also, will be manifest in what follows.

⁷ As it has been shown, says Aristotle, that time, motion, and to be moved, are divided by the same divisions, in like manner it may be demonstrated that that according to which motion is produced, is co-divided with the before mentioned particulars. If the motion indeed is local, length will be co-divided; but magnitude if the motion is according to quantity, as increase and diminution; and quality, if the motion is according to quality: for whatever of these is divided, all the rest will be co-divided with the same division. Thus, if any thing should be moved with a certain whole motion in a certain whole time, either according to quality, or according to quantity, or according to place, the time being divided into half, or a third, or any other part, the motion also, and that according to which the motion subsists, will be divided into the same parts. Quality, however, if the motion should be according to quality, will not be divided essentially, but according to accident.

But in things which are violently moved according to place, that which is moved, is co-divided with time: for a more ample magnitude is moved by violence through the same interval in a more ample time, and a less magnitude in a less time. In the motion, however, which subsists according to nature, how is this true? For, on the contrary, in things which are naturally moved, the part is moved in a greater time than the whole, and the less in a greater time than the greater. May we not say, that in these also, the analogous is preserved, viz. that magnitude is divided with time, and time with magnitude; but that the analogy is contrary, and is not similarly produced? For the division of a magnitude which is naturally moved, increases time according to the analogy of the division; since by how much less that which is naturally moved is, by so much the more will the time be in which it is moved. But again, the division of time, increases the magnitude according to the analogy of the peculiar division: for by how much less the time is, by so much greater is the magnitude which is moved with the same motion in the less time. So that the analogy is contrary, in things which are locally moved according, and in those which are locally moved contrary, to nature.

CHAP.

CHAPTER VI.

SINCE, however, every thing that changes is changed from something into something, it is necessary that what is changed, when it is first changed, should be in that into which it is changed: for that which changes proceeds from that from which it changes, or leaves it; and either to change and to leave are the same, or the latter is consequent to the former, and the having left to the being changed; for each subsists similarly with reference to each. Since, therefore, of mutations, one is that which is according to contradiction; when a thing is changed from non-being into being, it leaves non-being. It will be, therefore, in being: for it is necessary that every thing should either be or not be. Hence, it is evident, that in the mutation according to contradiction, that which is changed will be in that into which it is changed. But if it is so in this mutation, it will likewise take place in others: for the thing is similar in one and in others⁸.

Again,

⁸ That which is here proposed is to show, that a thing which is changed when it is *first* changed into that into which it is changed, is necessarily in that into which it is changed: for it is not simply necessary that a thing which is changed should now be in that into which it changes: for if any thing changing from black to white, should be in dark brown, this thing will be changed indeed from black, but will not yet be changed into white, on which account neither is it after a certain manner in white, into which it changes. But the word *first* is added to that which is changed, because thus what is asserted will be true. Such, therefore, is the problem.

But Aristotle, previously assuming as evident, that every thing which changes, changes from something to something, shows the thing proposed from the permutation of names, and from the mutation according to generation and corruption clearly possessing this. The permutation of names, therefore, which is effected, is that of the verb *to change*, into the verb *to relinquish*: for either *to change* and *to relinquish* are the same, or *to relinquish* is consequent to *to change*. But,
if

Again, this will be evident to those who consider the affair more particularly; if it is necessary that what is changed should be somewhere, or in something: for since it leaves that from which it is changed, and it is necessary that it should be somewhere, it will be either in this, or in another. If, therefore, that which is changed into B, is in another, as for instance in C, again it will change from C into B; for it did not adhere to B; because the mutation is continued. So that what is changed when it is changed, changes into that into which it is changed. But this is impossible. Hence it is necessary that what is changed, should be in that into which it is changed. It is evident, therefore, that what is made will then be when it is made; and that what is corrupted, will not be when it is corrupted: for this has been universally asserted of every mutation, and is especially evident in the mutation according to contradiction. That what is changed, therefore, is, when it is first changed, in that into which is changed, is evident ⁹.

CHAP.

if these so subsist with reference to each other, as that they are either the same, or that the one is consequent to the other, it is evident that *to have been changed*, and *to have relinquished*, will also thus subsist with respect to each other; so that they will either be the same, or *to have relinquished* will be consequent to *to have been changed*. This being previously assumed, it is evident that since the mutation according to generation and corruption, is a mutation from non-being to being, *to have been generated*, will also be *to have been changed* from non-being. But *to have been changed* is *to have relinquished* non-being. And to have relinquished non-being, is entirely to be in being: for there is nothing between being, non-being, and contradiction; and the mutation to it is into being. But Aristotle having demonstrated the thing proposed in generation, adds, that if this takes place in this mutation, it will likewise be universally true in all mutations, that every thing which is changed, when it is first changed, is in that into which it changes. But this is true from the hypothesis which says, that the assertion is similar in one mutation, of whatever kind it may be, and in others.

⁹ Aristotle having shown that as *that which is changed* subsists in generation, so likewise it subsists in other mutations; for *that which is changed* is in that into which it changes, now endeavours to demonstrate that this is also the case in each mutation. And for this purpose he employs a universal demonstration, which is capable of being adapted to every mutation. At the same time likewise, through this demonstration, he solves an objection which may be urged against the former demonstration: for it may be said, that a thing which is changed, though it should leave that from which it changes, may not be far distant from those things into which it changes, but may be in something between: for in most mutations there is that which is intermediate;

CHAPTER VII.

But that, in which that which is changed, is first changed, is necessarily an indivisible. But I call that first, which is not such from something else belonging to it being first: for let A C be divisible; and let it be divided in B. If, therefore, it is changed in A B, or again in B C, it will not be first changed in A C. But if it is changed in each (for it is necessary either that it should have been changed, or that it should change in each,) it will also be changed in the whole. But it was changed. The same reasoning applies if it changed in the one, but has been changed in the other: for there will be something prior to that which is first. So that the first in which that which is changed is changed, will not be divisible. It is evident, therefore, with respect to that which is corrupted, and that which is generated, that the one is corrupted, and the other generated, in an indivisible¹.

CHAP.

mediate; and it was not necessary from the mutations according to contradiction of things which have not a certain medium, to form a rule for other mutations, in which there is something intermediate. He solves, therefore, this objection through the following argument: If it is necessary that a thing which is changed should be somewhere, i. e. should be either in place, or in magnitude, or in passive quality, or in some other part of contradiction, and if it leaves that from which it changes, it will either be in the thing into which it changes, or if it should be in any thing else prior to that into which it changes, it will even now change or be changing into that into which it was said to have been changed, and will not be changed: for it will not be in that into which it is supposed to change, without a mutation from this in which it has a prior existence: for there will entirely be a certain interval from this to that; since these are not impartibly placed by each other, so as to render it possible to have been transferred from this to that, without mutation.

¹ Aristotle having demonstrated that a thing which is changed, when it is *first changed*, is necessarily in that into which it is changed, now shows that this in which it is *first changed*, is not

CHAPTER VIII.

BUT that in which a thing is first changed, is predicated in a two-fold respect: one, that in which primarily the mutation is perfect; for then it is true to assert, that it has been changed; but the other, that in which it began to change. Hence, that which is said to be first according to the end of the mutation, is inherent, and is; for it is possible that mutation may be perfected, and there is an end of mutation, which has been shown to be indivisible, because it is a boundary. But in short, there is not mutation which is predicated with reference to the beginning; for there is not a beginning of mutation, nor a first

not time, but a certain indivisible boundary of time, which we call *the now*; and which Plato, in the *Parmenides*, denominates *the sudden*. Explaining therefore what the term *first* signifies, he thus proceeds to the demonstration of the thing signified: for universally that which is first, says he, is *this particular thing*, or *to be such*, or *to be so much*, and in a similar manner in every thing which is said to be a thing of this kind, not from something else of a similar nature subsisting prior to it. But to *first* a subsistence *according to another* is opposed, either because some part of a thing possessing a certain quality, the whole is said to possess the same quality; as sight is said to belong to man, not *primarily*, because it *primarily* belongs to the eyes; and a man is said to be in Athens, from the place in which he is, being a part of Athens. Or a subsistence *according to another* is opposed to *first*, because the genus of a thing, and that under which it is arranged, possessing a certain property, the thing itself is also said to possess the same property. Thus an equilateral triangle is said to have three angles equal to two right, not *primarily*, but because every triangle possesses this property. Since, therefore, any thing may be said to have changed in a certain time, because it has changed in something belonging to this time, for it changed in the end of it, on this account Aristotle adds the word *first*. But he demonstrates that to be an indivisible in which that which is changed is *first* changed, through a deduction to an impossibility.

time in which a thing is changed. For let A D be a first time. This, therefore, is not indivisible; for it would happen that *nows* would adhere to each other. Again, if it is at rest in the whole time AC, (for let it be supposed to be at rest) it will also be at rest in A. So that if A D is without parts, it will at the same time be at rest, and have been changed; for it is at rest in A, but is changed in D. Since, however, A D is not without parts, it must necessarily be divisible, and have been changed in every part of it: for A D being divided, if it has been changed in neither part, neither will it have been changed in the whole; but if it changes in both, it will also change in the whole; and if it is changed in one of these, it is not first changed in the whole. So that it is necessary it should have been changed in every part. It is evident, therefore, that there is not a time in which a thing is first changed; because the divisions are infinite*. Hence, neither of that which

* Aristotle having shown that a thing which is changed is, when it is *first* changed, in that into which it is changed, and that this in which it is first changed is an indivisible, for it is not in time, but in *the now*, consequently to this adds, that the *first* in which any thing is changed, is predicated in a twofold respect; in one way, as that into which that is changed which is changed, in which also it ceases to change, and is changed in it; and in another way, as that in which it first commences the mutation, and begins to change: for this also is said to be that in which it is first changed, because in this it has made a transition from *not to change*. That in which a thing is *first* changed, therefore, being predicated in a twofold respect, Aristotle says, that the *first* which pertains to the end of mutation is *properly the first*: for the mutation is then complete; and the end of mutation is not mutation. But the *first* which pertains to the beginning of mutation, and which is itself also a certain beginning of mutation, being said to be the *first* of the time in which the beginning of the mutation exists, this, he says, is not in short in *byposstasis* or *subsistence*, but is predicated and understood in a common way. Hence, it is not possible to assume a first time, in which that which changes commenced its mutation; for it is not possible to assume a beginning either of the mutation or the time in which any thing first changes, because the beginning of mutation is also itself mutation.

Here, however, Simplicius adds, a doubt arises how there is said to be an end of motion and time according to which that which is changed is said to have been changed, but not a beginning: for Theophrastus also, in the first of his books Concerning Motion, says, "that the particulars pertaining to the nature of motion appear to be admirable, such for instance as, that there is not a beginning, but an end of it." But how do we assume that the end of it is indivisible,

which is changed, is there any first part which is changed: for let D F be that which is first changed of D E; since it has been shown that whatever is changed is divisible. But let the time in which D F is changed be H I. If therefore D F is changed in the whole time,

sible, and yet the beginning of it is divisible to infinity? For it is possible, by using the same arguments, to assume that the end of that which is continued is divisible to infinity, and that the beginning is indivisible. It appears, therefore, that *end* is twofold, and also that the *beginning* of motion, time, and every thing continued, is twofold, one subsisting as the first or last part of that which is continued, but the other as the beginning and end, which are no longer parts, nor similar to the whole: for in things of this kind, the beginning and that of which it is the beginning, are not the same, nor the end, and that of which it is the end. Thus, a point is the beginning and end of a line, not being itself the line. In a similar manner also, *the now* of time, and the *kinema* of motion, subsist; for the end of motion is called *kinema*. And Aristotle first said, that *to have been changed* is in an end of this kind, because it is after the whole mutation; but now he assumes the beginning of time and motion, as a part. This is evident, from his saying that this is the beginning, in which it first began to change, that is, to be moved. But every thing which is moved is moved in time, and not in the end of time. And, a beginning of this kind being a part of that which is continued, and being itself continued, is divisible into perpetually divisible parts. But a thing of this kind has not a beginning; because, whatever part of it you assume, is also itself divisible: since the indivisible *beginning* which is opposed to *end*, in which a thing is said to have been changed, is of such a kind, that it is not possible for any thing to change in it, and therefore neither can any thing change in the *end* which is opposed to it. But this beginning subsists prior to mutation, and has not another beginning prior to it. Aristotle, however, assuming the beginning of motion, and the first motion according to *changing*, which exists as a part of motion, and in time, and also assuming the end, in which that which is changed is first changed, says that *this* subsists and can be assumed, because it is possible for the mutation to be finished; but that the other, *i. e.* the beginning does not exist, and cannot be assumed, because of every beginning in it there is another beginning; just as of the *end*, which exists as the end of every part, another end may be assumed. And it is evident that when the whole of a finite quantity is assumed as continued, it is possible to assume as last, both the impartible boundaries of it, and things which exist as parts; but that when it is assumed as divisible to infinity, it is neither possible to assign impartible nor partible boundaries: for prior to every partible quantity that is assumed, there is another partible quantity; and also after every assumed partible quantity, there is another. And though any first or last part of it should be assumed, yet, since this is divisible, it is necessary that in any part of it whatever a thing should have been changed, so that again there will be something prior to it; and that which is assumed being always divisible, that alone will be first, which is a beginning or end, as an atom, or indivisible.

S B 2

that

that which is changed in half the time will be less, and prior to D F. And again, there will be another part prior to this, and another prior to that, and thus perpetually. So that there will be nothing first changed, of that which changes. That there is not, therefore, any thing first, neither of that which changes, nor of the time in which it is changed, is evident from what has been said³. But that which changes, or that according to which it changes, will no longer subsist in a similar manner: for there are three things which are considered in mutation; that which changes, that in which, and that according to which it changes; as, for instance, man, and the time, and that which is white. Man, therefore, and the time, are divisible. But concerning that which is white there is another reason; except that all divisible things are according to accident: for that to which quality or whiteness happens, is divisible: for with respect to such things as are said to be divisible essentially, and not according to accident, neither in these will there be that which is first; as, for instance, in magnitudes: for let there be a magnitude A B, and let it be first moved from B to C. If, therefore, B C is indivisible, that which is without parts will adhere to that which is without parts. But if it is divisible, there will be something prior to C, into which it will have been changed, and again something prior to that, and thus perpetually, because division never fails. So that there will not be a first into which it will be changed. The like also will take place in the mutation of quantity; for this too is in continuity. It is evident, therefore, that in that motion alone which is according to quality it is possible for the essentially indivisible to subsist.

³ Aristotle having shown that it is not possible to assume any part of time in which that which is changed *first* began its mutation, now demonstrates that neither can any *first* be assumed as a part of that which is changed: for he now assumes a first of this kind, and not the impartible as opposed to an impartible boundary or end, which in time he asserted to be that in which a thing is changed. But he demonstrates this by a deduction leading to an impossibility.

CHAPTER IX.

SINCE, however, every thing which changes, changes in time, and a thing is said to change in time, both as in that which is first, and as with reference to something else ; as for instance, in a year because it changes in a day ;—this being the case, it is necessary that a thing should change in every part of that time in which that which first changes, changes. But this is manifest from definition : for we thus denominate what is first⁴. It is also evident, from the following considerations : for let that in which a thing that is first moved, is moved, be

⁴ Aristotle having demonstrated that there is neither any first of time, in which a thing that is changed began its mutation, nor any thing which is *first* changed of that which is changed, since all mutation is of something which changes, and is *in something*, for it is in time, and *according to something*, for it is either according to place, or according to quantity, or according to quality, or according to contradiction,—now proceeds to this third particular, *that according to which mutation is produced*, investigating also in this, whether there is any thing *first* of that according to which the mutation subsists. But having in the beginning denominated this *the thing itself which changes*, he now more clearly denominates it *that according to which it changes* ; adding the latter, as explanatory of the former. He also says, that the thing investigated, no longer subsists in every thing according to which mutation is produced, similarly to its subsistence in that which is changed, and in time : for these are by their very nature indivisible, and on this account no *first* of them can be assumed, in which there is a beginning of mutation. Every thing, however, according to which mutation is produced, is no longer divisible by itself : for quality according to which the mutation according to alliation is produced, is not in its own nature divisible, because it is not quantity. It is, however, divisible accidentally, because the subject of it, and which is changed in quality, is divisible : for together with this the quality also is divided, and possesses quantity according to accident, since it pertains to quantity to be divided. But Aristotle says, that all these are divisible accidentally, not as if place and magnitude were divisible according to accident ; for these are essentially divisible : but either he calls all things endued with quality according to which alliation subsists, accidentally divisible, or he thus

be X R ; and let it be divided in K ; for all time is divisible ; in the time X K, therefore, it will either be moved, or not be moved. And again, in a similar manner in the time K R. If, therefore, it is moved in neither, it will be at rest in the whole time ; since it is impossible for that to be moved, which is moved in no part of this. But if it is alone moved in the other, it will not have been first moved in X R ; for motion subsists with reference to another. It is necessary, therefore, that it should be moved in every part of X R ⁵.

this speaks, because that which is accidentally divisible being con-numerated with divisible things, all things according to which mutation is produced will be divisible ; and that in all these it is true that a *first* cannot be assumed, in consequence of the division to infinity. In the next place of things according to which mutation is produced, assuming such as are essentially divisible, he first shows that a *first* cannot be assumed of place.

But Aristotle having demonstrated that a first cannot be assumed either of place or magnitude, adds, that of things according to which motion is produced, quality alone is essentially indivisible. It is evident, however, that this also is divisible according to accident.

⁵ Aristotle having demonstrated that it is not possible in time to assume a *first*, in which a thing changes, since a thing is said to change in a *first time*, when it is not in a certain part of what is called time, but in the proximate time itself, he now proposes to show, that this *first* being divisible, does not permit us to assume it as properly first : for since a thing is said to change in time in a twofold respect, either as that in which it first changes, or as *according to another* ; that which is changed in some one of the parts of this, is *according to another* : for a race is in this year, because it is in this day of the year ; but it is *first* in this day, or this hour. This time, therefore, is in a *certain respect* said to be first, since a *first time* cannot be assumed. And he shows that neither is this time properly first, since, being time, it also is divisible, and it is necessary that the thing which is changed should change in any part of it whatever ; so as that it cannot be said in what the thing moved *first* began its motion : for of the time which is *first* assumed, *some other first* may be assumed, and of that again another, and so on *ad infinitum*. But he demonstrates from the definition of a *first of this kind*, that being a certain part of the whole, it is also itself divisible : for a thing is said to *be*, or to *have been moved* in a first time, which *is not*, or *is not moved* in any part of the above-mentioned time ; for that which is *first* is opposed to that which is *according to a certain part*, and to that which is *according to another*. This time, therefore, is also assumed as divisible, since it is on this account *first*, because it is not in some one of its parts. But he again frames a third demonstration through a deduction to an impossibility, because neither in this is it true, that there is *properly a first time* in which any thing is moved.

CHAP.

CHAPTER X.

THIS being shown, it is evident that every thing which is moved must have been previously moved: for if in the time $X R$ it is first moved through the magnitude $K L$, that which is moved with equal celerity, and begins to be moved at the same time, will be moved through half that magnitude in half the time. But if that which has equal celerity is moved through a certain part in this time, it is necessary that the other also should have been moved through the same magnitude. So that what is moved will have moved⁶. Farther still, if we say that it has been moved in the whole time $X R$, or, in short, in any time whatever, in consequence of receiving the ultimate now of that time (for this it is which terminates); and that which subsists between the nows is time;—if this be the case, in other times also it may be similarly said to have been moved. But the division is the extremity of the half; so that it will have been moved in the half, and, in short, in every part: for always, together with section, time is bounded by nows. If, therefore, all time is divisible, and that which subsists between nows is time;—hence, whatever changes will have been

⁶ It having been shown that all time, every magnitude, and that which is said to be first, are divisible to infinity, Aristotle says, it follows from this, that every thing which is moved must necessarily have been previously moved; not that a thing which is moved, is said to have been moved as having ceased its motion, but as any thing which is passing through is now said to have passed through: for as that which is moved, when it is in motion, passes from something to something (for if it were in the same it would not be moved) and that which is transferred from one thing to another has been moved, it is evident that a thing which is moved must necessarily have been moved.

changed

changed infinitely⁷. Again, if it is necessary that what continually changes, and is neither corrupted, nor ceases from mutation, should either change or have been changed in any time whatever (but a thing cannot change in the now), it is also necessary that it should have been changed in every now. So that, if the nows are infinite, every thing which changes will have been infinitely changed⁸. But it is not only necessary

⁷ This is a second argument demonstrating that every thing which is moved, must necessarily have been previously moved: for if we say that every thing which was moved, has been moved in a certain time, because we can assume the last now, which bounds the past time in which it was moved; since prior to every now there is time, because nows do not adhere to each other, and all time, and even the least is divided by *the now*, it is evident that in that now which divides the past time into half, it will have been moved. Hence, that which is moved to the last now of time was moved prior to its arrival at this last now, when it passed through the half: for of the half also there was a certain last now; and not only of the half, but also of any part whatever, both of the greater and the lesser; because all time, and even the least, is divisible, and is divided according to *the now*. According to each now likewise it has been moved, just as according to each time it is moved. But if this be the case, and all time is divided to infinity by nows, and there is time between all nows, lest nows should adhere to each other, that which is moved will not only have been moved prior to being moved, but it will also have been moved an infinite number of times: for as often as it is possible to assume *the now* in the time in which the thing moved is moved, so often *to have been moved* may be predicated of that thing. But *the now* may be assumed as often as the time may be divided; and time is divisible to infinity. That which is moved, therefore, will have been moved an infinite number of times: for, if all time is divisible, and time is between the divisions, because nows do not adhere to each other, this time also will be divisible. So that if all time is divisible, and after every assumed division time remains, the division will never fail, because that which is capable of being divided will never fail in the sections. But this was time; the division, therefore, is to infinity. But as numerous as is the division, so numerous likewise are *the nows*; for the division is according to these; and as numerous as are *the nows*, so often is *to have been moved* predicated of that which is moved. That which is moved, therefore, will have been moved an infinite number of times. It is evident, however, that the infinites are in capacity, and not in energy; just as the division possesses the infinite in capacity, because that which is divided may be divided to infinity, but not because it may some time or other be divided into infinites in energy.

⁸ This is the third argument demonstrating that every thing which is changed, must have been previously changed to infinity: for that which is continually moved, and is neither corrupted nor ceases its motion during the whole of a certain time, must necessarily, in the time in which it is said to be moved, either change or have been changed. But it has been shown that it

necessary that what changes should have been changed ; but it is likewise necessary that what is changed, should previously change : for every thing which is changed from something into something, has been changed in time : for let a thing have been changed in the now from A to B. Hence, in the very now in which it is in A, it has not been changed ; for, if it had, it would be at the same time in A and B : for that a thing which is changed, when it is changed, is not in this boundary A, has been shown before. But if it is in another boundary, there is time between ; for nows do not adhere to each other. Since, therefore, it is changed in time, and all time is divisible ; it will be changed in half the time, and again in the half of that half ; and thus perpetually. So that it will previously change⁹. Farther still, what has been said will be more evident in magnitude, because magnitude is continued, in which that which changes, is changed : for let any thing be changed from C to D. Hence, if C D is indivisible, the impartible will adhere to the impartible. But since this is impossible, it is necessary that what is between should be magnitude, and should be divisible into infinite parts ; so that it will previously change into these. It is necessary, therefore, that every thing which is changed, should previously change : for there is the same demonstration in things which are not continued ; as, for instance, in contraries, and contradiction : for let us assume a time in which it is changed, and again we shall say the same things. So that it is necessary that what is changed, should change, and that what changes should have been changed. Likewise the being changed is prior to changing, and changing to the being changed ; and a first can never be assumed. But the non-adherence

it is not possible to change in *the now*. It must, therefore, *have been changed*. So that, according to each of the *nows* which are assumed in the time in which the thing moved is continually moved, it will have been moved and changed. But *the nows* are infinite. Hence, that which is changed, will have been changed an infinite number of times.

⁹ Aristotle having demonstrated that every thing which is changed, must necessarily have been previously changed, shows that the converse also is true, that every thing which has been changed from something to something, must have been changed in time. But he demonstrates this by a deduction to an impossibility.

of the impartible to the impartible is the cause of this: for the division is to infinity in the same manner as in lines which are increased and diminished¹. It is evident, therefore, that what was generated, was necessarily generated before, and that what is generated, was generated; viz. this is true of such things as are divisible and continued; yet not always that which is generated, but sometimes something else, as, for instance, something belonging to it, as the foundation of a house. The like also takes place in that which is corrupted, and in that which has been corrupted: for since that which is generated, and that which is corrupted, are continuous, a certain infinity is immediately present with these; and it is not possible that any thing can be generated which has not been generated, nor have been generated, which was not generated. The like also takes place in the being corrupted, and in the having been corrupted: for the having been corrupted will always be prior to the being corrupted, and the being corrupted to the having been corrupted. It is evident, therefore, that it is necessary that what was generated should have been generated before, and that what is generated was generated: for all magnitude, and all time, are always divisible; so that they cannot be primarily in that in which they are².

¹ Aristotle having shown from the time in which mutation is effected, that to change is prior to the having been changed, says, that the same thing is more manifest from the magnitude according to which the mutation is produced, viz. in those things which are changed according to magnitude. But these are the things which are changed according to place, and according to increase and diminution: for things which are changed according to quality, do not fall under this demonstration from magnitude; as neither do things generable and corruptible: for neither is the mutation of these according to quantity; and hence they do not subsist according to the continued, and things perpetually divisible, from which the demonstration is framed. But that the thing proposed is more evident in magnitude than in time, is evident; since, in the demonstration from time, magnitude also was employed. Aristotle, therefore, demonstrates this, assuming two magnitudes; either the magnitude of place, as in the mutation according to place, or the magnitude according to which increase and diminution are produced: and one thing that from which the thing changes, but another that into which it first changes. Afterwards also he adds a common conclusion, that a thing which has changed must necessarily have previously changed.

CHAPTER XI.

BUT since every thing which is moved, is moved in time, and passes through a greater magnitude in a greater time ; it is impossible that a

^a Aristotle having before said that the demonstration which evinces that to change is prior to the having been changed, pertains also to contraries which are not continuous, and to those which are according to contradiction, when the demonstration is assumed from time, now shows that in things also which are changed according to contradiction, viz. which are changed from non-being to being, or from being to non-being, or in other words, such things generated and corrupted, as are divisible and continued, not only the demonstration from time is adapted to these, but also the demonstration from magnitude. Hence, the magnitude which was generated, must necessarily have been previously generated, and that which is generated was generated. And not only is the assertion true in things generated, but also in every thing which is in any way whatever changed. It does not, however, always follow that a thing which is generated was previously generated, but some one of its parts : for while a house is yet making, something of it is now made or generated, viz. the foundation. And of the foundation itself, it is perhaps true to say, that always something was generated prior to that which is generated, on account of the division to infinity. But why does Aristotle add, “ sometimes ? ” for always in that which is in generation or becoming to be, some part of it was previously generated. May we not say that the word *sometimes* is added, not as applicable to things in which *to have been generated* precedes the being generated, but as pertaining to things in which the *becoming to be*, or a subsistence in generation, precedes the *having been generated* ? For sometimes this very thing was said to be making or becoming to be, which now is said to have been made ; as a house, or a foundation : and sometimes that which formerly was made is not this which is now making, but something else, and a part of it. Thus the foundation, which was first made, is not the house which is now making, but a part of it. Aristotle adds, that the like also takes place in that which is corrupted, as in that which is generated.

Simplicius adds, that Theophrastus appears to doubt whether all mutation is in time, looking, perhaps, says he, to the mutations from darkness to light, when a lamp being introduced into a room the whole room is at once filled with light without time. *Touching* also, unless it has its being through generation, cannot be said to have been generated, but to be without generation. Hence Aristotle, in the first of his books on the Heaven says, that one of the significations of the ungenerated is that which is according to *touching*.

finite space can be moved through in an infinite time, when that which is moved is neither always moved through the same, nor through some part of it, but is moved in the whole time through the whole. If, therefore, any thing is moved with an equal celerity, it is manifestly necessary that it should be moved through a finite magnitude in a finite time: for a part being assumed which will measure the whole space, in as many equal times as there are parts, it is moved through the whole space. Hence, since these are finite, and each is a quantity, and all are assumed a certain number of times, the time also will be finite; for it will be so many times so much as the time of a part multiplied by the number of the parts. But if it should not be moved with an equal celerity, it is of no consequence: for let A and B be a finite interval, through which something is moved in an infinite time; and let the infinite time be $C D$. If, therefore, it is necessary that it should be moved through one part prior to being moved through another; this also is evident, that in the prior and posterior part of the time it will be moved through different parts of the interval; for in a further time it will always be moved through another part, whether it be changed with an equal or with an unequal celerity; and no less so, whether the motion suffers intension or remission, or whether it remains the same. Let, therefore, any part of the interval $A B$ be assumed, viz. $A E$, which will measure the interval $A B$. This part, therefore, will be passed through in some portion of the infinite time; for it cannot be passed through in an infinite time, because the whole interval is passed through in an infinite time. Again, therefore, another part will necessarily be passed through in a finite time, if I assume a part as great as $A E$; since the whole is passed through in an infinite time. And thus by assuming one part after another, since there is no part of the infinite which measures it, (for it is impossible that the infinite should be composed from finites, whether they be equal or unequal; because things which are finite in number and magnitude are measured by a certain one; and that not the less whether they be equal or unequal, if they are of a definite magnitude,) and since the finite interval is

is measured by the quantity A E,—hence, that which is moved will be moved in a finite time through the space A B³. The like also will take place in a progression to rest. So that neither is it possible for any thing to be generated or corrupted, which is always one and the same. The same reasoning also will prove that neither can any thing be moved through the infinite in a finite time, nor proceed to rest, whether it be equably or unequably moved: for any part being assumed which measures the whole time, in this part it will pass through a certain quantity, and not the whole of the magnitude; since it passes through the whole in the whole time. And again, in an equal part of the time it will pass through another quantity of the magnitude, and in a similar manner in each part of the time it will pass through some quantity of the magnitude, whether it be equal or unequal to the quantity which it passed through from the beginning; for it is of no consequence, if only each part be finite: for it is evident that the time being consumed, the infinite space will not be consumed, an ablation taking place which is finite, both with respect to quantity and number. So that it will not pass through an infinite magnitude in a finite time. Nor is it of any consequence, whether the magnitude is infinite on one side, or on both sides: for there will be the same reasoning⁴. But these things having
been

³ Aristotle now proposes to demonstrate that it is neither possible for a finite line or motion to be moved in an infinite time, nor an infinite line or motion in a finite time. And it has been indeed already demonstrated, that it is not possible for things finite in multitude to be passed through in an infinite time, nor infinite things in a finite time, when the argument of Zeno was opposed. But Aristotle now demonstrates this very thing, in the first place, in magnitude, and in the next place in motion itself, employing a more universal demonstration. But, for this purpose, he previously assumes certain things already acknowledged; as, that every thing which is moved, is moved in time; and that the same thing in a greater time passes through a greater magnitude, and evidently with more motion.

⁴ Aristotle having shown that it is not possible for any finite magnitude to be passed through, or a finite motion to be absolved in an infinite time, now demonstrates the converse of this, that neither is it possible for an infinite magnitude to be passed through, nor for an infinite motion to exist in a finite time; and likewise that it is not possible to be at rest with an infinite rest in a finite time. He also now uses the same demonstration, here likewise dividing the finite, and co-dividing

been demonstrated, it is evident that neither can a finite magnitude pass through an infinite space in a finite time, on account of the same cause: for in a part of the time it will pass through a finite space, and in a similar manner in the several parts: so that in the whole time it will pass through a finite space. But since a finite moveable does not pass through an infinite space in a finite time, it is evident that neither can an infinite moveable pass through a finite space; for if the infinite could pass through the finite, it is necessary that the finite also may pass through the infinite: for it is of no consequence which it is that is moved, since in both ways the finite will pass through the infinite: for when an infinite magnitude, as A, is moved, there will be some part of it in B finite, as, for instance, the part C D; and again, another and another part; and thus it will be perpetually. So that it will at the same time happen that the infinite will be moved through the finite, and the finite through the infinite: for it is not, perhaps, possible for the infinite to be moved through the finite in any other way than because

co-dividing the infinite with it; except that before indeed dividing magnitude, for that was the supposed finite, he co-divided with it infinite time, which was the subject of hypothesis. But now he supposes a finite time, and takes from it a certain part which measures the whole: for in each of these times something finite is moved, and passes through equal things indeed, when it is equally moved, but unequal when it is unequally moved; but it always passes through such as are finite: for it will not have moved with an infinite motion, in a part of the whole time; because it was supposed to have moved with an infinite motion in the whole time. The supposed infinite magnitude, therefore, will be consumed in a finite time, whether the sections were equal or unequal. But the division being finite, both the division in magnitude and quantity will be similarly co-terminated in the time which is finite, and also in magnitude and number. But that which consists from things finite in magnitude and in number, is not infinite. Hence, the infinite will not be passed through in a finite time. Aristotle adds, that it makes no difference as to the demonstration, whether the assumed magnitude is infinite in one extreme, or in both extremes: for though it should be assumed infinite in both extremes, there will be the same demonstration; since in a finite part of a finite time it is necessary that a certain finite part of the magnitude which is supposed to be infinite both ways, should be assumed. And the finite part must be assumed as often as the parts of the time which is finite, whether the parts are equal or unequal. Previously assuming also the time finite one way, he demonstrates that the thing moved will pass through a part of the infinite magnitude in a finite time, though the whole should be moved through in an infinite time.

the

the finite passes through the infinite, either by lation, or measuring it. So that, since this is impossible, the infinite cannot pass through the finite. But neither can an infinite magnitude pass through an infinite magnitude in a finite time: for if it can pass through the infinite, it can also pass through the finite, since the finite is inherent in the infinite. Farther still, time also being assumed, there will be the same demonstration⁴. But since neither a finite can pass through an infinite magnitude, nor an infinite a finite, nor through an infinite magnitude, in a finite time; it is evident that neither will there be an infinite motion in finite time: for what difference does it make, whether the motion or the magnitude is supposed to be infinite? For it is necessary, if either of these is infinite, that the other should be infinite also; because all lation is in place⁵.

⁴ Aristotle adds what follows, arising from that which is moved, as a corollary to what he has just demonstrated; no longer indefinitely assuming that which is moved as before, but definitely at one time supposing it infinite, and at another finite. And that any thing indeed which is finite will not pass through an infinite magnitude in a finite time, he demonstrates in the same manner as before: for the finite time being divided into finite parts, that which is moved passing through in each a certain finite part of the magnitude, will completely pass through the whole; so that it will pass through something finite, and not the infinite, in a finite time. But if the thing moved is supposed to be infinite, and the interval through which it is moved finite, the infinite will not be moved in a finite time through the finite: for it is of no consequence, says he, whether the thing moved is supposed to be infinite, but the interval finite, or the contrary.

⁵ From the demonstrations about magnitude through which motion is effected, Aristotle now infers, that neither can there be an infinite motion in a finite time: for since, says he, neither an infinite nor a finite magnitude, when locally moved, will pass through an infinite interval in a finite time, it is evident that neither will there be an infinite motion in a finite time, unless it is produced again and again in the same thing: for every infinite motion, according to lation, is produced in an infinite local interval; since all lation is local motion, and there is one infinite motion in an infinite place, unless the same motion is produced again and again. If, therefore, it is demonstrated, that it is not possible for a thing to be moved through an infinite interval in a finite time, it is evident that neither can there be an infinite motion in a finite time; for the interval through which the motion is effected would also be infinite. Hence Aristotle, very properly, not only together with the infinity of interval takes away the infinity of motion in a finite time, but also together with the infinity of the moveable magnitude: for if motion is co-extended with both these, and neither infinite of these is inherent in that which is moved in a finite time, neither will infinite motion belong to it.

CHAP.

CHAPTER XII.

BUT since every thing is either moved, or is it at rest, which is naturally adapted to be so, and where, and as it is adapted ; it is necessary that whatever tends to rest, when it tends to rest, should be moved: for unless it were moved, it would be at rest. But it is not possible for that to tend to rest which is at rest. This then being demonstrated, it is evident that it must necessarily tend to rest in time: for that which is moved, is moved in time; and it has been shown that what tends to rest, is moved. So that it is necessary that it should tend to rest in time. Again, if we say that the swifter and the slower are in time, and it is possible to tend to rest swifter and slower; therefore, a thing tends to rest in time. But in any part of the time in which that first tends to rest which so tends, it is necessary it should tend to rest: for the time being divided, if it tends to rest in neither of the parts, neither will it tend to rest in the whole. So that that will not tend to rest which does tend to rest. But if it tends to rest in one of the parts, it will not first tend to rest in the whole: for, according to one part, it will tend to rest in this, as was before observed of that which is moved. But as that which is moved, is not in that in which it is first moved; so likewise that which tends to rest, is not in that in which it first tends to rest: for neither of the being moved, nor of the tending to rest, is there a certain first: for let A B be that in which a thing first tends to rest. This, therefore, cannot be without parts; for motion is not in that which is without parts, because something of it is moved through. But it has been shown that what tends to rest is moved. And if A B is divisible, the thing will tend to rest in any one of its parts whatever: for this was shown

shown before, that it tends to rest in any part whatever of that in which it first tends to rest. Since, therefore, it is time in which it first tends to rest, and not an indivisible (but all time is divisible to infinity,) there is not that in which it first tends to rest⁶. Neither, therefore, is there a first.

⁶ The thing now proposed by Aristotle, though apparently very paradoxical, is to show that that which *is about to stand still** is the same with that which is moved; and that such things as pertain to that which is moved, pertain also to that which stands still. But assuming that which is at rest, and which abides in the same, being opposed to that which is moved, as one thing; and that which is about to be at rest, and that which tends to rest, in the same manner as that which is about to be white tends to white, as another—he says, that which *stands still* is the same as that which is at rest; but that which *is about to stand still* is the same as that which is about to be at rest, i. e. which proceeds to permanency. And in the first place he shows, that a thing which *is about to stand still* is moved, previously assuming a necessary division, that every thing is either moved, or at rest, viz. which is naturally adapted to be so: for that which is naturally immoveable, is neither moved nor at rest; but that which is naturally adapted to be moved, is also naturally adapted to be at rest; since to be at rest is the privation of to be moved. But that which is naturally adapted suffers privation, when, being naturally adapted to possess, it does not possess: for a whelp just born cannot be said to be at rest according to not seeing, because at that time neither is it naturally adapted to see. Neither can a man who has not eyes in his breast be said to be deprived of sight in his breast; for where being naturally adapted to possess, he does not possess, there he is said to suffer a privation. Nor can fishes be said to suffer a privation of motion in the air, because neither are they naturally adapted to be there moved; nor do they suffer a privation of the motion of walking; for they are naturally adapted to swim, and not to walk. It is necessary, therefore, that every thing which is naturally adapted to be moved, if it is not moved when, and where, and as it is naturally adapted, suffering a privation of being moved, must be at rest. That which *is about to stand still*, therefore, i. e. which is proceeding to permanency, since it is naturally adapted to be moved, must necessarily either be moved, or be at rest. But it is not at rest: for that which is at rest is no longer about to be at rest; since as to be about to be at rest, so to be about to stand still, is the way to rest, for both are the same. Hence, Aristotle transfers *to be about to be at rest*, to *to be about to stand still*. If, therefore, *to be about to stand still* is moved, but that which is moved is moved in time, it is evident from what has been shown, that a thing which is about to stand still, is about to stand still in time; since that which is about to stand still, being naturally adapted to be moved and to be at rest, is not at rest, but is moved, and that which is moved is moved in time. But he also demonstrates this in another way: for if it is possible to be about to stand still swifter and slower,

* The word in the original is *τεταμνω*, which is literally *that which is standing still*, and is equivalent to *to be about to stand still*, or to a *tendency to rest*.

a first in which a thing rests that is at rest: for it will not rest in that which is without parts, because there is not motion in an indivisible. But in that in which a thing may be at rest, in that also it may be moved: for we then say a thing is at rest, when that which is naturally adapted to be moved, is not moved in that in which it possesses a natural aptitude to be moved. Again, we then also say a thing is at rest when it subsists similarly now and formerly, as not judging from one certain thing, but from two at the least. Hence, that in which it rests will not be without parts. But if it is divisible, the time also will be divisible, and it will be at rest in any one of its parts whatever: for this may be demonstrated after the same manner as before; so that nothing will be first. But the cause of this is, that every thing is at rest, and is moved in time; and there is not a first time, nor a first magnitude, nor, in short, any first continued quantity: for every thing continued is divisible to infinity 7.

since every thing which proceeds to permanency departs more swift or more slow, and every thing which is more swift and more slow is in time, hence to be about to stand still is in time. Having, therefore, demonstrated that a thing which is about to stand still is in motion, and is about to stand still in time, he shows in the next place that to that which is about to stand still, as well as to that which is moved, this also pertains, that a first cannot be assumed in which a thing about to stand still is about to stand still; because, prior to every first which is assumed, there is something else prior, as was demonstrated in motion, through the infinite section of time, and the interval which is moved through, and also of the motion itself, and that according to which the thing in motion is moved, when it is moved according to quantity. But that a first cannot be assumed in which that which is about to stand still, is about to stand still, but that prior to every time which is assumed as first, another will be found; he demonstrates, first showing that, in the time in which it is first about to stand still, it must necessarily be about to stand still in any part of this time: for the time being divided in which it is said *first* to be about to stand still, if you should say it is about to stand still in neither of the parts, it will not be about to stand still in the whole time. So that a thing which is about to stand still will not be about to stand still. But if it should be about to stand still in either of the parts, and evidently first in the first part, it will not *first* be about to stand still in the whole. Having, therefore, previously demonstrated this, he shows, in the next place, from this, that as of a thing moved a first cannot be assumed, in which any thing is moved, so neither can this be assumed of that which stands still; but he demonstrates this by a deduction to an impossibility.

CHAP.

CHAPTER XIII.

BUT since every thing which is moved, is moved in time, and changes from something into something, it is impossible that what is moved, in the time in which it is moved essentially, and not because it is moved in a certain part of that time, should be in a certain first: for this is to be at rest, i. e. for both a thing itself, and each of its parts, to be in the same, for a certain time: for thus we say a thing is at rest, when, in another and another now, it is true to say, that both itself and its parts are in the same. But if this is to be at rest, that which changes cannot wholly be in any thing, according to a first time; for all time is divisible. So that, in another and another part of it, it will be true to say, that both itself and its parts are in the same: for if it were not so, but in one *now* only, it will not be in any time in a certain thing, but in the boundary of time. But a thing may always abide in something in the now, and yet not be at rest in it; for it is not possible either to be

⁷ After having shown that in all motion, as well the simple as that which is denominated according to standing still, a first of it cannot be assumed, Aristotle demonstrates the same thing concerning the rest which is opposed to all motion. But there is the same cause of this in rest, that there is also in motion; and, on this account, he uses the same demonstration: for if rest is the privation of motion, and that suffers this privation, which being naturally adapted to be moved, is not moved in that in which it is naturally adapted to be moved, it is also necessary that it should be at rest in time, and not in an indivisible. He also, in another way, demonstrates, that to be at rest is in time, and not in an indivisible, reminding us of what was before said concerning rest; viz. that a thing is said to be at rest which both as to itself and its parts subsists similarly now and formerly; so that rest is bounded by two *nows*, the present *now* and the former. But time is between every two *nows*; and hence all rest is in time. It is not, however, possible to assume a first of time, in which a thing at rest began its rest; for time is continued, and is divisible to infinity. But in that which is continued, nothing is first.

3 D 2

moved,

moved, or to be at rest in the now. But it is true, that a thing is not moved in the now, and is in something; and it is not possible that it can be in time according to the quiescent: for it would happen that what is borne along would be at rest⁸.

CHAPTER XIV.

ZENO, however, paralogizes: for he says, if always every thing is either at rest or moved, when it is in a place equal to itself, (but that
which

⁸ Aristotle here delivers, accompanied with demonstration, those paradoxical theorems concerning motion, which are neither easily understood, nor readily assented to. Those theorems also are admirable which have just been demonstrated, that it is not possible to assume a beginning either of motion or rest; and it is evident that neither is it possible to assume an end of these, for the same reason. But in a still greater degree he unfolds what is now demonstrated; which he appears to have delivered in this place for the purpose of solving the argument of Zeno concerning motion: for since, says he, that which is moved, is moved in time, it is impossible, in the time in which it is moved *essentially*, it should *first* be in any part of the interval in which it is moved. But by *the time in which it is moved essentially*, he means the *whole time*, and not any *part* of it: and this is what he before called the *first time*; for, with Aristotle, the terms *in the first, essentially, and not in any part*, signify, when applied to time, the same thing. But he demonstrates this as follows: If that which is moved in any first time, is both itself and its parts in something which is the same, since all time is divided into prior and posterior time, both that which is moved and its parts will be now and formerly in something which is the same. But, when both a thing itself and its parts are in the same thing for a certain time, that thing is at rest. That which is moved, therefore, in a certain *first time*, if both itself and its parts are in something the same, will be at rest. It is, however, impossible that a thing should be at rest when it is moved. Hence, that which is moved in a *first time* will not both itself and its parts be in something which is the same.

If, however, that which is moved is in no time according to something of the interval in which it is moved, if it is moved according to place, nor possesses a place equal to itself in time, how does it complete the whole interval in this time, and pass through it? We reply, because
it

which is borne along is always in *the nows* in a place equal to itself,) an arrow which is borne along is immoveable. But this is false: for time is not composed from *nows* which are indivisible, as neither is any other magnitude⁹. There are, however, four arguments of Zeno concerning

it is in the *now* according to something of the interval; but this is the boundary of time. So that if it is said to be in time, yet it is not in a first time, nor that which is essential, but it is in time so far as it is in something belonging to time, which is not a part, but a boundary of time. But it alone possesses a place equal to itself in *the now*, in which place also it can be at rest. It is not, however, then at rest in it: for every thing which is at rest, is at rest in time, and not in *the now*; just as it is also moved in time: for in that which it is moved, in that also it rests. Hence, to assert that something is not moved in *the now* may be true; but it is not possible to be at rest in *the now*. But the words, "it is not possible to be in time according to that which is quiescent," are said of that which is moved; because that which is moved is indeed moved according to the equal to itself, in which also it may be at rest: for it is at rest in that which is equal to itself. That which is moved, however, is not in the equal to itself in time, but in the *now*; for if it were in the equal to itself in time, it would be at rest: for it has been shown that when both a thing and its parts are in a certain time, that thing is at rest.

⁹ The doubts of the divine Eleatic Zeno were the causes of these admirable theorems of Aristotle concerning motion; for he delivered to us what has been already said about motion, as useful to the solution of the arguments of Zeno. But the argument of Zeno, pre-assuming that every thing, when it is in that which is equal to itself, is either moved or at rest, and that nothing is moved in *the now*, and that every thing which is borne along is in the equal to itself according to each *now*, appears to have syllogized as follows: A dart which is thrown is in every instant or *now* in that which is equal to itself. It is, therefore, in the equal to itself in every time. But that which is in *the now* according to the equal to itself, is not moved. It is therefore at rest, since nothing is moved in *the now*; and that which is not moved is at rest, since every thing is either moved or at rest. A dart therefore which is thrown, as long as it is in motion, is at rest according to all the time of its lation; than which what can be more paradoxical? But, Zeno having said that every thing is either at rest, or is moved, when it is in the equal to itself, he adds, "but that which is borne along is always in *the now*."

Aristotle, however, solves the doubts by opposing the assertion that a thing which is borne along is always borne along in the equal to itself: for it does not follow, if *the now* is in every time, and a thing is in *the now* according to the equal to itself, that the thing is therefore in time, and that this is always the case; for *the now* is not a part, but the boundary of time, in which the thing which is moved is shown by the former theorem to be in the equal to itself. If, therefore, time is not composed from indivisible *nows*, the dart which is thrown, is not in time in the equal to itself, viz. in one time considered as present, and which we call *the now*. That also

is .

concerning motion, which afford some difficulty to those that solve them. The first attempts to prove that a thing cannot be moved, because it is necessary that what is borne along should arrive at the half before it arrives at the end; which argument we have already dissolved¹. The second is that which is called Achilles, and is this, that the

s not truly assumed, that every thing is either moved, or at rest; for it has been shown that in *the now* a thing is neither moved, nor at rest. Nor if any thing is not moved, is it necessary that it should be at rest. Hence, from the preceding theorem, he solves the assertion, that a thing which is moved is always in the equal to itself: for this is not always the case, but happens when it is in *the now*, and then it is neither moved, nor at rest. It is necessary, however, to conceive of this *now* in which the thing moved possesses the equal to itself, as existing alone in capacity, in the same manner as a point in a line: for if it could be every where assumed in energy in time, time would be divided into impartibles, and would be composed from them. There would also be infinites in energy. But the argument of Zeno excited the doubt, as if time were composed from *nows*. Hence, if this is not admitted, it is not true that a thing which is moved is always in that which is equal to itself.

¹ Of the four arguments of Zeno evincing that certain impossibilities are consequent to the existence of motion, the first is as follows: If motion is, it is necessary that a thing which is moved should pass through infinites in a finite time. But this is impossible. Motion, therefore, is not. But Zeno shows this, from a thing which is moved being moved through a certain interval; and since every interval is divisible to infinity, it is necessary that the thing moved should first pass through the half of the interval, and then the whole. But, prior to passing through the half of the whole, it must pass through the half of that half, and again the half of this. If, therefore, there are infinite halves, because it is possible to take the half of every assumed half, and it is impossible to pass through infinites in a finite time, which Zeno assumes as evident,—if this be the case, it is impossible for motion to exist. This argument was mentioned by Aristotle before, when he said, it is impossible for infinites to be passed through in a finite time, and for infinites to touch each other. But every magnitude has infinite divisions. It is impossible, therefore, for any magnitude to be passed through in a finite time. Aristotle solves this argument by saying, that infinites are not in energy, but in capacity in a magnitude. It is not possible, therefore, to pass through halves in energy, so far as they are infinite, but nothing hinders them from being passed through in capacity: for neither does that which is moved pass through an interval divided into infinite halves, but it passes through it as one and continued. Hence, nothing hinders things thus infinite from being passed through. He also solves the argument from infinity being similar in time and in an interval; so that the infinite will not be passed through in a finite time, but in a time similarly infinite: for time also is divisible to infinity, but this infinite is in capacity, and not in energy. The infinites in capacity, therefore, of magnitude are passed through in the infinites in capacity of time.

slower,

slower, when it runs from the swifter, will never be overtaken: for, prior to this, it is necessary that the pursuer should arrive thither whence that which fled began to fly; so that it is necessary that the slower should always advance a little farther. But this argument is the same as that which bisects; though it differs in not bisecting the assumed magnitude. It is concluded, therefore, from the argument that the slower is not overtaken, but for the same reason with the bisection: for it happens in both, that the thing in motion does not arrive at the end, the magnitude, in a certain respect, being divided. In this also it is tragically added, that it will not by the most rapid pursuit overtake that which is slower. So that the solution is necessarily the same. To think, however, that the thing which precedes will not be overtaken, is false: for when it precedes, it is not overtaken; but at the same time it will be overtaken, if it is admitted that a finite space is passed through. These, therefore, are two of his arguments². But the third is that
which

² The second argument, arising from the division to infinity, is as follows: If motion is, the slower will never be overtaken by the swiftest. But this is impossible. Motion, therefore, is not. In order to prove this, Zeno takes a tortoise as one instance, which according to the fable is naturally slow in a contest with a horse, and the swift Achilles as another. The argument, therefore, says that it is impossible for Achilles, when pursuing the tortoise, to overtake it: for it is necessary that the pursuer, prior to overtaking, should first arrive at the extremity whence the thing pursued started; but in the time in which the pursuer arrives at this, the thing pursued has proceeded through a certain interval. And again, in the time in which the pursuer passes through that space which the thing pursued passes through, in this time the thing pursued passes through a certain interval, which is by so much less than that which it moved through before, as it is slower than the pursuer. And thus, in every time in which the pursuer passes through a certain interval, and which the thing pursued passed through, being slower in this time, the thing pursued passes through some interval; for though this interval is always less, yet, in short, the thing pursued being moved passes through a certain interval. But, in consequence of one interval less than another being assumed to infinity, through the infinite section of magnitudes, not only Hector will not be overtaken by Achilles, but neither will a tortoise: for let a stadium be supposed to be the subject, and let the tortoise proceed through half the stadium; let Achilles, also, be moved ten times more than the tortoise in the same time. But Achilles beginning to pursue the tortoise from the beginning of the stadium, in the time in which he proceeds through half the stadium, so as to have arrived at the half whence the tortoise started, the tortoise also will

which was just now mentioned, that an arrow, which is borne along, stands still. This, however, is inferred from assuming that time is composed from *nows*; for this not being granted, there will not be a syllogism³. But the fourth argument is concerning equal bulks which are moved in the stadium in a contrary direction, some from the end, and others from the middle of the stadium, with an equal celerity: in which he thinks it will happen that half the time will be equal to the double. The paralogism, however, consists in this, that Zeno thinks it should be granted, that one of these bulks, which passes by that which is in motion, and the other which passes by that which is at rest, are moved with an equal celerity, in an equal time, through an equal magnitude. But this is false. Thus, for instance, let the equal bulks A A A A stand still; but let the bulks B B B B begin to be moved from the middle of them A, since they are equal to these in number and magnitude; and let the bulks C C C C begin to be moved from the last, these also being

will have proceeded through one-tenth of the remaining half stadium. If therefore every tenth of the interval has also itself a tenth, the tortoise will always be before Achilles, and neither of them will pass through the stadium. Such, therefore, is the argument.

But Aristotle says, that this is the same with the preceding; because the credibility of this depends on the division of magnitude to infinity. It appears, however, to differ from the former, because the division is not always according to bisection and into half, but in a certain other ratio, according to which the motion of the swiftest surpasses that of the slowest, whether it be tenfold, or in any other ratio. The solution here, too, is the same as before, from infinites not subsisting in energy in continued quantity, and in the continued motion which is produced in it.

³ Aristotle calls the third argument of Zeno, that which he dissolved a little before; which argument asserted that a dart, when thrown, would in being borne along stand still, since it is necessary that every thing should either be moved, or be at rest, and that which is moved is always in the equal to itself. But that which is always in the equal to itself is not moved, and therefore is at rest. This argument assumes what is false, viz. that a thing which is moved is always in the equal to itself: for it has been shown that it is only in the equal to itself in *the now*. And this, indeed, Zeno admits; but he did not perceive that nothing is either moved or at rest in *the now*. But since *nows* never fail, on this account he conceived that a thing stood still in the time of its lation; syllogistically collecting nothing from this, since *nows* are not continuous with each other, and time is not produced from *nows*.

equal

equal in number and magnitude, and moved with the same celerity as B. It will happen, therefore, that the first B and the first C will be at the same time in the extremity A, since they are moved in a parallel direction. It will also happen that all C will pass through all A; but all B will pass through the half; so that the time also will be half: for each is equal parallel to each. At the same time too, it happens that all B will pass by all C (for at the same time the first C and the first B are in contrary extremes), since the same time is consumed in passing by each B, that is consumed in passing by each A, as Zeno says, because both are moved in an equal time parallel to all A. This, therefore, is his reasoning; which happens through the above-mentioned falsity⁴. Neither, therefore, will there be any thing impossible in what we have asserted, from the mutation which is in contradiction; as if a thing should change from non-white into white, and into neither, that it will, therefore, neither be white, nor non-white: for it does not follow, that if the whole is not in either, that it will not be called white, or not white: for we call a thing white, or not white, not because the whole is such, but because most, or the principal of its parts, are white. And it is not the same thing, not to be in this, and for the whole not to be in this. The like also takes place in being and non-being, and in other things which subsist according to contradiction: for the whole will not necessarily be in either of the opposites, but always in neither⁵. Again, in a circle, and a sphere, and, in short,
in

⁴ The fourth argument of Zeno, and which also deduces to an impossibility the existence of motion, is as follows: If motion is, of magnitudes which are equal and equally swift, the one will be moved in the same time with a motion double and not equal to that of the other. And this indeed is also absurd. That also which is consequent to this is absurd, viz. that the same and an equal time should be at the same time double and half. But Zeno attempts to demonstrate this, assuming a thing acknowledged, that things equally swift and equal are moved through an equal interval in an equal time: and besides this, that of things equally swift and equal, one will be moved through the half, and another through the double; in half the time through half the interval, and in double the time through double the interval.

⁵ Aristotle having solved the arguments of Zeno which appear to subvert motion, produces also other arguments sophistically tending to the same thing, in order that he may dissolve the so-

in things which are moved in themselves, it will happen that these will be at rest; for both they and their parts will be in the same place for a certain time; so that they will at the same time be at rest, and be moved. For first, the parts are in no time in the same place; and, secondly, the whole also always changes into another: for it is not the same circumference which is assumed from the point A, from the point B, and from the point C, and from each of the other points, except in the same manner as a musical man, and a man, are the same, because it so happens. So that the one will always change into the other, and will never be at rest. After the same manner the thing takes place in a sphere, and in other things which are moved in themselves ⁶.

phisms they contain. The first of these endeavours to subvert motion from the mutation according to contradiction. This argument Aristotle confutes by asserting, that the whole of that which is changed according to contradiction, is in neither part of the contradiction, but that a part is in each part of it: and this indeed was demonstrated before, when he said, of that which changes, it is necessary that it should partly be in that from which it is changed, and partly in that into which it is changed. But, if this be the case, the whole of that which is changed will neither be in one part of the contradiction, nor will there be any thing between the contradiction in which it will be necessary for the thing changed to be, but it is in both the parts.

⁶ That Aristotle still opposes a certain argument of those who endeavour to subvert motion, is evident from the words preceding these, which as consequent to what had been said against Zeno begun as follows: "Nor yet according to the mutation in contradiction will it be impossible for motion to exist." It is evident, therefore, that now, as speaking about this, he again says, that in a circle and a sphere, and the things moved in them, because it happens that they are at rest as those fancy who reason sophistically, neither does this adduce any thing impossible to the existence of motion. But Aristotle solves this argument by showing, that things thus moved are neither themselves nor their parts in the same place at any time. And first he says, that the parts are not in the same place at any time: for each of the parts at a different time subsists in a different place; and according to a different place of that which contains it: for if the parts do not always preserve the same position, it is evident that each, at a different time, is in a different place; since, when both a thing itself and its parts subsist similarly for any time, then that thing is at rest. But neither does the whole abide in the same; for if all the parts are moved, the whole also is moved according to the parts: for the whole, says he, always changes, viz. into another place, which appears to be admirable.

CHAP.

CHAPTER XV.

THESE things being demonstrated, we say, that the impartible cannot be moved, except according to accident; as, for instance, the body being moved, or the magnitude in which the impartible is inherent: just as if that which is in a ship should be moved by the motion of the ship, or a part by the motion of the whole. But I call that impartible, which is indivisible according to quantity: for the motions of the parts are different, according to the parts, and according to the motion of the whole. This difference also may be especially perceived in a sphere; for there will not be the same celerity of the parts which are about the centre, of those which are external, and of the whole sphere, as if there were not one motion. As we have said, therefore, the impartible may be so moved, as he who sits in a ship, is moved when the ship sails; but it cannot be moved by itself: for let it be changed from A B into B C; whether from magnitude into magnitude, or from form into form, or according to contradiction. But let the time in which it is first changed be D. It is necessary, therefore, that in the time in which it changes it should either be in A B or B C, or something of it in this, and something else of it in the other, for whatever changes, thus subsists. Something belonging to it, therefore, will not be in each of these, for it would consist of parts. But neither will something of it be in B C; for it will have been changed. But it is supposed to change: it remains, therefore, that it is in A B at the time in which it changes. Hence, it will be at rest; for to be in the same thing for any time, is to be at rest. So that the impartible cannot be moved, nor, in short, changed: for thus in one way only can its motion sub-

sist, if time were composed from nows; since a thing would always be moved and changed in the now, so that it would never be moved, but would always have moved. But that this is impossible, has been shown before: for neither is time composed from nows, nor a line from points, nor motion from the boundaries of motion (*κίνηματα*.) And he who says this, does nothing else than assert that motion consists from impartibles; just as if he should say that time is composed from nows, or magnitude from points⁷. Again, it is also evident, from the following considerations,

⁷ Aristotle having before shown that nothing is either moved or at rest in an impartible, and on this account having mentioned the argument of Zeno as false, which asserts that every thing is either moved or at rest when it is in that which is equal to itself, and having afterwards adduced other arguments of Zeno, which endeavour sophistically to subvert motion, and mentioned two other arguments which have the same scope, and dissolved them, now shows, that an impartible cannot be moved, except by accident, in consequence of being in a body or magnitude which is moved.

In order to show, however, that it is not possible for an impartible to be moved essentially, he first defines the impartible, that it is that which is indivisible according to quantity. Afterwards he adds, that the motions of the parts are different according to the parts themselves, and according to the motion of the whole, solving a certain objection urged against the parts being moved according to accident: for when he demonstrated that motion is divisible, not only according to time, but also according to the parts of the thing moved, then he assumed the motion of the parts themselves by themselves; but now he says, that the parts are moved accidentally, in consequence of subsisting in the whole which is moved. He says, therefore, that the motions of the parts are twofold, some being the motions of the parts themselves moved by themselves; but others being motions according to the motion of the whole. At the same time, through this, he also shows the difference between the motion of the parts in the whole, and of a part in magnitude. In this, therefore, a part differs from the impartible, that the impartible is only moved accidentally; but a part, both essentially and accidentally. But that in the motion of the whole there are also motions essentially of each of the parts, he clearly demonstrates in a revolving sphere: for there is one swiftness of the parts of it towards the centre, and another of the parts equal to these, towards the external circumference: for if the parts towards the external circumference were not moved much swifter than those towards the centre, they would not pass through an interval so much greater in the same time, according to the revolution of the sphere; since that which revolves according to the greatest, and that which revolves according to the least circle, finish their revolutions at the same time.

Alexander observes that the words "of the parts towards the centre, and external to it," may be understood of the greatest circles described through the centre, as those of the equinoctial and zodiac,

considerations, that neither a point nor any other indivisible can be moved: for with respect to every thing which is moved, it is impossible that it should pass through that which is greater than itself, before it passed through that which is either equal to, or less than itself. But, if this be the case, it is evident that a point will be first moved through either that which is less, or that which is equal. Since, however, it is indivisible, it is impossible for it to be first moved through that which is less than itself. It will, therefore, pass through that which is equal to itself; so that a line will be composed from points: for the point always being moved through that which is equal to itself, will measure the whole line. If, however, this is impossible, it is also impossible for an indivisible to be moved. Farther still, if every thing that is moved, is moved in time, but nothing is moved in the now, and all time is divisible, there will be to every moveable a certain time less than that time in which it is moved through a space equal to itself: for this will be the time in which it is moved, because every thing is moved in time; and it has been before shown that all time is divisible. If, therefore, a point is moved, there will be a certain time less than that time in which the point is moved. But this is impossible: for in a less time it is necessary that it should be moved through a less space. So that the indivisible will be divisible into that which is less, just as time also into time: for, in one way, that which is impartible and indivisible may be

zodiac, and of the circles described about the poles; for these latter are external to the centre of the sphere. And it is evident on the contrary in these, that the circles towards the centre are swifter, as being larger, and those external to it slower, as being smaller, if the points in them finish their revolutions at the same time. Thus, therefore, do the motions of the parts differ from each other; and from that of the whole with which the whole sphere is moved: for the whole passes through all the intervals in the sphere in the same time, but each of the parts passes through these intervals by itself; and the motion of no one of the parts is the same as that of the whole. Hence, the parts are moved with a certain motion by themselves, besides the motion of the whole; and the motion of these is not accidental only, as that of impartibles is. Aristotle having demonstrated these things about parts, passes on to the impartible, and shows that this can only be moved according to accident, as he who sits in a ship when it is sailing, but that it cannot be moved essentially; and he demonstrates this in all the species of mutation.

moved,

moved, if it were possible to be moved in an indivisible now ; since there is the same reason why a thing should be moved in the now, and why any thing indivisible should be moved.

CHAPTER XVI.

THERE is not any infinite mutation ; for all mutation is from something into something, as well that which is in contradiction, as that which is in contraries. So that of those mutations which subsist according to contradiction, affirmation and negation are the boundary ; as, for instance, of generation being is the boundary, and of corruption, non-being. But of those mutations which are in contraries, contraries are the boundaries : for these are the extremes of mutation. So that this will likewise be the case in all change according to quality ; for change according to quality is from certain contraries. In like manner also, this will be true of increase and diminution : for the boundary of increase, is the end of a magnitude according to its proper nature ; but of diminution, a departure from this magnitude. But lation is not thus bounded ; for not all lation is in contraries. Since, however, it is not possible for a thing to be cut, unless it were possible that it might have been cut, (for the impossible is multifariously predicated), that which is attended with this impossibility cannot be cut. And, in short, if nothing can be generated, which might not once have been generated, neither can that which might not have been changed, be changed into that into which it might not have been changed. If, therefore, that which is borne along, should be changed into any thing, it will also be possible that it might change. So that there will not be infinite motion, nor will a thing be impelled through infinite space, because

cause it is impossible for the infinite to be passed through. It is evident, therefore, that there is not infinite mutation, so as not to be terminated by boundaries⁸. It must be, however, considered, whether it be possible that there may be infinite mutation in such a manner, that being one and the same, it may be infinite in time: for not being one, nothing perhaps hinders this from taking place; as, for instance, if change, according to quality, should be after lation, and increase after change in quality, and again generation: for thus there will always be motion in time, but not one motion; because there is

⁸ Aristotle demonstrates that there is no infinite mutation, from this, that all mutation is from something into something; but these are definite: for the mutation, according to contradiction, though it is not from a subject to a subject, yet even this is from something to something; since it is from non-being to being, and from being to non-being. And, in short, non-being signifies something. The mutation indeed, according to contradiction, has for its terms and boundaries the parts of the contradiction, viz. being and non-being; but alliation, being a motion, is from a contrary to a contrary; and these are definite; as, for instance, the white and the black, the hot and the cold, health and disease, good and evil: for contraries are distant in the extreme, and things distant in the extreme are definite. Augmentation also, and diminution, have their boundaries; the former a perfect magnitude, according to its proper nature; but the latter a departure from this. In lation, however, the boundaries are not always definite; for in the lation according to a right line, upward and downward, are indeed contrary and definite; but the transitive motion of animals has no longer definite boundaries. A circular motion also is not from a contrary to a contrary; for nothing is contrary to circulation, since it is from the same to the same, but not from a contrary to a contrary: for neither is it contrary to itself. If, therefore, there is not contrariety in all lation, according to this indeed it is not possible to show the limitation of boundaries; but he shows this according to another method, which is adapted to all mutation: for if it is true that a thing does not admit of being changed into that into which it is impossible for it to be changed, the converse of this also is true, that if any thing is changed into any thing, it is also possible for this to change, that is, to be changed into it. But that which can be changed into something, cannot be moved through an infinite interval, nor with an infinite motion: for in an infinite motion there is nothing last, into which it will be possible for that which changes to change. All local motion, therefore, is bounded: for of the motion in a circle, that from which it began is a certain boundary. Aristotle, having demonstrated these things, concludes by observing, that it is evident there is not infinite mutation, so as not to be limited by boundaries; since it is impossible that a thing which changes should not change into that into which it changes.

not

not one motion from all these. So that it is not possible there should be one motion infinite in time, except the motion which is in a circle⁹.

⁹ Aristotle having shown that no motion is so infinite as not to have boundaries, viz. the term *from which*, and the term *to which*, in the next place enquires whether a motion, infinite in time, and which is one and the same according to species, and is generated again and again, can exist; since it has been shown to be impossible that there should be an infinite motion in a right line. May it not, therefore, be possible that there may be one continued motion according to number, through its becoming the same again and again? And Aristotle well observes, that nothing hinders there being one though not the same motion infinite in time, if one motion succeeds another; for instance, if after lation there should be alliation, and after this, increase, and again, generation. One motion, however, will not be produced from these, neither in number nor in species, as he demonstrates: for the motion thus produced may indeed, in a more common way, be said to be one; but properly speaking, it is not one and continued. But the thing now investigated is, whether it is possible one continued motion can be produced to infinity, by becoming the same again and again, not being intercepted by any intermediate natures, nor composed from things of a dissimilar species, but being itself specifically the same. But he says, that there can only be one such motion, viz. the motion in a circle; because in other motions the reiterated regress is intercepted by standing still. A circular motion alone, therefore, can be one continued and infinite in time. But he very properly adds, *in time*, because this is not possible in magnitude, nor in an extension of motion on one thing. These things, however, he now previously announces, but afterwards demonstrates.



THE

THE PHYSICS.

B O O K VII¹.

CHAPTER I.

It is necessary that whatever is moved, should be moved by something: for if it has not in itself the principle of motion, it is manifest that it is moved by something else. But if it has this principle in itself; let A B be assumed as that which is moved, not because some part of this is moved. In the first place, therefore, to apprehend that A B is moved by itself, because the whole is moved, and this by nothing external,

¹ This is the Seventh Book, says Simplicius, of the Physics, which the Peripatetics are accustomed to inscribe H. But there are two copies of it, which in the reading have only a small difference: for the problems and the demonstrations of them are in both the same. It must be observed, however, that the more principal of the problems in this book, and which are more adapted to this treatise, are given with more secure demonstrations in the following and last book. Whence, to some, this Seventh Book has appeared to be superfluous, employing more weak, or, as Alexander says, more logical demonstrations. And Eudemus, who discusses the books of the Physics thus far, passing by this as superfluous, proceeds to the chapters in the last book. Themistius also, who paraphrases the whole of this work, omits many of the chapters in this book.

external, is just as if some one, because D E moves E F, and E F is itself moved, should apprehend that D E F is moved by itself, because he does not perceive which of these is moved by the other, i. e. whether D E is moved by E F, or E F by D E². Farther still, that which is moved by itself, will never cease to be moved, because something else which is moved stands still. It is necessary, therefore, if any thing ceases to be moved because something else stands still, that this thing should be moved by something else. But this having become mani-

Simplicius adds : Since, however, this book does not appear to be entirely discordant with what is discussed in the other books, nor unworthy the sagacity of Aristotle, perhaps I would say, that it was formerly written by Aristotle, but that afterwards the chapters in this book, being more accurately discussed in the Eighth Book, certain persons gave it this arrangement as adapted to the whole treatise. It possesses, indeed, an utility which, I think, is not to be despised, since it previously exercises and accustoms us to the perception of those theorems which are truly great, and contain the whole of physiology, and which Aristotle delivers to us in the last book. Hence, the problem which he immediately proposes in this book, that every thing which is moved, is moved by something, is more accurately demonstrated in the Eighth Book.

² On this theorem, that every thing which is moved, is moved by some thing, all the following natural theorems depend. Since, however, of things which are moved, some are moved externally, but others not externally, and those are moved externally which are moved by violence, but those are moved not externally, as well the bodies which are moved naturally, as those which are moved according to the impulse of of the soul,—this being the case, Aristotle does not think it worth while to demonstrate that things externally moved are moved by something, since that which moves is here apparent ; for it moves either by impelling, or drawing, or carrying, or rolling. But in that which appears to be moved from itself, and not externally, he demonstrates this, first separating that which is moved essentially and primarily, from things which are moved according to something else, and, in short, from things which are moved according to accident ; such as things which are moved according to a part, conformably to the division in the beginning of the Fifth Book ; for he who moves his hand, is himself said to be moved, but he is said to be moved in consequence of something belonging to himself being moved. But that is moved essentially and primarily from itself, which is neither moved accidentally, nor in consequence of any thing belonging to it being moved. Aristotle, therefore, shows that in a thing which is thus moved, that which is moved is one thing, and that which moves another. And in the first place, he admonishes us that we must not suppose that the whole of a thing which is moved from itself, is not moved by any thing, because that which moves it is not externally apparent : for it is possible that the motive power may not be apparent as that which is moved is ; in which it is manifest that the mover is one thing, and that which is moved by it, another.

fest,

fest, it is necessary that whatever is moved should be moved by something else : for since it has been assumed that A B is moved, it will be divisible. Let it, therefore, be divided into A C and B C. Hence it is necessary, when B C is at rest, that A B also should be at rest : for if not, let it be supposed to be moved. B C therefore being at rest, A C will be moved ; and hence A B will not be moved by itself. It was, however, supposed to be first moved by itself. It is evident, therefore, that C B being at rest, B A also will be at rest, and will then cease to be moved. But if any thing stands still and ceases to be moved, because something else stands still, this will be moved by something else. It is evident, therefore, that every thing which is moved, is moved by something : for every thing which is moved is divisible ; and the part being at rest, the whole also will be at rest³. But since every thing that is moved, is moved by something, it is also necessary that whatever is moved in place should be moved by another. Hence that which moves, will be moved by another, since it is itself also moved ; and again, this will be moved by something else.

³ Aristotle now demonstrates the remainder of the thing proposed, viz. that every thing which is moved is moved by something. But he demonstrates this, previously assuming that if any thing is at rest because something else which was moved has ceased its motion, that thing must necessarily have been moved by something : for that which is not moved by something, does not necessarily cease to be moved, when something else ceases its motion ; since it may happen that a thing which is not moved by something else, may, when that thing ceases its motion, cease also itself to be moved ; yet, not from necessity. Hence, that which *necessarily* ceases its motion, in consequence of something else ceasing its motion, must *necessarily* be moved by something. Aristotle, therefore, concludes this according to the second of hypohetic syllogisms, and also assumes that every thing which is moved is divisible, which he had demonstrated at the end of the preceding book.

CHAPTER II.

THIS, however, does not proceed to infinity; but it stops somewhere, and there will be something which will be primarily the cause of motion: for if it be not so, but there is a progression to infinity; let A be moved by B, B by C, and C by D; and, after this manner, let there be a progression to infinity. Since therefore the mover is at the same time itself moved, it is evident that A and B will be at the same time moved: for B being moved, A also will be moved; and hence B being moved, C also will be moved; and C being moved, D will be moved. The motion, therefore, of A, B, and C, and of each of the rest, will take place at the same time. Hence we shall be able to assume each of these: for though each is moved by each, nevertheless there is a motion of each which is one in number, and not infinite with respect to boundaries; since whatever is moved, is moved from something into something: for it happens that there is either the same motion in number, or in genus, or in species. I call, therefore, that motion the same in number, which proceeds from the same into the same in number, and in a time which is the same in number; as, for instance, from this white which is one in number, into this black, according to this time which is one in number: for if according to another time, there will no longer be one motion in number, but in species. But the motion is the same in genus, which is produced in the same category of substance, or of some other genus; and the motion is the same in species, which proceeds from the same thing in species to the same thing in species; as, from white into black, or from good into evil. These things, however, have been spoken of before. Let the motion therefore of A be assumed, and let it be E; the motion

tion of B, and let it be F ; and the motion of C D, and let it be G H. Let the time also in which A is moved be K. Since therefore the motion of A is definite, the time also will be definite, and not infinite. But in the same time A and B were moved, and each of the rest. It happens, therefore, that the motion E F G H being infinite, will be accomplished in a finite time K : for in the time in which A was moved, all the rest in succession after A, and which are infinite, were moved ; so that they will be moved in the same time : for either the motion of A will be equal to the motion of B, and to the motion of the rest, or it will be greater. It is, however, of no consequence, since it will entirely happen that an infinite motion will be effected in a finite time ; which is impossible⁴. Thus, therefore, that which was investigated from the beginning, may appear to be demonstrated : it is not how-

⁴ Aristotle assuming as a thing demonstrated that every thing which is moved, is moved by something, shows, this being admitted, that there is something which first moves, and that one thing does not move another to infinity ; but that there is something which moves, not being moved by another. But he demonstrates this in local motion, because it is the first of motions, since this not existing, neither will there be any other motion, as we shall learn in the following book. If, therefore, it is shown that there is a first mover in local motion, it will also be universally shown. But the demonstration proceeds through a deduction to an impossibility : for supposing one thing to be moved by another to infinity, he shows, as the consequence of this, that there will be an infinite motion in a finite time, which is demonstrated to be impossible in the preceding book. Hence, in the perpetual motion of that which is moved by another, he frames his demonstration, taking away the procession of this to infinity, and showing that there is something which first moves, not being itself moved by another : for supposing one thing to be moved by another to infinity, he shows the impossibility consequent to the hypothesis : for since it is supposed that the thing which imparts motion, is itself also moved by something, it will evidently at the same time be itself moved by some mover, and move that which is moved by it ; since it moves in consequence of being moved by another. In the same time, therefore, and according to the same thing, the motion of the mover and the thing moved will be completed : for when that which moves is moved, then it moves ; so that the motion of all the movers and things moved will subsist at once. But the impossibility consequent to this is, that there will be an infinite motion in a finite time, which was shown to be impossible in the preceding book : and this is the consequence of supposing that the movers, and things moved, are infinite in multitude. It is impossible, therefore, that these should be infinite ; and consequently there is something which first moves, and is no longer moved by another.

ever

ever because no absurdity happens ; for it is possible that there may be an infinite motion in a finite time, yet not the same, but another and another, many and infinite things being moved ; which also happens in the particulars now under consideration ⁵. But if it is necessary that ~~that~~ which is first moved according to place, and with a corporeal motion, should touch or be continued with the mover, as we see this happens to be the case in all things ; from all, the whole will be one, or continued. Let this, therefore, which may take place, be assumed, and let the magnitude, or that which is continued, be A B C D ; and let the motion of this be E F G H. But it is of no consequence, whether it be finite or infinite ; for in a finite time K, either that which is infinite, or that which is finite, will be similarly moved ; and either of these is impossible. It is evident, therefore, that at some time or other it will stand still, and that the being moved by another will not always proceed to infinity, but that there will be something which will be first moved. But it ought not to be any objection that this has been demonstrated from something being supposed ; for that which is possible being supposed, it is requisite that no absurdity should happen ⁶.

CHAP.

⁵ Aristotle, in the preceding demonstration, having indefinitely assumed that the movers and things moved are infinite in multitude, well observes that the argument appears to demonstrate the thing proposed from the beginning, but yet does not collect any thing impossible from the things admitted : for the position was, that of things infinite in multitude, the motions also are infinite in multitude. But these motions infinite in multitude may be produced in a finite time, when the motions of A, and B and the rest, are produced at once, and nothing impossible will follow. But an impossibility will follow, if it is asserted that one infinite motion is moved in a finite time ; since it is not impossible that many motions and infinite in multitude may be produced in a finite time. If, therefore, an impossibility is to follow, it is requisite to show how motions infinite in multitude are composed in magnitude into one infinite motion, subsisting at once in a finite time, in which also one of the finite motions is produced : for thus the impossibility will follow of an infinite motion subsisting in a finite time. In what follows, therefore, he shows how one infinite motion of this kind is effected.

⁶ When the movers and things moved are infinite in multitude, no impossibility will follow from admitting that infinite motions may subsist at once in a finite time ; but one thing, says Aristotle, will be produced from all the movers and things moved : for that which *first* moves any
any

CHAPTER III.

THAT, however, which first moves, not as that for the sake of which motion subsists, but as that whence the principle of motion is derived, exists together with that which is moved. I say *together with*, because nothing is between them ; for this is common to every thing which is moved, and which moves. But, since there are three motions, viz. according to place, according to quantity, and according to quality, it is also necessary that the things which are moved should be three. The motion therefore according to place, is lation ; that according to quality, alliation ; and that according to quantity, increase and diminution. In the first place, therefore, let us speak concerning lation ; for this is the first of motions⁷. Whatever, therefore, is borne along, is either

any thing, according to place, that is, proximately and not through another, and which moves according to a corporeal motion, must necessarily move, either being continuous with the thing moved, or being in contact with it, must thus move it. But Aristotle by *corporeal motion* means *motion which resists* : for the first mover and the lovely move ; and though these may move locally, yet they do not move corporeally : for that moves corporeally which impels, or draws, or rolls, or carries. But things of this kind must necessarily touch the things moved by them, and through contact become after a manner one with them.

⁷ Aristotle now proposes to demonstrate that the proximate mover, according to every species of motion, must necessarily subsist together with the thing moved. But since that which moves is twofold, the one being as that whence the principle of motion is derived, viz. the producing principle, but the other as that for the sake of which, viz. the final principle,—this being the case, Aristotle's demonstration is now about the producing principle of motion ; for that which moves as the end, and in short as the object of desire, does not subsist in conjunction with the thing moved : for orexis or appetite is an extension to the object of desire as distant from the desiring nature. But that is said to be the first mover which imparts the cause of motion, even though

either moved by itself, or by another. Hence, with respect to such things as are moved by themselves, it is evident that in these the mover and the thing moved subsist together; for that which first moves is inherent in them; so that there is nothing between. But it is necessary that such things as are moved by another, should be moved in a fourfold manner; for there are four species of lation which is produced by another, viz. drawing, impelling, carrying, rolling; since all the motions according to place are reduced to these: for impulsion is a certain pushing, since that which pushes any thing from itself, follows the thing which it pushes. But repulsion is when the mover does not follow by moving; and throwing is when the mover produces a more vehement motion by which he drives a thing from himself; than is produced by the natural lation of that thing, and when the thing is moved as long as the motion retains its power. Again, propulsion and compulsion, are repulsion and drawing; for propulsion is repulsion; since it is a repulsion of a thing, either from itself, or from another. But compulsion is drawing; for it is a drawing of a thing to itself, and to another. So that whatever species there are of these motions, they ought to be referred to these, as, for instance, the thickening of a web, (*σπαθησις*) and weaving; for the former is compulsion, and the latter propulsion. In like manner other commixtures and separations are to be referred to these; for all of them will be propulsions, or compulsions; except such as are in generation and corruption^a. At the same time

though it imparts it through other intermediate motions, as he who draws through a rope, or impels through a pole. Thus also the first immoveable cause of motion is here said to move as the producing principle of motion. That also is said to be the first mover which proximately moves; and in this sense, Aristotle now uses the word, asserting that the thing which thus *first* moves subsists in conjunction with the thing moved.

^a By το φερόμενον, *that which is borne along*, Aristotle means *that which is locally moved*, it being thus denominated from *lation*. (*απο της φορας*). But that, when there is that which is moved, there is necessarily also that which moves is evident; since it has been shown that every thing which is moved, is moved by something. But Aristotle divides things locally moved, into such as are moved by themselves and which have the mover in themselves, as animals which have in

time too, it is evident that commixtures and separation are not any other genus of motion ; for all of them are distributed into some of the above-mentioned motions. Farther still, inspiration is drawing ; but expiration is pushing. In like manner also, excretion (*πλυσίς*), and such other motions as are produced through the body, by which any thing is expelled or assumed ; for these are drawings, but those repulsions. But it is also necessary to refer the other motions according to place ; for all of them fall into these four. Again, of these motions, carrying and rolling are referred to drawing and pushing ; for carrying subsists according to some one of these three modes ; for that which is carried is moved according to accident, because it is in that which is moved, or upon something that is moved ; but that which carries is moved, either because it is pushed, or drawn, or rolled ; so that carrying is common to all the three. But rolling is composed from drawing and pushing : for that which rolls must necessarily partly draw, and partly push ; since it leads one part from itself, and another part to itself. Hence, if that which pushes, and that which draws, subsist together with that which is pushed and drawn ; it is evident that there is nothing between that which is locally moved, and that which locally moves. This also is evident from definitions ; for pushing is a motion either from a thing itself, or from something else to another. But drawing is the motion of a thing from another to itself, or to another, when the motion of that which draws is swifter and separates those things that are continuous : for thus the other is at the same time drawn.

in themselves soul, moving the body, and into things moved externally and by another ; for, besides these modes, it is not possible to be moved. Having, therefore, made this division, he says it is evident that things moved by themselves, contain in themselves the mover subsisting in conjunction with the thing moved, neither being separated from it, nor intercepted by the accession of any thing intermediate. Thus the soul is present with the body, and moves it, though not corporeally. But the motion arising from something externally moving, since it is violent, and not according to nature, has four supreme differences ; for the mover either draws, or impels, or carries, or rolls. And that these are the only modes of motion produced externally, and through violence by another, he shows, from all the motions which are produced through violence by another, being referred to some one of these differences.

3 G

(But

(But perhaps there may appear to be a certain drawing after another manner; for wood draws fire, not in this way. It is, however, of no consequence, whether that which draws is moved or abides; for sometimes it draws where it is, and sometimes where it was). But it is impossible for a thing to move something from itself to another, or from another to itself, when it does not touch it. Hence, it is evident that there is nothing between that which is locally moved, and that which locally moves. Neither is there any thing between that which is changed according to quality, and that which changes it. But this is evident from induction; for in all things it happens, that what changes the extreme according to quality, and that which is first so changed, subsist together; since these are the passions of the subject quality: for we say, either that which is heated, or that which is sweetened, or that which is condensed, or that which is dried, or that which is whitened, is changed in quality; in a similar manner asserting this of the inanimate and the animated: and again, as well of the insensible parts of animals, as of the senses themselves: for the senses also are, in a certain respect, changed in quality; since sense which is in energy, is a motion through the body, sense being passively affected. With such things, therefore, as the inanimate is changed in quality, with these that which is animated is also so changed; but the inanimate is not changed in quality with all such things as that which is animated is changed; for they are not changed in quality according to the senses. And the one in being passively affected is latent, but the other is not latent. Nothing, however, hinders but that the animated nature may be latent, when the change in quality is not effected according to the senses. If, therefore, that which is changed in quality, is so changed by sensibles, it is evident that in all these that which changes the extreme in quality, and that which is first changed in quality, subsist together; for to that the air is continuous, and body to air. And again, colour is continuous to light, and light to the sight. Hearing also, and smelling, subsist after the same manner; for the air is the first mover with respect to that which is moved. And in like manner
in

in the taste ; for juice subsists together with the taste. The like also happens in things inanimate, and which are deprived of sense. So that nothing will subsist between that which is changed, and that which changes, according to quality⁹. Neither is there any thing between that which is increased, and that which increases ; for that which first increases, increases that which adheres to it, so as that the whole may become one. And again, that which is diminished, is diminished in consequence of something departing from that which is diminished. It is necessary, therefore, that there should be a continuity in that which increases and that which is diminished ; but in things continued, there is nothing between. Hence, it is evident that nothing subsists between that which is moved, and that which moves, when they are first and last, with reference to that which is moved.

⁹ Aristotle now proposes to speak concerning that which is changed in quality, and that which is the cause of change in quality, and to show that in these there is nothing between, which, he says, may be known from induction ; for in all alliation, that which last changes, and that which is first changed, are found subsisting at one and the same time. But he calls that which last changes, that which he had hitherto denominated the thing proximately moving and changing. But this is partly the first, as being proximate to the thing moved ; and partly the last of movers, when that which primarily and properly moves, moves through certain *media*. And he calls that the thing first changed in quality, which is changed in quality essentially, and not according to accident, nor in consequence of something belonging to this being changed in quality ; for that which changes in quality subsists together with that which is thus changed. Let it then, says he, be admitted, that things which are changed in quality according to what are called passive qualities, are so changed suffering. But we know that a certain species of quality in the categories, which subsist according to passive qualities, ranks as the fourth after habit, power, and figure ; and passive qualities are such as are apprehended by those that perceive them through passion, such as heat, cold, dryness, sweetness, bitterness, and the like. Of this kind also, are the more superficial and not specific dispositions according to colours, all which, he says, are called passive qualities, not because they produce passion in those that apprehend them, but because they are themselves generated from passion in those that receive them : for the heat of fire produces indeed passion in its recipients, yet it is not called passive, because it is not generated through passion, so that it is a superficial, and easily changeable, and not an essential disposition.

Observe too, that Aristotle now calls animals, those animated natures which are characterized by sense, and local motion ; for plants, though they are animated, are not changed in quality according to the senses.

CHAPTER IV.

But that whatever is changed in quality, is so changed by sensibles, and that change in quantity alone subsists in such things as are said to be essentially passive to sensibles, may from hence be surveyed: for some one may apprehend that the change in quality of other things especially subsists in figures, forms, and habits, and in the assumption and loss of these; but it is in neither: for of that which is figured, when it has arrived at perfection, we do not say it is that from which it derives its subsistence. Thus, we do not say that the statue is brass, or that the pyramid is wax, or that the bed is wood; but paronymizing we say, that the first is brazen, the second waxen, and the third wooden. But we call that which has been passively affected, and is changed in quality, by the same name as before: for we say that a thing is dry and moist, hard and hot; and also that it is wax. And, not only so, but we say that what is moist, and what is hot, is brass; calling the matter by the same name as the passion. So that, if that which is made in which there is figure, is not predicated according to figure and form, but is predicated according to passions and changes in quality, it is evident that these generations will not be changes in quality. Farther still, to speak thus may seem to be absurd, viz. either that a man or a house is changed in quality, or any thing else that is generated. But, perhaps, it is necessary that every thing should be generated, something being changed in quality; as, for instance, the matter being condensed, or rarified, or heated, or refrigerated: yet nevertheless things which are generated are not changed in quality, nor is the generation of them a change according to quality. Moreover, neither
are

are the habits of the body, nor of the soul, changed according to quality: for of habits, some are virtues, and others vices; but neither virtue nor vice is a change in quality. But virtue is a certain perfection: for when any thing receives its proper virtue, it is then said to be perfect: for then a subsistence according to nature is especially present. Thus a circle is said to be perfect, when it especially becomes the best circle. But vice is the corruption¹ of, and departure from this. As, therefore, neither do we call the perfection of the house a change in quality (for it would be absurd that the roof and a tile should be change according to quality, or that the house when it receives a roof, and is covered with tiles, should be changed in quality, and not rather be perfected); in like manner, in the virtues and vices,

¹ It may here be enquired, how virtue and vice can be said to be the generation and corruption of the soul, and how the assumption of virtue is similar to the assumption of a tile or a roof? For these are parts of the house, and not habits; and virtue and vice are not parts of the soul: for if virtue were a part of the soul, the soul, when she abandons virtue, would be destroyed. And in short, perfection is twofold, the one pertaining to essence itself, according to which it is filled with the first, middle, and last parts of itself, but the other subsisting according to virtue and vice, and, in one word, according to habit, and being adventitious and accidental to the whole form; for these accede and depart without the corruption of their subject. How then does Aristotle refer perfection according to parts, as of a house, to the example of habit? To this it may be replied, that every form, when subsisting according to nature, is not only completed by the perfection of its proper parts, but also by its proper virtue: for to subsist according to nature is nothing else, than to possess an appropriate perfection and virtue, so as to produce natural energies; and on this account, Aristotle reasons from a perfection according to nature. As, therefore, a diseased body is not perfect, because it cannot produce energies according to nature, although it has all the corporeal parts, for they are dead, being deprived of a natural subsistence, and resembling a dead body, thus also the rational soul, abandoning the virtue naturally pertaining to it, and not being able to produce energies naturally adapted to its essence, is not properly soul, nor a rational life according to nature, but is dead, as far as it is possible for soul to die. The virtue naturally adapted to any thing, therefore, must be considered as the most principal part of its whole essence, without which the rest is dead, and is only equivocally denominated. Aristotle, therefore, very properly compares perfection according to habit, as being the most principal part of a thing, to the parts of a house; for, in reality, habit and virtue are not accidents; for when they depart they destroy their subject, as neither is soul an accident to the animated body.

and

and in those who possess or receive them, the former are perfections, and the latter departures ; and consequently are not changes in quality. Again, we say that all the virtues consist in being affected in a certain manner towards a certain thing ; for we admit that the virtues of the body, such as health and a good bodily habit, consist in the temperament and symmetry of things hot and cold, either of the internal parts with respect to each other, or with reference to that which contains them. The like also takes place in beauty and strength, and the other virtues and vices ; for each consists in being affected in a certain manner towards a certain thing ; and well or ill disposes its possessor with respect to appropriate passions. But appropriate passions are said to be those things by which any thing is naturally adapted to be generated and corrupted. Since, therefore, relatives are not themselves changes according to quality, and there is not either a change in quality, or generation, or in short, any mutation of them, it is evident that neither are habits, nor the loss and assumption of habits, changes according to quality. But perhaps it is necessary that these should be generated and corrupted, certain things being changed in quality, just as the form and *morphe*, for instance, of things hot and cold, or dry and moist, or in those things in which they are first inherent : for every vice and virtue is said to subsist in those things by which the possessor is naturally adapted to be changed in quality ; for virtue produces the impassive, or passivity, in such a manner as is proper ; but vice produces the passive and the impassive in a contrary manner². The like also takes place in the habits of the soul ; for all these

² Since Aristotle here says, that there is neither change in quality, nor generation, nor in short any mutation of relatives, it is necessary to observe, that when he says the virtues and vices are relatives, he also says that they are generated and corrupted, in consequence of certain things being changed in quality. It may be asked, therefore, how it is true, that there is neither generation, nor mutation of relatives ? The answer to this is, that relatives are entirely generated and corrupted : for that which before was not double, is so afterwards, and again is not. But that which before was not, and afterwards is, that is generated ; and that which having subsisted

these consist in being affected in a certain way towards a certain thing. And the virtues indeed are perfections, but the vices egressions. Farther still, virtue well disposes, but vice ill disposes, towards appropriate passions; so that neither will these be changes in quality, nor the loss and assumption of them. But it is necessary that these should be generated, the sensitive part being changed in quality, and it is changed in quality by sensibles; for all ethical virtue is conversant with corporeal pleasures and pains; and these consist either in action, or in memory, or in hope. Some of these pleasures, therefore, consist in the energy of sense, so that the sense is moved by some sensible object; but others consist in memory and hope, and derive their being from energizing according to these; for men are delighted, either from recollecting the manner in which they have been affected, or from the hope of what they expect. So that all such pleasure is necessarily produced by sensible objects. But since, when pleasure and pain are produced, vice also and virtue are produced (for they are conversant with these), and since pleasures and pains are changes in quality of the sensitive part, it is evident that something being changed in quality, these also must necessarily be lost and obtained. Again, the generation of these is attended with change in quality; but it is not itself a change in quality³. Moreover, neither are the habits of the intellective part of

sisted before, afterwards is not, that is corrupted. Relatives, however, are not essentially generated and corrupted; but, as Aristotle here says, they are generated and corrupted, in consequence of certain things being changed in quality, and in short, suffering a mutation. Hence, the motion of these is accidental; but he dismisses accidental mutation in these, as indefinite. If, therefore, relatives have not an essential subsistence, but have their being in other things, relatives also will be changed from the change of these things, yet not essentially, but accidentally.

³ The being accustomed to be pleased and pained, not casually, but in such things as it is proper, and when it is proper, and as far as it is proper, produce ethical virtue. This also Plato teaches in his *Laws*; for he there says, speaking of pleasure and pain: "Those two fountains are permitted to flow; of which the one being supplied whence it is proper, when, and as much as it is proper, renders both a city and every animal happy." But Aristotle having demonstrated the

of the soul, changes in quality: for that which possesses scientific knowledge especially pertains to things which are predicated as relations. But this is manifest; for science is not ingenerated in us, in consequence of our being moved according to any power, but it is generated when something is inherent: for from partial experience we acquire, in a certain respect, universal science. Neither therefore is energy generation, unless it should be said that beholding and touching are generations; for energy is a thing of this kind ⁴. Again, there is not generation of use and energy, unless some one should fancy that there is a generation of beholding and touching. And to energize is similar to these ⁵. But the first acquisition of science is not indeed generation

the propositions, concisely proposes the syllogism as follows: The virtue and vice of the soul are ingenerated from pleasure and pain being ingenerated. But pleasures and pains are alliations of the sensitive nature. It is evident, therefore, that pleasures and pains are ingenerated and corrupted, from the sensitive nature being changed in quality, so as then to reject and receive them. Hence, from what has been said, it is evident that the generation of virtue and vice follows from certain things being changed in quality. But the generation itself of these is not change in quality, but accedes to the alliation of the sensitive nature, according to pleasure and pain; virtue indeed, according to the measure acceding to this alliation, but vice according to the privation of measure which accedes to it.

⁴ Since intellect possesses science, of universals indeed always according to energy, whether they are at hand or not, but of particulars in capacity,—this being the case, when sense applies itself to that which is particular, then intellect does not know the universal in energy, in the particular, but in the universal knows particulars: for some particular man is also man, as Aristotle somewhere says. Hence he adds, “that we acquire, *in a certain respect*, universal science from partial experience,” because the knowledge of universals is not co-ordinate to the knowledge of particulars. But that which is particular is known by the knowledge of universal, in consequence of the particular being comprehended by the universal.

Let it, however, be every where remembered, that Aristotle denies essential generation and mutation of relatives, but admits that they may be generated and changed accidentally.

⁵ Aristotle now shows, that the object of science existing, whether it be partial or universal, when he who knows scientifically energizes about it, employing science for this purpose, such an energy is not produced through generation, and that there is not generation of such a use. And because there is not generation, on this account, neither is there alliation of it. But there is not generation of it, because it is energy: for generation is in time, but the mutation from not energizing to energizing, is without time, or instantaneous; just as beholding and touching are instantaneous.

neration nor change in quality ; since, for the dianoetic part to have rested and stood still, is, we say, to possess scientific knowledge and prudence. There is not, however, a generation to resting ; for there is not, in short, a generation of any mutation, as was before observed⁶.

Farther

instantaneous. But that the mutation into these is without time, is evident from this, that any time being supposed as the least, in which there is a mutation from not touching, and not seeing, to touching and seeing, a less time may be found. Hence, neither will such a mutation be alliation ; for alliation is in time. Again, if beholding and touching are energies, but alliation is passion, there will not be a passion of energy, so far as it is energy. In like manner, the mutation from not energizing to energizing according to science, is not produced through generation, nor through alliation.

⁶ The assumption of science from the beginning, is the mutation from the first capacity into habit, which is afterwards able to energize : according to which not being yet able to possess science, we are changed into the ability of possessing it. But this takes place after the first age, when the dianoetic power is at rest from the abundant perturbation, which it sustains through the accretions and secretions of the body, which are produced through food and increase, while nature is yet more infirm. Such a mutation, therefore, Aristotle says, is neither alliation nor generation : for *resting*, i. e. *a mutation to rest*, is motion, as was before shown. But there is not a motion of motion, nor a generation of generation, nor, in short, a mutation of mutation, as was before demonstrated. Aristotle also very properly etymologizes *scientific knowledge* from the *standing still* of the dianoetic power ; and he likewise asserts these things in conformity to his preceptor Plato : for Plato in the *Timæus* says, that these and such a rejection of science are the causes from the beginning of the ignorance of human souls : for after the fabrication of perpetual natures, the junior gods, the sources of mortal natures, bound, says he, the periods of the immortal soul in the influxive and effluxive body. But these periods being merged in a profound river, neither govern, nor are governed, but violently hurry and are hurried along. And, after speaking largely about such a condition, he adds, “ In consequence of all these passions, the soul becomes insane at present, and was so from the first period of her being bound in a mortal body. However, when the river of increase and nutrition flows along with a more gentle and less abundant course, the circulations being again restored to tranquillity, proceed in their proper path, in process of time become more regular and steady, and pass into a figure accommodated to their nature.” For if to those of an adult age, the motions of the body, and of the irrational appetites, become the causes of folly, how much more must they be the causes of this in youth, in whom the corporeal motions are more vehement, nature is more infirm, and reason unexercised and unskilled ? Plato also further adds, “ If any one, therefore, receives a proper education in conjunction with convenient nutriment, such a one will possess perfect health, and will every way avoid the most grievous disease. But when this is neglected by any individual,

3 H

such

Farther still, as when from intoxication, or sleep, or disease, any one is changed into the contraries to these, we do not say that he again becomes scientifically knowing, though it was impossible prior to this that he could use science; so neither when any one first acquires habit: for in consequence of the soul becoming established by ethical virtue, something becomes prudent and scientifically knowing. Hence, children can neither understand, nor judge according to the senses equally as well as elderly persons: for there is in them much perturbation and motion⁷. But they become steady, and are liberated from this perturbation,

such a one proceeding along the path of life in a lame condition, will again pass into Hades imperfect, and destitute of intelligence."

The whole reasoning, therefore, of Aristotle is as follows: The assumption of science from the beginning is effected through resting. But of resting there is neither motion nor mutation, because *resting* is mutation, and there is not a mutation of mutation: for if there were, something would at the same time be changed into opposites, and would at the same time subsist in opposites. Farther still, the progression of mutation and generation would be to infinity, as was before demonstrated. Hence, neither will there be a mutation of resting.

⁷ Aristotle having shown that the assumption of science from the beginning, that is, of the power of receiving science, and becoming in possession of the habit of it, is not produced through a generation of science, nor through a change in quality of him who is about to become scientific, now, through the example of one intoxicated, or asleep, or diseased, shows that a mutation is not effected into the use and energy of science, nor of him who becomes scientific in consequence of any thing pertaining to him who is scientific being changed in quality; though it is impossible for him who is scientific to use science, when he is asleep, or intoxicated, or diseased; for it is sufficient to remove that which impedes. Thus also, says he, in him who is changed from folly to wisdom, neither is any thing ingenerated, which was not inherent before: nor is intellect changed in quality, but a permanency only is produced, and a tranquillity of natural perturbation. And this is sufficient to the power of being wise, and the possession of science: for through this tumult, says he, children are neither able to understand, nor judge according to the senses, equally as well as elderly persons; since there is an abundant tumult and motion in children, through nutriment and increase. As therefore, children become adapted to sensible perception when this perturbation ceases, thus also the resting of things producing perturbation is sufficient to the possession in energy of understanding, wisdom and science. But indeed those who are intoxicated, or asleep, or diseased, when they possess habit, and are only impeded in energy, are very properly said neither to become scientific, nor to be changed according to quality into those that are scientifically knowing. If, however, at any time children possess

bation, sometimes by nature, and sometimes by other things. This, however, happens in both, in consequence of certain things being changed according to quality in the body, as in excitation and energy, when any one becomes sober and is roused from intoxication. It is evident, therefore, from what has been said, that to be changed in quality, and a change in quality, is effected in sensibles, and the sensitive part of the soul, but not in any thing else except according to accident⁸.

sess the habit of science and prudence, not possessing it before, how is it true that they do not become scientific from being deprived of science? Or how is the example of one intoxicated, asleep, or diseased, similar to those who possess a habit which they had not before? To this it may be replied, that if he who from the first possesses habit, resembles one intoxicated, or asleep, the soul always possesses habit, and disciplines are truly reminiscences, according to the doctrine of Plato. But it is possible, as Plotinus says, to possess a thing, and not have it at hand; and of that which is at hand, and that which is not, there are many differences. Children indeed, possess the habit of science and prudence, so as to be for a certain time immovable in essence: and hence they appear to require the assumption of science. We also say that they *learn*, *learning* being a certain stimulus, an assumption of motion, and a preparation to energy, which are not inherent in children, till the tumult of the body ceases; habit, prior to this, having a confused subsistence, and requiring much assistance to its evolution. And the grammarian who is asleep, or intoxicated, in a certain respect previously employs his habit; but the previous employment is still in a certain respect impeded. But he who is sober, awake, and in health, possesses habit more at hand, and more prompt. Aristotle, therefore, begins indeed from him who possesses habit at hand, but who does not energize, in consequence of the object of knowledge not being present to sense. Afterwards he subjoins him who uses and energizes; and in the last place, him who acquires science. And, perhaps, he begins from that which is more obvious.

⁸ Aristotle now reminds us on what account all the preceding observations have been made; for he proposed to show that alliation is produced according to passive qualities; and these are sensible, by which sense is changed in quality. Hence, the sensitive part of the soul alone is changed in quality; or, in other words, that which contains the soul is changed in quality according to the sensitive part. Neither intellect, however, nor contemplation and prudence, are perfected through change in quality, except accidentally; in consequence of certain things being changed in quality in the body, as was observed of a man becoming sober after ebriety. According to science itself, however, there is no change in quality; because science is perfection, and the mutation to perfection appears to be rather generation, and not change in quality; and because science is a relative, and in relatives motion has not an essential subsistence.

CHAPTER V.

SOME one, however, may doubt whether every motion may be compared with every motion, or not. If, therefore, every motion may be compared, and that is equally swift, which, in an equal time, is moved through an equal space, there will be some periphery equal to, and also greater and less than a right line. Again, change in quality, and a certain lation, will be equal, when in an equal time the one is changed in quality, and the other has completed its motion. Hence, there will be a passive quality equal to length. This, however, is impossible. But when a thing is moved in an equal time through an equal space, it is then said to be equally swift. But passive quality is not equal to length; so that change in quality is neither equal to nor less than lation. All motion, therefore, cannot be compared⁹. But in what manner will it happen in a circle, and a right line? For it would be absurd

⁹ Aristotle here shows that every motion cannot be compared with every motion; because there is not a common measure of all motions; but those motions alone can be compared with each other, which are of a similar species. But he shows this through a deduction to an impossibility, in two lations, the right-lined and circular; previously assuming that which has been already demonstrated by him, that things are equally swift, which are moved through an equal space in an equal time; and inferring as an impossibility attending their being compared with each other, that a right line will be equal to the circumference of a circle: for if certain things are equally swift, one of which is moved on a right line, and the other on the circumference of a circle; and things equally swift, are such as are moved through an equal space in an equal time; a right line will be equal to a circumference. Simplicius adds, whether however this is possible is still an object of inquiry; and is on the whole rather considered to be impossible. And even now, says he, though the quadrature of the circle appears to have been discovered, yet the discovery is attended with certain contradictory hypotheses.

not

not to admit that this thing can be similarly moved in a circle, and that in a right line. But it is immediately necessary that it should be moved either more swiftly or more slowly; just as if the one should be in a declivity and the other in an acclivity. Farther still, it is of no consequence with reference to this reason, if it should be said it is necessary for it immediately to be moved swifter or slower: for the periphery will be greater and lesser than a right line; so that it will also be equal to a right line: for if in the time A the one should pass through the line B, and the other the line C, the line B will be greater than the line C; for thus it was said to be swifter. If, therefore, in a less time, it passes through an equal space, it will be swifter. So that there will be a certain part of the time A, in which the moveable B will pass through a part equal to the circle, and the moveable C in the whole time A will pass through the line C. If, however, the motions may be compared, that will happen which was just now observed, viz. that a right line is equal to a circle. But these two cannot be compared, and therefore the motions are not comparable¹. All such things

¹ Aristotle having shown that neither the motion in a right line can be compared with the motion in a circle, nor alliation with lation, doubts why the motion in a circle cannot be compared with that in a right line, nor a right line with a circumference: for, in the first place, says he, it is absurd to suppose it to be impossible for this thing to be moved similarly, in a right line, and that in a circle; evidently assuming the difference from their subject, as if the one should be moved on a declivity, and the other on an acclivity: for in things thus subsisting there is no absurdity, that the motion of things equally swift by nature, should become unequally swift through the difference of their subjects. But a circle and a right line have a certain difference of this kind, with reference to each other, and especially if the circle does not stand erect, so that the thing moved may appear to ascend and descend, but lies supine on the ground. Afterwards, he endeavours to show, that though it should be supposed the motion is always swifter in one of these, whether from the subject lines, or from some other cause, and whether it is the same thing or another and another, that is moved in each, neither in this case will it happen that the motions cannot be compared; for the greater of them will be that in which the thing moved, is more swiftly moved in an equal time, and the lesser that in which it is more slowly moved. But in things in which there is the greater and the lesser, it is possible to assume the equal. Hence, there will be a certain right line equal to a circumference. But, if a right line cannot be compared with a circle, neither will the motions in them be comparable with each other.

however

however as are not homonymous may be compared. Thus, for instance, why is not a comparison to be made, which is the more sharp, a pen, or wine, or the lowest chord, *nete*? The answer is, because they are homonymous, they cannot be compared. But the *nete* may be compared with the *paranete*, or the chord next to the lowest, because the acute signifies the same thing in both. Whether, therefore, does the swift not signify the same thing here and there? But much less in change according to quality and lation². Or, in the first place indeed, shall we say, this is not true, that if they are not homonymous, they may be compared? For the much signifies the same thing in water and air; and yet these cannot be compared. But if this is not the case, yet the double signifies the same thing; for it is the ratio of two to one, and these do not admit of comparison³. Or, shall we say that in these there is the same ratio? For the much also is homonymous. But of some things the definitions also are homonymous: as if some one should say, that the much is so much, and something else besides; but the so much, and the equal, are homonymous. Unity indeed is perhaps immediately homonymous; and if unity, also two⁴. Since, why

² Aristotle now wishes to discover a certain rule, by which it will be possible to distinguish all motions that can be compared and that cannot be compared with each other; though of all motions the swift and the slow are predicated. He says, therefore, that things homonymously predicated cannot be compared. Thus, the acute in liquids, in bulks, and in sounds, cannot be compared. Nor is it possible, by making a comparison, to say which is the more sharp, a pen, or wine, or the *nete* in music. But the sharp in sounds can evidently be compared with the sharp in sounds, and the *nete* is more sharp than the *paranete*; for the sharp signifies the same thing in both. The swift and the slow, therefore, though they are predicated of both the motions, viz. of the motion in a right line, and the motion in a circle, cannot be compared with each other, because they are predicated homonymously.

³ Aristotle here objects against that which he had just before asserted, that things which are not homonymous or equivocal may be compared with each other: for *much*, with reference to air and water, is homonymous, and yet we do not compare air with water in multitude. And, if any one should deny that *much* accords with air and water in the same ratio, yet the double at least homonymously pertains to them, since the double in each is the proportion of two to one; and as is the double of air to its half, so the double of water to the half of water.

⁴ Aristotle, however, persists in the rule which he has delivered, and says, that all things which are not homonymous may be compared with each other; and that the examples adduced of

why do some things admit of comparison, and others not? If there was one nature. Is it because they are in another first recipient? A horse, therefore, and a dog admit of comparison, with respect to which is the more white; for that in which whiteness is first inherent is the same, viz. superficies. After the same manner also, things may be compared according to magnitude. But water and voice cannot be compared, because they are in different subjects. Or is it not manifest that thus it may be possible to make all things to be one, and to say that each subsists in another? And the same thing will be equal, sweet, and white, but in something else. Farther still, not any thing whatever is a recipient, but there is one first recipient of one thing⁵. Shall we say, therefore, it is not only requisite that things which may be compared should not be homonymous, but also that neither that which

of the much, and the proportion of the double, do not hinder this from taking place; for these have not the same, but a different ratio in air and water; since *the much* is so much, and something else besides. Hence air, by reason of its bulk, is said to be much, with reference to water, so far as in a greater quantity it has but little matter. On the contrary, water, in comparison of air, is said to be much, because in a small bulk it contains more matter. Hence it comes to pass that their proportions according to quantity assumed in the aforesaid manner, do not subsist in the same ratio; as neither equality, nor unity, nor agreement in multitude.

⁵ Aristotle here endeavours to establish what he had before said, that *much* and *the double* are not synonymous; and asks why, if they are synonymous, we cannot aptly compare air with water, but air with air, or water with water? For it will not be a sufficient answer to say, that the cause of the diversity arises from certain things having the same receptacle, as the whiteness of a horse and dog which are received in the superficies of each, and that on this account they may be aptly compared; but that other things have not the same receptacle, as voice and water, and therefore cannot be mutually compared; that in a similar manner much and the double are not allotted the same recipients in water and air, which nevertheless they are allotted in this and that portion of water, compared with each other, and also in this and that portion of air; and hence, that these two latter conjugations may be rightly compared, but not those of water and air. Aristotle confutes this answer first, because if this were the case, it might be lawfully said that any synonymous things whatever agree in one nature, but cannot aptly be compared with each other, on account of the diversity of the recipient; and in the next place, because it is not sufficient that there is one first receptacle, unless there is one nature, since all the forms of things in generation, by whatever distinction of nature they may be disjoined, have one and the same common matter for their receptacle, and yet all these forms cannot be compared with each other.

is

is compared, nor that in which it is inherent, should possess a difference? I say, for instance, colour possesses a difference, or division; there is not, therefore, any thing which may be compared according to this: as, for instance, whether it is more coloured, not according to a certain colour, but so far as it is colour. It may, however, be compared according to whiteness⁶. Thus also in motion, that is said to be equally swift, which is moved in an equal time through so much equal. If, therefore, in this time, a part of a magnitude is changed in quality, and a part has been locally moved, will the change in quality be equal, and equally swift with the motion? But this would be absurd; and this because motion has species. Hence, if those things which are locally moved in an equal time, through an equal length, are equally swift, a right and a circular line will be equal. Whether, therefore, is this because motion is a genus, or because a line is a genus? For time is the same, being always indivisible in species. Or shall we say that they at the same time differ in species? For motion has species, if that has species in which it is moved⁷. Again, is local motion divided into species

⁶ Aristotle now delivers another rule by which we may know things comparable with each other, viz. that they ought to be such that they may not only not be homonymous, but also may not differ in species. Hence, whiteness and blackness cannot be compared, so far as they are colours, because they are natures differing in species; yet two whitenesses may be compared together, because they are under the same species. He adds, that neither that which is compared nor that in which it is inherent ought to be different. Thus, for instance, not only colours which are compared with each other, but also that in which they are compared, ought to possess the same communion of a specific nature.

⁷ Aristotle having shown that things which may be compared together ought not only not to be homonymous, but also that neither the things according to which the comparison is made, as, for instance, white things, should possess a difference, nor the things in which they are contained, as, for instance, superficies, but that both whiteness and superficies should be one in species, now returns to the proposed discussion concerning motion, for the sake of which the preceding enquiries were moved: for proposing to show that all motions are not comparable with each other, since neither are all motions of a similar species; for the motion in a circle is not similar in species to that in a right line, lest a thing impossible should follow, that a right line is equal to a periphery: and having explained the object of investigation by other examples, he says, that the like

cies by reason of the instruments through which it is effected? As, for instance, if feet are the instruments, will it be walking; if wings, flying? Or is it not so, but lation is different from figures only? So that things which are moved through the same magnitude in an equal time, are equally swift. But it is the same magnitude, which has no specific difference; and in a similar manner the motion is the same, not being divided into species. So that this is to be considered, what the difference is of motion⁸. And our present discourse indicates that genus is not one certain thing, but that it latently contains many things in itself. But of things homonymous, some are very much distant; others possess a certain similitude; and others are near, either in genus,

like also takes place in motions: for in consequence of there being many species of motion, not only common, such as lation, alliation, increase, and diminution, but also according to each of these, every motion cannot be compared with every, but only those which are produced according to the ultimate species, which is no longer genus: and this he distinctly unfolds as he proceeds; for things which move through equal lengths in an equal time, are said to be equally swift, and will be comparable; for lengths are one species in right lines, and a right line has not many species, nor the motion in a right line. If, therefore, it should be said that the motions in a right line and a circle may be equally swift, and that in this case a right line will be equal to a periphery; and if this is impossible, what will be the cause of the impossibility that these motions may be compared? Shall we say, it is because lation is not the ultimate species, but is yet a genus, and can be divided into rectilinear and circular motion as its species? Or is it because a line is a genus, which may be divided into the right and circular? For whether the motions are different in species, though both should be lations, or whether the things in which the motions are made are different, though both should be lines, the motions will not be comparable with each other.

⁸ Aristotle, having observed that a specific difference is produced, when that in which the lation is made differs according to species, adds, that if that also through which the lation is produced is different in species, the lation also will be specifically different. Thus, if one thing is moved through feet, and another through wings, these motions will be different; for the motion through feet is walking; but through wings, flying; though both should be produced in a right line. After this he adds, "or is it not so, but lation is different from figures only;" not conceiving that motion becomes specifically different, if the instruments through which the motion is effected differ in species, but the things in which it is produced are no longer specifically different; for the motions of flying and walking are alone different, says he, in figure and in species, when both are produced in a right line, on which account also they may be compared. And he concludes with observing that things which are moved according to lation through the same specific interval in an equal time, are equally swift.

or in analogy; on which account though they are homonymous, yet they do not appear to be so⁹. When, therefore, is the species different? Is it when the same is in another, or when another is in another? And what is the definition? or by what shall we judge that the white and the sweet are the same, or different? Is it because a different species appears to be in another? or because, in short, it is not the same? With respect to change in quality, therefore, how is one equally swift with another? If, indeed, to acquire health is to be changed in quality, and it is possible that one person may acquire health swifter than another, it is also possible that certain persons may acquire health. So that change according to quality is equally swift; for it is changed according to quality in an equal time. But what is changed in quality? For the equal is not predicated here. But as is equality in quantity, so is similitude here. Let, however, the same thing which is changed in an equal time be equally swift. Whether, therefore, is it

⁹ Aristotle here, as a corollary from what has been above said, infers that things homogeneous cannot be compared with each other, because they are not in species, but in genus; and genus is not one particular species, as the ultimate species which can no longer be divided into species; for genus is that which may be divided into many species. Hence, things which are similar in genus, and not similar in species, cannot be compared with each other. And besides this, says he, many things are latent, which are not indeed, but are thought to be comparable; as a right line and a periphery: because assuming line as a genus, and dividing it into these two, as having for their genus one certain nature, a right line and a periphery are thought to be comparable, as possessing a similar nature. After this, Aristotle adds, the deception which takes place about things homonymous, through which though all things that are homonymous are of a different nature, since they have a name alone common, but a different essence, and cannot be compared, yet at the same time some of them appear to be comparable: for in things homonymous, says he, there is a great difference: for some of them are very much distant, as those which originate casually; but others have a certain similitude, as images to their prototypes. Others again are near, either in genus or analogy: for things are near in genus which are said to subsist from one thing, and with reference to one thing; for a subsistence from something, and with reference to something, brings with it the imagination of genus. But things are homonymous in analogy, which preserve a similitude in definition and use, as principle: for a fountain, the heart, the monad and a point, and the ruler in a city, are called principles, though they naturally differ so much from each other. Things therefore which, being near and similar, are assumed as things of a kindred nature, are thought to be comparable with each other; as the much and the double of water and air.

requisite

requisite to compare that in which the passion is, or the passion itself? Here indeed it may be assumed that there is the same health, or neither more nor less, but similarly inherent. But if the passion is different, as, for instance, that which becomes white is changed in quality, and also that which acquires health;—in these there is nothing the same, nor equal, nor similar, so far as these make the species of change in quality; nor is there one change in quality only, as neither is there one lation. Hence it must be assumed how many species there are of change in quality, and how many species of lation. If, therefore, those things which are moved differ in species, viz. those things of which the motions are essential, and not according to accident;—if this be the case, the motions also will be specifically different. But if they differ in genus, the motions will be generically, and if in number, numerically different. Is it, however, necessary to look to passive quality, whether it be the same, or similar, if changes in quality are equally swift? or to that which is changed in quality (as, for instance, if so much of this is whitened, but so much of that), or to both? And change in quality, indeed, is the same or different, by reason of passive quality, if passive quality is the same or different: but change in quality is equal or unequal, if passive quality is equal or unequal. In generation also, and corruption, the same thing must be considered, viz. how generation is equally swift, if in an equal time the same thing and an individual are generated, as, for instance, man, but not animal; and how it is swifter, if a different thing is generated in an equal time: for we have not any two things in which there is diversity, as there is dissimilitude. And if essence is number, a greater or a lesser number is of the same species. But that which is common is anonymous, and also each; just as the passive quality which is more abundant, or exceeds, is said to be more; but the quantity is said to be greater¹.

CHAP.

¹ Aristotle having assigned the causes of things comparable and not comparable in lation and change of quality, omitting increase and diminution, passes on to generation and corruption. But he omits increase and diminution, as being known from what has been already said: for in

CHAPTER VI.

SINCE, however, that which moves always moves something, and in something, and as far as to something (but I say in something, because it moves in time; and as far as to something, because it moves through a certain quantity of length; for it always at the same time has moved and moves; so that the thing which has been moved will be a certain quantity, and in quantity): if, therefore, A is that which moves, but B that which is moved; the length through which it is moved C, and the time in which it is moved D;—in an equal time indeed, an equal force A will move the half of B through a length the double of C; but it will move through the length C in half the time D: for thus there will be proportion. And if the same force moves the same weight in this time through such a length, it will move through

things of a similar species, an equal addition taking place through the whole in an equal time, the increase is equally swift; and when a similar ablation takes place, the diminution also is equally swift; for the equal in increase and diminution is said to take place in the same way as in lation. This, however, Aristotle omits as evident. But he enquires in generation and corruption, how generation can be said to be equally swift with generation, and corruption with corruption? And as it were doubting and answering, he says, “Is generation, therefore, said to be equally swift, if in an equal time things the same in species, and individuals according to species, are generated, as for instance, man; but not the same thing according to genus, as, for instance, animal?” But generation is swifter when a different thing is generated in an equal time. Thus, in the generation of men, one thing will be a man, now generated in an equal, or the same time; but another, a man not yet generated, but a certain part of a man.

Aristotle likewise calls essence number; in so doing, either following the Pythagoreans, who called the principles of beings numbers, or because the generations and compositions of the elements and of all parts are perfected according to certain definite numbers. Hence none of the human arts which imitate the whole fabrication of things, can consist without number.

half

half the length in half the time; and half the force will move half the weight in an equal time, through an equal space. Thus, let the half of the force A be E, and let the half of the weight B be F; they will, therefore, be similarly affected, and the force will be analogous to the weight; so that they will move through an equal space in an equal time. And if E moves the weight F in the time D, through the length C, it is not necessary that E should move in an equal time, the double of the weight F, through half the length C. If, therefore, A will move the weight B in the time D through the length C; the half of A, i. e. E, will not on that account move the weight B in the time D; nor in a certain part of the time D will it move through a certain part of the length C, or which has the same ratio to the whole length C, as the force A to the force E: for, in short, it may happen that it will move through no part of the space; for, if the whole force moves through so much length, half the force will not on that account move through as much length, nor in any time; since, if this were admitted, one man might move a ship, if the force of those who draw it should be numerically divided, and should also be divided into the length through which all those that draw the ship move. Hence, the assertion of Zeno is not true, that any part whatever of a grain of millet emits a sound; for nothing hinders this from moving in no time the air, which the whole bushel, in falling, moved. Neither, therefore, will this part of the grain of millet move as great a part, if it is by itself, as it moved together with the whole; since neither is any part in the whole, unless in capacity. But if there are two things, and each of these moves each of the weights, through so much space in so much time, the conjoined forces also will move that which is composed from the weights, through an equal length, and in an equal time; for there is proportion². Is, therefore, this also the case in change according to quality and increase? For there is something which increases, and something which is increased. But in so much time, and according to so much magnitude, the one increases, and the other is increased. That also which changes in quality, and that which is changed in quality, in a similar manner

manner according to something, or according to some quantity, are more or less changed in quality; and also in so much time; the double in a double time, and in a double time the double; the half in half the time, or in half the time the half, or the double in an equal time. But if that which changes in quality or increases, either increases or changes so much in so much time, it is not necessary that the half also should

* Aristotle having observed that if a whole power moves a whole weight, through a certain interval in a certain time, it will not follow that the half of the power will move the whole weight in the same time, through half or a certain part of the interval; through this solves also the question of the Eleatic Zeno, which he asked Protagoras the sophist: for he said, "Inform me, O Protagoras, whether a grain of millet, in falling to the ground, will produce a sound, or a thousandth part of a grain of millet?" Protagoras answered, it would not. "Will then," said Zeno, "a bushel of millet, in falling to the ground, produce a sound or not?" Protagoras answered that a bushel would. "Is there not then," said Zeno, "a ratio of a bushel of millet to one grain, and to a thousandth part of one grain?" Protagoras answered, "There is." "Why will there not then," said Zeno, "be the same ratios of the sounds to each other? for as are the things which produce sound, so also are the sounds. But this being the case, if a bushel of millet produces a sound, one grain of millet, and also a thousandth part of a grain, will produce a sound." This argument of Zeno Aristotle solves by saying, that not every power of every magnitude is motive, nor in any time whatever. Hence, though a bushel of millet moves so much air, as when moved produces a sound, it is not necessary that a part of the bushel should be able to move as much air as will emit a sound. But such a portion of air or any weight as will move a part of a power when subsisting together with the whole power, if the part of the power is by itself, will not move such a portion of the weight. Thus, if every one of a hundred men, acting in conjunction, moves a hundredth part of a ship, it does not follow that one of these hundred, acting separate from the rest, will move a hundredth part of the ship; though it appears that such a portion of the weight is moved by each portion of the power, when the whole of it subsists at once. Aristotle assigns as the cause of this, that the parts are not in the whole in energy, but in capacity, when it exists as a whole; so that then the hundredth parts of the power will not move the hundredth parts of the weight: for that which is not in energy, neither moves, nor is moved in energy.

Simplicius adds, that it is worth while, however, to investigate the cause through which proportion is preserved in the half of a power for instance, and the half of a weight, but does not extend to the whole: for to say that the parts are in capacity and not in energy in the whole, does not assign the investigated cause. He solves the difficulty therefore with his usual acuteness, by observing, that not every power is naturally adapted to move every weight, neither through any least interval, nor in any greatest time; nor is every magnitude naturally adapted to produce a sound; but there is a certain boundary of the smallest power which, when divided, is no longer able to move either any weight or through any interval.

increase

increase or change in quality in half the time, and in half the time the half; but perhaps it will change in quality or increase in no part, as is the case in weight³.

³ Aristotle having shown that the proportions of movers and things moved proceed to a certain extent, and not as far as to the whole, afterwards enquires if this is also the case in other motions, viz. in alliation and increase; and he demonstrates that in these also symmetries and proportions proceed to a certain extent: for as in lation one thing is that which moves, and another that which is moved, so likewise one thing produces a change in quality, and another is changed in quality; and one thing increases, but another is increased. If, therefore, there are the same axioms in these as in local motion, the conclusions deduced from the axioms will also be the same.

THE

THE PHYSICS.

B O O K VIII¹.

CHAPTER I

WHETHER however was motion once generated, not having a subsistence before, and will it again perish, so that nothing will be moved? or was it neither generated nor will be corrupted, but always was and always will be, and is this present with things as something immortal and unceasing, being as it were a certain life to all things which have

¹ The last book of the Physics of Aristotle, which according to number is the eighth of the whole treatise, but, according to the order of the letters of the Greek alphabet, was inscribed by the Peripatetics *theta*, is full of many and beautiful theorems; for it terminates in the best manner the discussion of physical principles, demonstrating that the first natural motion is perpetual, and splendidly announcing the perpetuity of the world, through perpetuity of motion. And what is the greatest of all, it suspends the whole of the physical theory from the first philosophy, and demonstrates, that every natural essence is suspended from a supernatural cause; for it demonstrates, that every natural body is moved; that every thing which is moved, is moved by something; and that the primary mover, and which is properly so called, is an immoveable essence, possessing an invariable sameness of subsistence.

3 K

a natural

a natural² subsistence? That motion therefore is, all those assert who say any thing concerning nature, because they fabricate the world; and all these speculate concerning generation and corruption, which could not subsist unless motion had a being³. Those too, who assert that there are infinite worlds, and that some of these worlds are generated, and others corrupted, these say that motion always is: for it is

² It is evident that Aristotle does not here investigate concerning any one of sublunary motions, for each of these has a beginning and end. Nor does he now enquire whether there is one continued perpetual motion, which afterwards he discovers. But he universally investigates whether there was a time, when there was not any motion whatever, and when, in short, nothing was moved? or whether there will be a time when nothing will be moved? or whether these things are not indeed impossible, but motion always was, and always will be, so as to be present to beings as something immortal and unceasing? For motion does not rank among the number of things which subsist by themselves, but among those which belong to other things, that is to essences. Hence he says, "motion is present with things." But the words, "being as it were a certain life to all things which have a natural subsistence," are delivered with Aristotle's usual accuracy, in conformity to Plato. For we say, that those things live, which are inwardly moved from themselves. If, therefore, all natural things have in themselves a principle of motion, that is, nature, these also may be properly said to live, according to their inward aptitude to motion. For nature is the last of animals. Hence, it has its being in a subject natural body; and is rather, as it were, something living, than properly life; and the motion according to it, is an aptitude to motion, as we shall learn in this book.

³ But that Aristotle says agreeably to Plato, that inward natural motion is, as it were, a certain life, is evident from the following passage of the Tenth Book from Plato's Laws—"If we should see this (inward motion) subsisting in that which is earthly or aquatic, or fiery, either separate, or comingled, what should we denominate the passion in a thing of this kind? Do you ask me if we should say that a thing lives, when itself moves itself?" These things however are said concerning the self-motion properly so called, viz. the psychical, or belonging to soul. Hence Aristotle very properly says, that natural motion is as it were a certain life, and does not call it imply life, because soul is to nature, as life, properly so called, is to natural motion.

³ Aristotle says, that natural philosophers fabricate the world, not as if asserting that the world was generated in time, but as unfolding the composition of it through motion. For thus Democritus, Empedocles, and Anaxagoras fabricate the world; the two former asserting that atomic bodies and the four elements compose the world by their mixture and separation; but Anaxagoras contending that the *homoiomeriæ*, or *things of similar parts*, were separated from the mixture. The mingling also, the separation, and the secretion are certain motions. And all of them indeed speak concerning generation and corruption, which are not produced without motion; for local motions, alliations, augmentations, and diminutions, precede generations and corruptions.

necessary

necessary that the generations and corruptions of them should be accompanied with motion. But such as assert that there is one world, or that it is not always, these admit concerning motion what is conformable to that opinion⁴. If therefore it be possible, that once nothing

⁴ Those who asserted that there are worlds infinite in multitude, as Anaximander, Leucippus, and Democritus, and afterwards Epicurus, said that they are generated and corrupted infinitely, some of them always rising into being, and others always perishing. They also said, that motion is perpetual; since without motion, there is neither generation nor corruption. But of those who said there is only one world, some asserting that it is unbegotten in time and incorruptible, admitted that motion also is perpetual, as Plato and Aristotle. And those made the one world to be generable and corruptible, who assert indeed that the world always is, yet not always the same world, but that at a different time a different world is generated, according to certain temporal periods; as Anaximenes, Heraclitus, and Diogenes, and afterwards the Stoics. And it is evident that these also had the same opinion concerning motion; for when the world was, then also it is necessary that there should be motion. With respect to Empedocles indeed, if any one understands his words literally, when he sometimes calls the universe a sphere, and sometimes the world, it is evident that by surveying motion in the generation of the world, he supposes it to be always rising into being, and perishing: for he is of opinion, that the sphere and the world always are, and that motion is always in the world. But Anaxagoras, Archelaus, and Metrodorus Chius, appear to say, that the world was generated from a temporal beginning: and they also say that motion had a beginning. For things being at rest prior to the existence of time, they say that motion was generated by intellect, by which also the world was produced. These however appear, for the sake of doctrinal order, to have supposed a beginning of the fabrication of the world. And Anaxagoras clearly says, that intellect gave subsistence to the mundane separation from intelligible union, in which, as he says, all things subsisted together.

Alexander however says, that Plato asserts the world to have been produced in time, except that prior to the generation of the world, he says, there was a confused and disordered motion in things. That Plato, however, does not say that the world was generated from a temporal beginning, in such a manner as if time had a prior subsistence, is evident from his clearly saying, that time was generated together with the universe; so that neither must a confused and disordered motion be conceived to have subsisted according to Plato prior to the universe in time; but in order that he might indicate the disorder and confusion of a generated nature, subsisting according to its falling off from real being, and the order from the demiurgus, which always adorns it, he exhibits each of these in his discourse apart from one another.

Such then being the division of the opinions about the world, those who say that there are infinite worlds, so that while some are always rising into being, others are always perishing, assert that motion is perpetual; but those who say, that there is always one world, and that the same, or one world indeed, but not always the same, these also speak concerning motion, in a manner

thing was moved, it is necessary that this must have happened in a twofold respect ; for it must either be as Anaxagoras says, viz. that all things subsisting together, and being at rest in an infinite time, intellect produced, and separated, motion : or as Empedocles says, that things were alternately moved and at rest ; being moved indeed, when friendship made one from many things, or strife many from one ; and at rest in the intervening times. For he says as follows :

As far as one from many was produc'd,
Or many to the one their being ow'd,
So far these natures generated were,
Nor firm eternity in them abides.
But so far as for ever they are chang'd,
Nor cease at once t'exist, for ever they
Immoveable, alternately remain.

For by the words, “so far as they are changed,” we must conceive that he means hither and thither⁵. With respect to these things therefore,
we

adapted to their opinion about the world. For those who say that there is always one and the same world, likewise say that motion is perpetual. In like manner those who say that at different times there is a different world, when the corruption of one is followed by the generation of another, these also say, that motion is perpetual ; for the world always existing, it is necessary that motion should always exist.

⁵ If it be possible that there was a time when nothing was moved, it must necessarily either be so as that motion was not before, as Anaxagoras seems to say, rendering more clear the perpetually consubistent procession of secondary from primary natures, by an apparently temporal evolution. And there is the same mode of hypothesis, though some one should suppose motion not to exist hereafter ; on which account, this is not mentioned by Aristotle. But Anaxagoras appears to say, that all things subsisting together, and being at rest in an infinite past time, intellect the fabricator of the world being willing to separate the forms of things, which he calls *ἁμοιομερία*, inserted in them motion ; since corporeal separation could not be effected without motion. But the second mode is that of Empedocles, alternately making motion and rest ; for according to him the intelligible and sensible worlds are composed from the same four elements, viz. the former paradigmatically, and the latter iconically, or after the manner of an image. The producing cause also of the intelligible world, is according to him *friendship*, which through union forms it into a sphere, and which also he denominates God ; but the producing cause of the sensible
sensible

we must consider how they subsist: for to perceive the truth respecting them, not only contributes to the contemplation concerning nature, but also to the method which pertains to the first principle⁶. But we shall first begin from things which have been before defined by us in the Physics. We say, therefore, that motion is the perfect energy of that which is moveable, so far as it is moveable. Hence it is necessary that things should be present which are capable of being moved according

sensible world through separation is *strife*. In this world however, both union and separation may be seen, both of them indeed always, but one of these having dominion over the other, in different parts, or at different times. For Empedocles says, that here also *friendship* and *strife* alternately have dominion, in men and fishes, in beasts and birds.

But Aristotle, citing those verses of Empedocles in which he conceives him to have delivered motion and immobility, surveys motion according to generation; Empedocles clearly asserting, that the one is produced from the many, and the many from the one, and that so far as this is the case, they are generated, and do not possess stable eternity; for that motion subsists with generation, has been before observed. But Empedocles appears to have surveyed immobility according to the perpetual sameness of the mutation of the one and the many into each other; for this is the meaning of the following lines:

'But so far as for ever they are chang'd,
Nor cease at once t'exist, for ever they
Immoveable, alternately remain.

For so far as they perpetually change into each other, their mutation and motion are perpetual; but so far as changing hither and thither sensibles are generated, as, for instance, one from the many, or many from the one, and after the mutation they stop, sometimes so as to be one, and at other times so as to be many: so far as this is the case, always periodically returning after the mutation to the form of the one or the many, according to this period they are immoveable, until they again begin to change.

⁶ Aristotle here shows how the investigation of the perpetuity of motion is necessary. And in the first place it contributes to the physical theory. For if natural motion is perpetual, whether according to the continued, or according to never-failing mutation, it is evident, that natural things also are perpetual; some of them, indeed, through remaining the same in number, but others through the corruption of one being the generation of another. In the next place, it contributes to the ascent to the first principle, the contemplation of which no longer pertains to physics, but to the first philosophy. But it contributes to this ascent, because it will be shown that perpetual motion subsists from an immoveable cause, who is entirely exempt from a natural essence.

to

to each motion. And without the definition of motion every one must acknowledge it to be necessary, that what is able to be moved, should be moved according to each motion; as for instance, that what is capable of being changed in quality, should be changed in quality, and that what can be locally changed, should be borne along. Hence it is necessary that what is capable of being burnt, should be prior to that which is burnt; and that which has the power of burning, to that which burns⁷. It is necessary, therefore, either that these should have been once generated, there being a time when they were not, or that they should be perpetual. If, however, each of those things which can move and be moved, is generated, it is necessary that another mutation and motion should be generated prior to the mutation which is assumed; according to which that is generated, which is able to be moved, or to move. But if they always had a prior subsistence, motion not existing; an absurdity will immediately appear to the intelligent. And to those who proceed still further, this will be found to happen by a yet greater necessity. For if, since some things are moveable, and others motive, there is at any time something which first moves, and something which is first moved; and if at another time there is nothing which moves, but it is at rest, it is necessary that this should have been previously changed: for there was some cause of its rest, since rest is a privation

⁷ Aristotle, beginning to demonstrate the perpetuity of motion through many arguments, produces the first from the definition of motion, which he says he had before given in his *Physics*, calling the first five books of this work *Physics*, which also he frequently denominates, *Concerning Principles*. In the Third Book, therefore, he gives the definition of motion, which he now mentions; that it is the energy of that which is moveable, so far as it is moveable; viz. that which is moved remaining in capacity, as long as it is moved; for when it perfectly abandons a subsistence in capacity, and becomes in energy according to that with respect to which it is said to be in capacity, it is no longer moved, but stands still in energy. But it is always moved, so far as it has something in capacity, which proceeds to a subsistence in energy. From this conception of motion, Aristotle demonstrates, that motion is perpetual, not only that which is properly so called, but also the mutation under which generation and corruption subsist.

It must here, however, be observed, that it is true only of changeable motion, that what is naturally adapted to be moved, should necessarily subsist prior to motion, whether it is passively or actively moved.

of

of motion. So that there will be a mutation prior to the first mutation ; for some things move according to one motion, but others according to contrary motions. Thus fire heats indeed, but does not refrigerate ; but science appears to be one of things contrary. Hence there also something similar appears : for the cold heats being turned in a certain respect, and having departed ; just as he who possesses scientific knowledge, willingly errs, when he improperly uses science. Such things, however, as are able to act and suffer, or to move and to be moved, are not entirely able to effect this, but then only, when they subsist in this manner, and are near to each other. Hence, when they approach near, the one moves, and the other is moved ; and when they are so circumstanced, that the one is motive, and the other moveable. If, therefore, it was not always moved, it is evident that they were not so affected, as that the one could be moved, and the other could move ; but it was necessary that one of them should be changed. For it is necessary that this should happen in things which have a relative subsistence. Thus, if a thing not having been double is now double, if not both, at least one of them must have been changed. There will therefore be a certain mutation prior to the first⁸. To which may be added, how

⁸ Aristotle having shown, that though the mover and thing moved should be supposed to be generable, and though they should be supposed to be perpetual, if to move and to be moved are assumed from a beginning of time, it is necessary prior to the supposed beginning of motion, that another motion should be assumed, so that there will always be a mutation prior to that which appears to be the first. Hence motion is demonstrated to be perpetual, from not being able to assume a first motion. Having especially shown these things from that which is moved, he afterwards shows the same thing from that which moves. For that which is motive in capacity of any thing, if it is also about to move in energy, must necessarily itself first change, the moveable subject subsisting unchanged. And this indeed is immediately manifest. But he also demonstrates this according to another method. For previously assuming in capacity, that things which move with contrary motions, according to nature, the things moved remaining the same, must necessarily move with contrary motions, themselves being changed, afterwards, he assumes from division, that of things motive, some move with one simple motion, as fire heats, and snow refrigerates ; but others move with contrary motions ; as science moves the soul both to truth and falsehood, when he who possesses scientific knowledge willingly errs. Aristotle also observes that

how will there be prior and posterior time not having a subsistence ; or how will there be time motion not existing ? But if time is the number of motion, or a certain motion ; if time always is, it is necessary that motion also should be perpetual. Concerning time, however, all philosophers, except one, appear to accord, for they say that it is unbegotten. On this account Democritus shows, that it is impossible for all things to have been generated ; because time is unbegotten⁹. But Plato alone generates time ; for he says, that it was generated together with the universe, and that the universe is generated¹. If, therefore, it is impossible

that things which appear to move in one way only, produce contrary dispositions ; as that which is cold heats according to accident, by departing. Thus also, that which moves according to place, rests by *departing*, that is, by *becoming disposed in a different way*. So that all motive natures are not always able to move, nor are always able to be at rest ; but they are then able, when if it should so happen they approach near to moving, and depart from being at rest. Hence, when they are so circumstanced, that the one does not move, and the other is not moved, but afterwards the one moves, and the other is moved, a mutation is evidently produced, either about both, or about one of them ; for all relatives thus pass from a subsistence in capacity, to a subsistence in energy, either one or both of them being changed. But that which moves, and that which is moved, are relatives. Hence, again concluding the argument, he very properly adds, there will be therefore a certain mutation prior to the first. And again, the same questions must be asked concerning this mutation which is produced by that which moves, in order that it may be able to move in energy. For why again does it now move with that motion, and not before ?

⁹ All the philosophers, says Aristotle, except Plato, conceived time to be perpetual ; for he says, that it was generated together with the world. We shall shortly however learn how this is asserted by Plato. But Democritus believed time to be perpetual, because wishing to show that not all things are generated, he employed for this purpose, as a thing evident, that time is not begotten. Anaxagoras also, when he says “ all things *were* together,” indicates that there was time prior to the fabrication of the world ; for the verb *were* is temporal. He likewise says, that things being indistinct in an infinite past time, they were afterwards separated and adorned by intellect. Empedocles also, when he says, that there is perpetually an alternate dominion at one time of friendship, and at another of strife, evidently conceives time to be perpetual. But if time, motion also is perpetual.

¹ That which is generated, and that which is without generation, being multifariously predicated, Plato using them in one way, and Aristotle in another, they appear to oppose, though in reality they do not dissent from each other ; for that is said to be generated, which formerly was not,

impossible for time to be, and to be conceived without *the now*, but *the now* is a certain middle, possessing at the same time the beginning and the
the

not, and afterwards is, and which has its subsistence in a part of time; according to which signification Aristotle uses the term *generated*, dividing it in opposition to that which is perpetual. But there is another signification of that which is generated, according to which it is divided in opposition to *true being*; for having its being *in becoming to be*, it subsists from another cause, and not from itself. Hence, through both these; viz. through its opposition to true being, the whole of which subsists at once, and to that which is self-subsistent, it is said to be generated, though it should be perpetual; and according to this signification, Plato calls every sensible and corporeal nature generated. For every thing corporeal being divulsed, is neither able to give subsistence to itself, nor to be at once a collected whole, neither according to essence, nor according to the being of essence. And it is evident, that he immediately opposes that which is generated to being, when he says in the *Timæus*, “we must enquire what that is which is always being, but is without generation; and what that is which is generated indeed, but is never being.” According to this signification of that which is generated, and not according to that used by Aristotle, Plato says, that the world and time are generated. Hence, enquiring concerning the world, whether it always was, having no beginning of generation, or whether it was generated, originating from a certain beginning, he replies, “It was generated, for it is visible and tangible, and has a body; but all such things are sensible, and sensibles being apprehended by opinion in conjunction with sense, appear to be generated and generable.” Here we may see, that Plato assigning the cause of the world being generated, does not say, that not having an existence before, it afterwards was; but that it is visible and tangible, and has a body. He was also of opinion, that time was generated; for he says, that it was generated together with the universe. Nor does he assign as the cause of this, time not existing before but afterwards; for he says, that it is perpetual, though not in such a manner as eternity, but because it is the image of eternity, and subsists according to motion. Plato therefore in the *Timæus*, after the animation of a corporeal nature, says, “As soon as the generating father understood that this generated image of the perpetual gods moved and lived, he was delighted, and in consequence of this delight, considered how he might fabricate it still more similar to its paradigm. Hence, as that is an eternal animal, he endeavoured to render the universe such to the utmost of his ability. The nature indeed of the animal, its paradigm, is eternal, and this it is impossible to adapt perfectly to a generated effect. Hence he determined by a dianoetic energy, to produce a certain moveable image of eternity; and thus while he was adorning and distributing the universe, he at the same time formed an eternal image flowing according to number of eternity abiding in one, and which receives from us the appellation of time.”

Here we may observe, that the demiurgus being willing that the universe, which is itself an image, should be as much as possible perpetual, imparted to it time, the image of eternity; in order, as he says, that the world might be as much as possible similar to its paradigm. “For

the end, the beginning indeed of the future time, and the end of the past; it is necessary that time should always be. For the extremity of the last time which is assumed will be in some *now*; since nothing can be assumed in time, besides *the now*. So that since *the now* is both a beginning and an end, it is necessary that time should always be, on each side of *the now*. But if time, it is evident that motion also must

its paradigm," says he, "is through all eternity being; but the world, through the whole of time was, and is, and will be." If therefore the world was, and is, and will be, through the whole of time, it is evidently perpetual; not indeed in the same manner as eternity; for the eternal has the whole of its essence, power and energy subsisting at once, because eternity possesses *the ever* in profound union with being. But time and that which is temporal, having their being in becoming to be, evolve the all-perfect nature of eternity and the eternal, according to motion and generation. If, therefore, Plato says, that the universe participates of perpetuity as much as possible, through time, it is evident, that time according to him is perpetual, though not in the same manner as eternity. Let no one therefore looking at the words fancy that these philosophers oppose each other. For if, indeed, adopting the same significations of that which is generated, and that which is without generation, the one said, that time and the world are generated, but the other, that they are without generation, they would speak contrary to each other; but now they accord in their conceptions. For if Aristotle calls time the number of motion, but Plato an eternal image proceeding according to number, what difference will there be in these conceptions, since they even agree in the appellations which they employ? If also Aristotle says, that time is perpetual, but Plato, that the world becomes perpetual through the participation of time; and if Plato clearly says, that the world is generated as being corporeal, but time, as having its being in motion and becoming to be, both which Aristotle also acknowledges, how can we any longer think that what is generated according to Plato, contradicts that which is without generation, according to Aristotle, in conceptions, and not in words only.

Why then, it may be said, does Aristotle say, that all philosophers except Plato assert time to be without generation? We reply, because Plato alone says, that time was generated, and adds the cause of its being generated; for it was generated together with the universe. But why does he also say that the universe was generated? Because it was usual with the ancients to contradict that which is apparent, through a contempt of the knowledge of the more superficial. Since, therefore, the term *generated* is more usually asserted of things which formerly were not, and afterwards are, on this account Aristotle, contradicting this signification of the word, appears indeed to correct Plato who calls time generated, but in reality does not correct Plato, but those who adapt this signification of the word generated to time and the world.

necessarily

necessarily always exist; since time is a certain passion of motion². The same reasoning likewise will prove, that motion is incorruptible. For as, if it be

² The demonstration of what is now said by Aristotle, is as follows: Time is and is conceived according to *the now*; for of time *the now* alone has a subsistence, because the past no longer is, and the future is not yet. But time which subsists according to *the now*, subsists according to a medium which is the beginning of the future time, and the end of the past. And that which subsists according to such a medium, as that there is always something prior and posterior to that which is assumed, is a thing of this kind. For that which may be hypothetically adduced as the last *now*, is itself a middle, and has time posterior to itself; so that there is neither a last *now*, nor a last time. For if there is a last time, there is, also a last *now*, if *the now* is the boundary of time, just as a point is of a line. In a similar manner, neither has time a beginning; for *the now* which appears to be in the beginning, is itself also a middle; since as it is the beginning of the future, so it is the end of the past. Time therefore is perpetual, neither having a beginning nor an end. But if time always is, motion also will evidently be perpetual; since time is the number or passion of motion. And as it is not possible to assume motion without time, so neither time without motion. Such then is the exposition of the interpreters of Aristotle, of what is here said by him intellectually and divinely, in order to demonstrate that motion is perpetual.

It deserves here to be noticed, that a very considerable part of the Commentary of Simplicius, on this Eighth Book of the Physics, consists of a refutation of the arguments of John the Grammarian, who was also called Philoponus, against Aristotle's demonstration of the perpetuity of time and the world. This Philoponus was a Christian, who frequented the schools of the philosophers, and particularly that of the celebrated Ammonius, one of the most illustrious of the disciples of Proclus. Without understanding, however, the philosophy of Plato and Aristotle, he had the presumption to write prolix commentaries on the works of the latter, mingling with his own crude and erroneous conceptions, the invaluable elucidations of Ammonius. Unfortunately too, they are so mingled, that no one but an adept in that philosophy, can distinguish the one from the other, and separate the dross from the gold. Simplicius, among many excellent observations, with which his confutation of the sophistical reasoning of this grammarian* abounds, has the following: *εἰ δὲ τὸν τῶν Ἰσραηλίων νομοθέτην ἐνδεικνύται λέγοντα, ἐν ἀρχῇ ἐποίησεν ὁ θεὸς τὸν οὐρανὸν καὶ τὴν γῆν. ἡ δὲ γῆ ἦν ἀορατὸς καὶ ἀκατασκεύαστος, καὶ σκοτὸς ἔπλην τῆς ἀβύσσου, καὶ πνεῦμα θεοῦ ἐπεφερέτο ἐπ' αὐτὴν τοῦ ὕδατος. εἶτα ποιήσας αὐτὸν τὸ φῶς, καὶ διαχωρίσας αὐτὰ μεσσην τοῦ φῶτος, καὶ ἀνα μεσσην τοῦ σκοτοῦς, ἐπηγάγει, καὶ ἐκάλεσεν ὁ θεὸς τὸ φῶς ἡμέραν, καὶ τὸ σκοτὸς νύκτα· καὶ ἐγένετο ἑσπέρα καὶ ἐγένετο πρωὶ ἡμέρα μία. εἰ οὖν ταυτὴν τοῦ χρόνου νομίζει γενέσθαι τὴν ἀπὸ χρόνου, ἐπισημαίνει ὅτι μωδίκῃ τις ἐστὶν παραδοσις, καὶ ἀπὸ μύθων αἰγυπτίων εἰληυσμένη. ἐπεὶ πῶς εἶχε λόγον τὸν ἅλιον τὸν τῆς ἡμέρας αἰτίον, ὡς (lege ὄν) καὶ αὐτὸς ὁ Μοῦσης φησὶ τὴν τέταρτην τῶν ἡμερῶν γεγενῆσθαι;* i. e. "But if he indicates the legislator of the Jews, saying, "In the beginning God made the heaven and the earth, and the earth was invisible and

* Simplicius justly calls him *τις τῶν τελευτών*, i. e. *one of those who are agitated with a furious spirit*.

be admitted that motion was generated, it will happen that there was a certain mutation prior to the first ; so here it will happen that there is a mutation posterior to the last. For a thing will not at the same time cease to be moveable and to be moved : or to be capable of being burnt, and to be burnt (for that may be capable of being burnt, which is not burnt) nor to be motive and to move. But it will be requisite, that what is capable of being corrupted, should have been corrupted, when it is corrupted : and again afterwards, that which has the power of corrupting this. For corruption is a certain mutation. If, therefore, these things are impossible, it is evident that motion is perpetual, and not sometimes in existence, and sometimes not ³. For thus to speak rather resembles
a fiction

unadorned, and darkness was upon the abyss, and the spirit of God was carried on the water." Afterwards divinity having made light, and separated the light from the darkness, he adds, " And God called the light day, and the darkness night, and the evening and the morning were one day." If, therefore, he (John the Grammarian) conceives this generation of time to be temporal, let him understand, that this is a certain fabulous tradition, derived from the fables of the Egyptians. For how could the sun be the cause of day, when Moses says, it was created on the fourth day ?"

Indeed, unless the account given by Moses of the origin of things, and the fall of man, is conceived to be a fabulous tradition, in which the concealed is very different from the apparent meaning, it is a narration far more idle than the history of Tom Thumb !

³ Aristotle having proposed to show that motion was not once generated, not having a prior existence, nor can be corrupted so as not to exist afterwards, uses two arguments, one from the definition of motion, and the other from that of time, exhibiting from this the object of investigation in a twofold respect ; viz. from the prior and posterior, and from *the now* which always exists in the middle of the past and the future. In both the arguments, however, from time he demonstrates both these ; viz. that time was not, when motion was not ; and that time will not be, when there is no longer any motion. But in the argument derived from definition, having demonstrated that motion is unbegotten, and that time was not when motion was not, passing on to the argument derived from time, he now adds, what is wanting to the argument from definition, viz. that motion is incorruptible. For as in the former arguments he demonstrated that motion is without generation, in consequence of that which is capable of being moved always subsisting prior to motion, so here he demonstrates it to be incorruptible, through that which is capable of being moved always subsisting together with motion. For this is the meaning of the words, " A thing will not at the same time cease to be moveable, and to be moved, nor to be motive and to move." For if a thing should cease to move, or to be moved, and should be immediately corrupted, the capability of being moved, will

a fiction than any thing else ;⁴ as also to assert, that it is thus naturally adapted, and that it is necessary to consider this as a principle, which Empedocles appears to have asserted, who says, that it is necessarily inherent in things, that friendship and strife should alternately govern and move, and that they should be at rest in the intermediate time. Perhaps also those who make one principle, as Anaxagoras, would assert the same thing. Nothing however among those things which consist from and according to nature, is deprived of order : for nature is to all things the cause of order. But the infinite has no ratio to the infinite ; and all order is ratio. That any thing however should have been at rest for an infinite time, and afterwards should have been once moved ; and that with respect to this there should be no difference, why it happened now rather than before, and again, that it should have no order,—this is no longer the work of nature. For that which subsists by nature either subsists simply, and not differently at different times (as fire is naturally carried upwards, and not at one time and at another not), or it has a ratio which is not simple⁵. Hence it is better to say
with

will not remain after the motion. But if when not capable of being moved, it is capable of being at rest, because nature is the principle of rest as well as of motion, if any thing ceases to be moved, it will not then also cease to be moveable, when motion is assumed as that which is properly motion, and not as the corruption of that which may be moved. If therefore when ceasing to be moved, it remains moveable, it may evidently be again moved, and that will not be the last motion with which it ceased to be moved.

⁴ Aristotle having demonstrated that motion is perpetual through the perpetuity of time, and that it is impossible to suppose motion or time to be generable or corruptible, now says, that from this also, motion and time are shown to be perpetual : since to assert that motion or time once were, and once were not, rather resembles a fiction than any thing else. For what can be more fictitious than to say, that neither motion nor time, formerly existing, were once generated ? Since why they were then generated, and not before or afterwards, is more similar to a fiction. It may also perhaps be said to be fictitious to assert that there was a time when there was no time. But he who says, that once there was time, and once there was no time, says this. The same fiction also takes place in motion ; since time is the number of motion. For if time was when motion was not, but when motion is not, neither is there time, he who says this, evidently says nothing else, than that there was a time when there was no time.

⁵ Aristotle having said that to assert, that motion at one time was, and at another time was not, resembles

with Empedocles, and any other who may assert the same thing, that the universe is alternately at rest and in motion : for now a thing of this kind

resembles a fiction, because the cause of this cannot be assigned, afterwards says, that to assert this is naturally adapted to be so, and to assign this as a principle and cause, is similarly fictitious. This however Empedocles appears to assert, when he says, it is necessarily inherent in things that friendship and strife should alternately govern : and if this be the case, that they should be at rest in the intermediate time. For rest is between contrary motions. But Eudemus considers immobility as subsisting in the dominion of friendship according to the sphere. For when all things were mingled together, Empedocles says,

Then, nor the sun's swift members splendid shone,
But in dense harmony establish'd lay
Conceal'd; eternity's revolving sphere
Rejoicing round its centre firm to roll.

But strife again beginning to have dominion, then again motion was produced in the sphere.

Then all the members of the God appear'd.

What difference is there, however, between asserting that this was naturally adapted to be the case, and saying that it was from necessity, without adding the cause? But these things Empedocles appears to assert, when he says,

By turns they govern in revolving time.

He also asserts, that necessity is the cause of generated natures,

Of Gods' necessity's the antient seal,
For ever stamp'd with oaths of various forms.

For through necessity and these oaths, he says, strife and friendship alternately have dominion. But Empedocles speaks of the dominion of strife, as follows :

When mighty strife was in the members hid,
It to the honors rose of perfect time,
And oaths in mutual turns for them remain'd.

To assert these things without assigning a cause, is nothing else, says Aristotle, than to say, that it is naturally adapted to be so. Perhaps too, says he, Anaxagoras asserts intellect to be a similar principle

kind possesses a certain order. He however who asserts this, ought also to assign the cause of what he says, and not adopt any axiom without a reason, nor expect that it should be granted him; but he should either employ induction or demonstration. For the things which Empedocles supposes are not causes. Nor is this the essence of friendship or strife; but it is the province of the former to conjoin, and of the latter to separate. If also it is added, that they have dominion *alternately*, it should be shown in what particulars this happens; as for instance, because there is something which unites men, viz. friendship, and enemies avoid each other. For this is also supposed to be in the universe, because it thus appears to be in certain things. His assertion likewise, that this happens in equal times, requires a certain reason. And in short, to think that this is a sufficient principle, viz. that it either always is, or is always generated, this is not right; to which Democritus refers natural causes, because they were thus, and prior to this, generated. But he does not think that the principle of eternity should be investigated, in some things speaking rightly; but because he asserts this of all things, not rightly. For a triangle has always angles equal to two right, but at the same time, there is a certain other cause of this perpetuity. Of principles, however, there is no other cause, since they are eternal⁶. That there neither was therefore, nor will be a time, when motion was not, or will not be, has been thus far shown.

CHAP.

principle of motion, the prior homoiomeriæ being at rest, and not adding the cause through which intellect then moved; though in nature, and things produced by nature, the causeless and the disordered, are especially to be avoided.

⁶ Aristotle says, it is not right to assume as an indemonstrable principle, that a thing is always and every where. For many things are indeed perpetual, and are so every where, yet they are not principles and things indemonstrable, but such things have certain causes and principles of their being. Thus in mathematics, that the three inward angles of a triangle are equal to two right, is indeed a thing perpetual, and this is the case in every triangle, yet it is not on this account an indemonstrable principle; but there is a certain principle of this, from which it is demonstrated. In like manner, that summer and winter alternately succeed each other, is a thing perpetual, and is so every where, yet it is not a principle, but there are principles and causes of a motion of this kind. Hence Aristotle does not admit Democritus referring natural causes to this principle,

CHAPTER II.

BUT it is not difficult to solve the arguments which oppose what we have said. The following considerations may indeed induce some to think that motion once was, when before it had not any subsistence. First, because no mutation is perpetual: for all mutation is naturally adapted to proceed from something into something; so that it is necessary there should be a boundary of all mutation, viz. the contraries in which it is produced, and that nothing should be moved to infinity. Farther still, we see that a thing may be moved, which neither is moved, nor possesses in itself any motion; as in a thing inanimate, which when neither any part nor the whole of it is moved, but is at rest, is sometimes moved. But it is fit that a thing should either always, or

principle, because they were formerly thus produced, and no longer thinking fit to investigate the principle and cause of things which are always generated in a similar manner; nor perceiving that in things in which the perpetual is a self-credible and indemonstrable principle, in these it is right not to investigate the cause of their always subsisting in this manner, but that in things in which the perpetual is not a principle, in these principles and causes must be assigned. For not every thing perpetual is a principle, though principle is entirely perpetual; since the perpetual is more extended than principle. Hence a geometrician being asked to demonstrate that the three inward angles of a triangle are equal to two right, is not satisfied with saying, that this is a perpetual thing, a principle, and indemonstrable, but he adds the demonstration. Democritus therefore must not think it a sufficient cause of the congress and connexion of the atoms, that things generated were always thus generated. It has, however, been frequently observed, that Empedocles and Anaxagoras assert, that the intelligible world is united, and the sensible world separated. But both these worlds having a perpetual subsistence, they assumed mutation according to time, for the purpose of indicating the order of these worlds, and of the generation of the sensible from the intelligible world. Empedocles also signified by this, the conversion of the sensible to the intelligible universe.

never

never be moved, if motion is not generated, when it had not any subsistence before. A thing of this kind, however, is much more evident in animated natures. For sometimes when there is no motion in us, but we are at rest, at the same time we are sometimes moved, and the principle of motion is sometimes ingenerated in us, from ourselves, though nothing external moves us. For we do not similarly perceive this in things inanimate, but something else which is external always moves them. But we say that an animal moves itself. So that if at any time the whole is at rest, motion can be produced from itself, in the immoveable, and not externally. If therefore this can be effected in an animal, what should hinder but that it may also happen in the universe? For if it takes place in the microcosm, it may likewise in the great world; and if in the world, also in the infinite, if it be possible for the whole infinite to be moved, and be at rest⁷.

Of these arguments, however, the first, that there is not always one and the same motion in number, which tends to opposites, is rightly asserted. For this perhaps is necessary, if the motion of one and the same thing cannot always be one and the same in number; I say for instance, whether there is one and the same sound of one chord, or always another, when the chord subsists, and is moved similarly. At the same time, however, in whatever manner this may take place, nothing hinders but that there may be some motion which is one and the same, because it is continued and eternal. This however will be more manifest from what will hereafter follow. But there is no absurdity in admitting that a thing may be moved which was not moved before, if that which moves externally is at one time present, and at

⁷ By the infinite here, Aristotle either alludes to the infinite of Anaxagoras, because the mixture from an infinity of similar parts must necessarily be infinite; or to the infinite of Anaximenes and Anaximander; and in short, to those philosophers who supposed one element infinite in magnitude. Or perhaps he alludes to both these. But he adds, "if it be possible for the whole infinite to be moved, and to be at rest," because it has been shown, that the infinite according to magnitude cannot be moved with the local motion, with which self-motive natures are moved.

another not. But how this can take place must be investigated. I say then it must take place in such a manner, that the same thing may be at one time moved, and at another not, by the same thing which has the power of moving. For he who says this, doubts nothing else, than why some things are not always at rest, and others in motion. But the third argument may especially appear to be dubious, being that which happens in animated natures, as if motion was ingenerated in these, when it was not inherent before. For that which was before at rest afterwards walks, nothing external moving, as it appears. This however is false: for we always see something connascent moved in an animal. The animal itself, however, is not the cause of this motion, but perhaps that which surrounds it. But we say, that the animal moves itself, not according to every motion, but that which is according to place. Nothing therefore hinders, but perhaps it is more necessary, that many motions should be generated in the body, by that which surrounds it⁸; that some of these should be produced by the dianoetic
etic

⁸ Aristotle having solved the second objection, from things inanimate and which are moved externally, by showing that there is no absurdity in admitting that they are sometimes moved through the presence of the mover and thing which may be moved, and having shown that another motion subsists prior to that which is now produced, and that things are sometimes at rest, when the mover is not present, now coming to the third objection, and clearly stating it, that an animated nature which was before at rest afterwards walks, nothing externally moving it, as it appears, he evinces that the motion is generated. Asserting also of this objection, that it excites doubt more than the rest, he solves it by saying it is false to suppose that animals which were before at rest are moved by themselves, nothing externally moving them. For we always see, says he, something connascent moved in an animal, that is, something which is physically present with it. For it is either heated or refrigerated, or becomes dry or moist, or is passively changed, according to some other physical quality. Perhaps also, Simplicius adds, Aristotle calls things physically connascent, what those posterior to him denominated *powers*; such as the powers of attracting, restraining, altering, and separating. For these always energize in the bodies of animated natures, and especially in those of animals which do not possess these according to the self-motive characteristic. Nothing therefore hinders, says he, or rather it is perhaps necessary that many of these physical motions should be ingenerated in the body from the motion of that which surrounds it; but that some of these should at one time be moved by the dianoetic power, and at another time by appetite. For the dianoetic power knowing the
passion

etic power or appetite ; and that this should move the whole animal. Just as it happens in sleep : for then no sensitive motion being inherent, though a certain motion is inherent, animals are again excited. These things, however, will be manifest from what follows.

CHAPTER III.

BUT the beginning of the consideration will be that which was the beginning of the doubt already mentioned, viz. why some things are at one time moved and at another again at rest. It is necessary, therefore, either that all things should always be at rest ; or that all things should always be moved ; or that some things should be moved, and others be at rest. And again, of these it is necessary, either that those things which are moved should always be moved, and those things which are at rest always be at rest ; or that all

passion through sense, deliberates about it, whether it be proper to decline or endure it, and thus it locally moves the animal which appears to be moved from itself. But sometimes, when the co-sensation becomes pleasant or painful, appetite and declination are moved, as in irrational animals ; and these powers locally move the animal.

But that there is always a certain motion in animals, produced not from themselves, but from that which surrounds them, and which becomes the cause of local motion to animals, may be inferred from what happens in sleep : for those who are asleep, though neither locally moved nor energizing according to the senses, which are the peculiarities of animals, so far as animals, yet at the same time are moved with many motions, viz. with those of respiration, and others which are connascent, and with the motions of concoction. They are also moved with the motions of the phantasy, and with the passive motions arising from that which surrounds them ; something in them being heated or refrigerated. But when the vapours arising from food, collectively occupy the brain, or the heart, and produce refrigeration, then they become the cause of sleep. And when they are heated, separated, and attenuated, they cause the animal to awake, as Aristotle shows in his treatise on sleep. Hence the animal again sensibly perceives, and is locally moved, receiving the principle of this motion from certain motions with which it was excited when asleep.

things should be naturally adapted to be similarly moved, and be at rest; or that which remains, and which is the third thing, is necessary; for it happens that some things are always immoveable, that some are always moved, and that others participate of both these, which is what we assert to be the case: for this contains a solution of all the doubts, and is the end to us of this treatise⁹. To assert, therefore, that all things are at rest, and to investigate the reason of this, laying aside sense, is a certain infirmity of the dianoetic power. The doubt likewise is about a certain whole, and not about a part. Nor is it only adverse to the natural philosopher, but likewise to all the sciences, as I may say, and to all opinions, because all of them use motion.

Again, as the objections about principles, for instance, in mathematical discussions, are of no consequence to the mathematician, and in a similar manner also in other things; so neither is the objection about what is now said, of any consequence to the natural philoso-

⁹ A triple division of the habitude of things to motion and rest may be made as follows: for since these are three, to be always moved, to be always at rest, and in the third place, to be sometimes moved and sometimes at rest, the habitudes are triply divided into three, viz. either all things have the same condition of subsistence, or they receive a twofold division, or they are triply divided into beginnings, middles, and end: for what division can there be beyond this? And if all things indeed have the same condition of being, either all things are always at rest, or all things are always moved, or all things are sometimes at rest, and sometimes are moved alternately. But if things receive a twofold division, either some things are always at rest, and some things are always moved; or some things indeed are always at rest, but others are sometimes moved and sometimes at rest; or on the contrary, some things are always moved, but others are sometimes moved, and sometimes at rest; so that this section also is triply divided. But the third and true argument is that which is called *Sorites*, consisting of many propositions collected together; for if things are triply divided, it is necessary that some things should always be at rest, but others always be moved, and that some things should sometimes be at rest, and sometimes be moved. And besides these nine sections, there is not any other habitude of things to motion and rest; since it is necessary they should be moved or be at rest, or at the same time be moved, and be at rest. But Aristotle more properly asserts the being immoveable of things which are never moved, than the being at rest: for rest being a privation of motion, belongs to things which are naturally adapted to be moved. And thus the division becomes contradictory, being distributed into things which are always moved, and into things which are never moved.

pher;

pher; for the hypothesis with him is, that nature is a principle of motion¹. To assert, however, that all things are moved is nearly false indeed, but is less foreign from this method: for in physics it is supposed that nature is a principle, as of motion, so likewise of rest: at the same time, however, motion is a natural thing. Some also assert that it is not true that some things are moved, and others not, but that all things are moved, and always; but that this is concealed from our sense. To these, however, though they do not define what the motion is of which they speak, or whether they speak of all motions, it is not difficult to reply: for things can neither be increased, nor diminished continually; but there is also a medium. This assertion, however, is similar to that in which it is said that stones are worn away by a drop of water, and are divided by plants germinating from them; for it does not follow that if a drop of water² rubs off, or carries away a certain portion of the stone, it, prior to this, rubbed off or carried away the half of such a portion in half the time; but as in drawing a ship along, in

¹ Aristotle having divided things according to motion and immobility, runs through all the members that are to be reprobated of the division, so elegantly, as to again resume the argument, because the method itself proceeding in conjunction with accurate demonstration, affords, as he says, a solution of the subjects of doubt, and gives the most excellent end to the physical discussion; for it leads back the last to the first of natural things, and collects these as into a summit into the supernatural principles of beings.

² To assert, says Aristotle, that all things are always moved, but that this is concealed from our sense, is similar to the assertion that stones are worn away by a drop of water; "A drop of rain by continual trickling makes a cavity in a stone," says Choerilus, (*πέτρην κοιλαινει ρανις υδατος; ενδελεχειν*) or are divided by plants germinating from them. Just as if the stone was diminished by every drop, the gradual diminution of it being unapparent to us. And in a similar manner from the germination of a fig in the fracture of a stone, which in the whole of the former time happened to have a fracture gradually made; the divulsion through taking place by degrees being concealed from our sense: for in these instances there is not a continual diminution and divulsion of the stone, but they resemble the drawing of a ship; for here a hundred men draw it along at once, but each does not shake it as he proceeds. Thus also, so many drops of water carry away so much of the stone, but one drop does not carry away any part of it; for though the magnitude which is taken away from the stone is divisible, yet it is not necessary that each drop of water should carry away such a part of the stone as it is of all the water: for the whole is taken away by all the drops.

like

like manner so many drops move so much of the stone. A part of them, however, does not move so much in any time. Hence, that which is taken away, is divided indeed into many parts, but no one of them is moved separately, but they are all moved together. It is evident, therefore, that it is not necessary that something should always depart, because the diminution may be divided to infinity, but the whole will some time or other depart. The like also takes place in any kind whatever of alliation : for it does not follow, that if that which can be changed in quality may be infinitely divided, on this account, alliation also may be divided to infinity ; but it is frequently produced collectively, as in the instance of concretion.

Farther still, when any one has been ill, it is necessary that there should have been a time when he recovered his health, and that he should not have been changed in the end of the time. It is also necessary that he should have been changed into health, and not into any thing else ; so that to assert that a thing is continually changed in quality, is to doubt about things which are very apparent ; for alliation is into that which is contrary. And a stone neither becomes harder nor softer. With respect to lation, it is admirable if a stone is latent which is carried downwards, or which remains on the earth. Again, earth, and each of the other elements necessarily remain in their proper places, and are moved from these by violence. If, therefore, some of these are in their proper places, it is necessary that neither should all things be locally moved. That it is impossible therefore, either that all things should be always moved, or that all things should be always at rest, may be believed from these and other arguments of a similar kind. Neither, likewise, is it possible that some things should always be at rest, but others always be moved ; and that nothing should at one time be at rest, and at another time be moved. But it must be said that this is impossible, as well in things which have been before mentioned, as in these ; for we see that the mutations, already enumerated, take place in the same things. Besides, he who doubts of this opposes the phænomena ;

phænomena ; for there will neither be increase³, nor violent motion, unless that which was before at rest is moved contrary to nature. This assertion, therefore, subverts generation and corruption. To be moved likewise, nearly appears to all men to be nothing else than for something to be generated and corrupted : for it becomes that, or in that, into which it is changed ; but not that from which it is changed, or from whence it is corrupted. Hence it is evident, that some things are moved, and others are sometimes at rest. But to think fit to assert that all things are sometimes moved and sometimes at rest, this must be conjoined to the reasons above adduced.

We must, however, again begin from the things now defined, and from which also we begun before ; for either all things are at rest, or all things are moved ; or some things are at rest, but others are moved. And if some things are at rest, but others are moved, it is necessary, either that all things should sometimes be at rest, and sometimes be moved ; or that some things should always be at rest, and others always be moved ; or that some things should sometimes be at rest, and sometimes be moved. That it is not possible, therefore, that all things can be at rest, has been said before, and we shall also now assert ; for if it were in reality so as some say, viz. that being is infinite and immovable, yet this is not apparent to sense, but many beings are moved. If, therefore, there is false opinion, or in short, opinion, there is also motion. This is also the case if there is imagination⁴, though at one time it may appear to subsist in this manner, and at another differently : for

³ There will not be increase, unless that which was previously at rest, is moved contrary to nature : for the nutriment being before at rest, and afterwards being changed in quality, is carried to the upward places and obliquely, to which it is not naturally adapted to be carried, and being assimilated becomes conglutinated. When also the influx is greater than the efflux, it causes that which receives it to be increased.

⁴ If there is false opinion and imagination, it is evident that there is motion ; for imagination is of sense according to energy, opinion is the assent of imagination, and sense is motion, and subsists through motion. Aristotle, therefore, having said, “if there is false opinion,” adds, “or in short, opinion :” for false opinion and imagination are not motions, because they are false, since every imagination and opinion is a motion,

imagination

imagination and opinion appear to be certain motions. To consider, however, about these things, and to investigate a reason in things in which we are better affected than to require a reason, is nothing else than to judge badly of the better and the worse, of that which is credible, and of that which is not credible; and of principle, and that which is not a principle. In a similar manner, it is impossible that all things should be moved; or that some things should always be moved, and others always be at rest; for one credible argument is sufficient against all these; since we see some things at one time in motion, and at another at rest. Hence it is evident, that it is similarly impossible for all things to be at rest, and for all things to be moved continually, as it is for some things to be always moved, and others to be always at rest. It remains, therefore, to consider, whether all things are of such a kind as to be moved and to be at rest, or whether some things subsist in this manner, but some are always at rest, and some are always moved: for this must be shown by us.

CHAPTER IV.

OF things, therefore, which move and are moved, some move and are moved according to accident; but others essentially. According to accident indeed, such as are inherent in movers, or the things moved, and such as have the relation of a part. But such things move and are moved essentially, as move and are moved, not because they are inherent in that which moves or is moved, nor because a certain part of them moves or is moved. Of those things, however, which are moved essentially, some are moved by themselves, and others by something else; and some by nature, but others by violence and contrary to nature: for that which is moved by itself is moved by nature, as, for instance, every animal; since an animal is moved by itself. But of such things as contain in themselves the principle of motion, of these
we

we say, that they are moved by nature. Hence, the whole animal indeed, itself moves itself by nature; but the body happens to be moved by, and contrary to nature: for it is of consequence with what kind of motion it may happen to be moved, and from what element it consists. Of those things also which are moved by something else, some are moved by nature, but others contrary to nature. Contrary to nature, indeed, as terrestrial things when moved upward, and fire downward. Again, the parts of animals are frequently moved contrary to nature, on account of positions and modes of motion. And it is especially obvious that a thing which is moved, is moved by something, in things which are moved contrary to nature, in consequence of the being moved by something else being evident. But after things which are moved contrary to nature, among such as are moved according to nature, those are more manifest which are moved by themselves, as animals; for this is not immanifest, whether they are moved by something, but the obscurity consists in the manner in which it is necessary to distinguish the mover, and the thing moved: for it seems that, as in ships, and things which have not a natural subsistence, so likewise in animals, that which moves and that which is moved are divided from each other, and that the whole thus moves itself⁵. But it may be especially doubted concerning the remaining member of the last mentioned

⁵ In order to the demonstration that some things are perpetually immoveable, Aristotle divides movers and things moved, into such as move and are moved essentially, and into such as move and are moved according to accident. But he now arranges the motion according to a part under accidental motion; when a certain part of them moving or being moved, the wholes are also said to move or to be moved; though before, in the division of movers and things moved, he gives a division to these things which move and are moved according to a part opposite to those of which moving and being moved are asserted essentially, and according to accident: for to things which move or are moved according to a part, i. e. according to another, things which primarily move or are moved, are opposed; but things which move or are moved essentially, are opposed to those which do so accidentally. Now, however, he denominates every thing which does not move, and is not moved properly, primarily, and essentially, according to accident. And thus dividing, he omits things according to accident, as contributing nothing to the investigation of the things proposed; and because things which thus move and are moved, have a reference to such as move and are moved essentially.

division ; for of things which are moved by another, some we have considered as being moved contrary to nature ; but others remain to be opposed, because they are moved by nature. And these last are the things which may occasion a doubt by what they are moved ; as, for instance, things light and heavy ; for these are moved by violence to opposite places ; but to their proper places naturally, the light indeed upward, and the heavy downward. But it is no longer apparent by what they are moved, as it is when they are moved contrary to nature : for it is impossible to say that they are moved by themselves, since this is vital, and the peculiarity of animated natures. They would also be able to stop themselves. I say, for instance, if any thing is the cause to itself of walking, it will also be the cause to itself of not walking ; so that since it is in the power of fire to tend upward, it is evident that it is also in its power to tend downward *. It is also absurd to suppose that they should be moved with one motion only by themselves, if they themselves move themselves.

Again, how is it possible that any thing continued and connascent can move itself ? For so far as it is one and continued, but not by contact, so far it is impassive. So far, however, as they are separated, so far the one is naturally adapted to act, and the other to suffer. Neither, therefore, will any one of these move itself ; for they are connascent ; nor can this be asserted of any thing else which is continued. But it is necessary that in every thing that which moves should be divided from that which is moved ; as we see in things inanimate, when any thing animated moves them. It happens, however, that these are always moved by something ; and this will become evident to those who divide causes. What is asserted also may be assumed in motive natures ; for some things are motive contrary to their own nature. Thus, a lever has not naturally a power of moving a weight. But others are naturally motive. Thus, that which is hot in energy, is motive of that which is hot incapacity. The like also takes place in other things of a simi-

* i. e. If fire were self-motive, it would also have the power of tending downward.

lar

lar kind. Thus too, that which is moveable by nature, which in capacity possesses quality or quantity, or somewhere, when it has such a principle as this in itself, and not according to accident: for the same thing may possess quantity and quality, but the one happens to the other, and is not essentially inherent. Fire, therefore, and earth are moved by something, by violence indeed, when they are moved contrary to nature, but naturally, when being in capacity, they are moved to their own energies⁶. Since, however, a subsistence in capacity is multifariously predicated, this is the cause why things of this kind do not appear to be moved by any thing; as, for instance, fire upward, and earth downward. But he who learns, is in a different way in capacity, from him who is scientific, and who now possesses science, and does not theorize. Always however, when the agent and patient subsist together, that which is in capacity becomes in energy. Thus, he who learns, from being in capacity, becomes something else in capacity: for he who possesses science, and does not theorize, is in a certain respect scientific in capacity, but not as he was before he learnt. But when he thus subsists, unless something impedes, he energizes and contemplates, or he would be in contradiction and ignorance⁷. These things also similarly take place in natural things: for that which is cold is in capacity hot; but when it is changed, it is now fire and burns, unless something prohibits and impedes. The like also happens about the heavy and the light; for that which is light becomes so from the heavy; as, for instance, air from water: for it was first this in capa-

⁶ Aristotle says that fire and earth are moved naturally, when being in capacity, they are moved to their own energies, i. e. when they become in energy that which they were before in capacity, and assume their proper energies: for fire when it becomes in energy, being before fire in capacity, then energizes according to the energies of fire, and is moved according to the natural motion of fire.

⁷ Aristotle says, that he who possesses science and does not theorize, when nothing impedes, will be in contradiction and ignorance; that is, he who possessing science in habit, and knowing according to it, does not energize, though nothing impedes, will be in contradiction, because he will be both in ignorance and knowledge.

city, and now is light, and immediately energizes, unless something impedes. But the energy of a light thing is to be somewhere, and to be in the upper region; but it is impeded, when it is in a contrary place. This likewise similarly happens in quantity and quality. This also may be investigated why things light and heavy are moved to their proper places. The cause of this, however, is that they are naturally somewhere, and this is the very being of what is light and heavy; the essence of the former being defined by existing in the upper, and of the latter, by existing in the downward region. But things are light and heavy, in capacity, multifariously as we have already observed: for when a thing is water, it is in a certain respect light in capacity, and when it is air, it is still in capacity; because it may happen that being impeded, it is not in the upward region; but if that which impedes is taken away, then it energizes, and always tends upward. In like manner, that which possesses quality, changes into a subsistence in energy; for he who possesses science immediately theorizes, unless something impedes. And that which possesses quantity is extended, unless something prevents. But he who removes that which supports and impedes, in a certain respect moves, and in a certain respect does not; as is the case with him who withdraws a pillar, or takes away a stone from a bladder in water: for he moves accidentally; just as a ball⁸ when rebounding, is not moved by the wall, but by him who threw it. It is evident, therefore, that no one of these things moves itself; but possesses the principle of motion, not indeed of moving or acting, but of suffering. But if all moveable natures are either moved by nature, or contrary to nature, and by violence; and if all things which are moved by violence, and contrary to nature, are moved by something and by another: and again, if those things which are moved by nature, as well those which are moved by themselves, as those not moved by themselves, as things heavy and light, are moved by something; (for they are either moved

⁸ A ball when rebounding is moved accidentally by the wall, but primarily by him who threw it.

by

by that which generates and makes the light and heavy, or by that which removes things that impede and prevent)—if this be the case, whatever is moved, is moved by something ⁹.

CHAPTER V.

THIS, however, takes place in a twofold respect: for either it is not through that which itself moves, but through something else which moves the mover; or it is through itself. And this is either the first after the last, or it moves through many media. Thus, a staff moves a stone, and is moved by a hand, which is moved by a man; but man no longer moves because he is moved by something else. We say, therefore, that both move, as well that which is the last, as that which is the first of the movers. But that is more a mover which is the first; for it moves that which is the last mover, but this does not move the first. And without the first mover indeed; the last will not move, but the first will move without the last. Thus a staff will not move unless a man moves it. If, therefore, it is necessary that every thing which is moved should be itself moved by something, it is also necessary that it should either be moved by that which is moved by another, or that it should not be moved by it. And if it is moved by that which is moved by another, it is necessary that there should be some first mover, which is not moved by any thing else. But if the first mover is a thing of this kind, it is not necessary that the other likewise should be so: for it is impossible that a thing which moves, and which is itself moved by

⁹ The syllogism here used by Aristotle is as follows: all moveable things are moved either according to, or contrary to nature. But all things that are moved contrary and according to nature, are moved by something. All moveable things, therefore, are moved by something.

another,

another, should proceed to infinity ; since of infinites there is no first. If, therefore, every thing which is moved is moved by something, but that which first moves, is indeed moved, yet not by another, it is necessary that it should itself be moved by itself. Again, it is possible also to discuss this affair as follows : Every thing which moves, moves something, and through something ; for that which moves, either moves through itself, or through another. Thus a man moves, either through himself, or through a staff ; and the wind throws something down, either by itself, or through a stone which it impels. But it is impossible for that which moves to move, without that which moves from itself. If, however, a thing moves itself from itself, it is not necessary that there should be something else through which it moves. But if that through which it moves is something different, there is something which moves not from any thing else, but from itself ; or there will be a procession to infinity. If, therefore, something moves being moved, it is necessary to stop, and not proceed to infinity ; for if a staff moves, in consequence of being moved by a hand, the hand moves the staff. But if through this it moves something else, there is also something else which moves this. Since, however, it always moves something else through something, it is necessary that should be prior, which itself moves itself. If, therefore, this is indeed moved, but there is not any thing else which moves it, it is necessary that it should move itself. Hence, according to this reasoning, either that which is moved, is immediately moved by that which moves itself, or some time or other it will arrive at a thing of this kind. In addition to what has been said, to those who consider, the following particulars also will be found to happen : for if every thing which is moved, is moved by that which is moved, either this will be inherent in things accidentally, so as for that which is moved to move, yet, not because it is itself moved ; or it will not be inherent in things from accident, but essentially. In the first place, therefore, if it is inherent *accidentally*, it is not *necessary* for that which is moved also to be moved. And if this is admitted, it is evident that it may be possible, some time or other, that nothing may be moved ;
for

for accident is not necessary, but may not exist. If, therefore, we admit that to be which is possible, nothing impossible will happen, but *perhaps*¹ that which is false. But for motion not to exist is impossible; for it was before demonstrated, that it is necessary motion should always exist. And this happens conformably to reason: for it is necessary that there should be three things, viz. that which is moved, that which moves, and that by which it moves. With respect to that which is moved, therefore, it is necessary indeed that it should be moved, but it is not necessary that it should move. But with respect to that by which it moves, it is necessary that it should both move and be moved: for this is co-changed, since it subsists at the same time, and according to the same with that which is moved; as is evident in things which are locally moved: for it is necessary that they should thus touch each other, as far as to a certain thing. But that which moves so as not to be that by which it moves, is immoveable. Since, however, we see that which is last, which indeed may be moved, but does not possess the principle of motion; and since we also see that which is moved indeed, but by another, and not by itself, it is *reasonable*², not to say necessary, that there should be a third thing which moves, being immoveable. Hence Anaxagoras also speaks rightly, when he says, that intellect is impassive and unmingled; because he makes intellect to be the principle of motion; for thus alone can it move, being immoveable, and have dominion, being unmingled.

¹ Aristotle here says *perhaps*, because that which moves was supposed to be moved according to accident; but the thing assumed, viz. that it is not moved, is some time or other false, if it should happen to be moved, but is not impossible: for being supposed to be moved according to accident, it may some time or other not be moved.

² If that which is in the middle participates both of that which moves and of that which is moved, and is composed from both these, and if one of the simple natures from which it is composed subsists *per se*, or essentially, it is *reasonable* that the other of the natures in the composition, should also be simple and *per se*; for it is reasonable that each of the extremes from which the middle consists, should have the same analogy to the middle: for as in a mixture of wine and honey, since the honey subsists by itself, it is also necessary that the wine should be by itself; so in that which moves and in that which is moved, it is reasonable, if one of these is by itself, that the other also should be by itself.

If,

If, however, that which moves is not moved according to accident, but from necessity; and if unless it is moved, it will not move, it is necessary that that which moves, so far as it is moved, should either be so moved, as to be moved according to the same or a different species of motion. I say, for instance, either that which heats must also be itself heated, and that which imparts health must also be made healthy, and that which carries must be itself carried; or that which imparts health must be carried, and that which carries must be increased. It is evident, however, that this is impossible³: for it is necessary to speak dividing as far as to individuals; just as if something should teach how to geometrize, this same thing should also be taught to geometrize; or if any thing throws, that it should also be thrown, according to the same mode of throwing; or not in this manner indeed, but a different thing from a different genus; as, for instance, for that which carries, to be increased, but that which increases this, to be changed in quality by something else; and for that which causes this to be changed in quality, to be moved according to some other motion. But it is necessary to stop; for motions are finite. To say, however, that a reversion again takes place, and that a thing which produces change in quality is carried, is to do the same thing, as if any one should immediately say, that which carries is carried, and that which teaches is taught: for it is evident, that every thing which is moved, is also moved by a superior mover, and that it is more moved by that which is prior among movers. This, however, is impossible; for it will happen that the teacher will learn; of which two it is necessary that the one should possess, and that the other should not possess science. Farther still, it will happen, which is still more absurd, that whatever is motive will be moveable, if every thing which is moved, is moved by that which is

³ The words "it is evident that this is impossible," are principally adduced against him who says that that which moves, moves and is moved according to the same species of motion; as is evident from the words, "for it is necessary to speak dividing as far as to individuals, &c." which are adapted to things that both move and are moved, according to the same species of motion.

moved:

moved : for it will be moveable. And this is just as if some one should say, that every thing which has the power of imparting health, is also capable of being made healthy ; and that every thing which has the power of building may be built, either immediately, or through many media. I say, for instance, it is just as if every thing which is motive, is moveable by something else, yet it is not moveable with the same motion by which it moves a thing near, but with a different motion ; just as if that which has the power of imparting health could learn. This ascent, however, will some time or other be terminated in the same form, as we have before observed. One, therefore, of these is impossible ; and the other fictitious : for it is absurd that a thing which is capable of producing a change in quality, should necessarily be capable of being increased. It is not therefore necessary, that a thing which is moved should always be moved by another, which also is itself moved. The procession, therefore, will stop. Hence that which is first moved, will either be moved by that which is at rest, or it will itself move itself. However, though it should be necessary to consider, whether that which itself moves itself is the cause and principle of motion, or that which is moved by another, every one should admit the former : for that which is a cause through itself, is always prior to that which is a cause through another ⁴.

⁴ Aristotle having shown that that which first moves is necessarily either immoveable, or self-motive, since that which is moved is not always externally moved by that which is moved, now demonstrates that a self-motive nature is the principle of motion. And that a self-motive nature indeed is by itself or essentially the cause of a thing being moved, since it possesses from itself both *to move*, and *to be moved*, is manifest. But that which is moved by another, is the cause of motion according to *another*, in order that it may move. That a thing however, which is the cause of motion essentially, has a more principal and causal subsistence, is also manifest : for that which is according to another, being predicated in a twofold respect, either according to accident or through another ; neither is that which is according to accident, unless that which is essential has a prior subsistence ; nor that which is through another, unless that which is through itself is prior, and which is the essential. Hence the self-motive nature, is the first cause and principle of things moving and moved.

CHAPTER VI.

THIS, therefore, must be considered assuming another beginning, if any thing moves itself, how, and after what manner it moves. It is necessary then that whatever is moved should be divisible into things perpetually divisible: for this was before demonstrated in the universal⁵ discussions concerning nature, viz. that every thing which is moved essentially is continued. It is impossible, however, that a thing which moves itself, should wholly itself move itself: for the whole would be carried, and would carry according to the same motion, since it is one and an individual in species. It would also be changed in quality, and be the cause of change in quality; so that a man might teach and be at the same time taught, might impart health and be made well, according to the same health. Farther still, it has been shown that a thing which is moveable, is moved; but this while it is moved, is in capacity and not in energy; and that which is in capacity proceeds to energy. But motion is the imperfect *entelecheia* of that which is moveable; and that which moves is already in energy. Thus, that which is hot, heats; and in short, that which possesses form, generates; so that the same thing will be at once and according to the same hot, and not hot. The like also will take place in every thing else, the mover of which necessarily has the synonymous⁶. Hence, of that which moves

⁵ It may here be collected, that when Aristotle says, that any thing has been asserted by him in the discussions concerning nature, he means the first five books of the Physics; but that when he refers to his discussions concerning motion, he means the three last. But in the fifth book, he demonstrated that every thing which is essentially moved, is continued and divisible.

⁶ By things, the mover of which necessarily has the synonymous, Aristotle means such things as move essentially, and is of opinion that in these contradiction is at the same time true, if any one says that a thing is moved by itself, and not in things which move and are moved according to accident.

itself,

itself, one thing moves, and the other is moved: But that it is not possible that the same thing can so move itself, as that each part should be moved by each, is from these arguments evident; for neither will there be any first mover, if each part moves each; since that which is prior is more the cause of a thing being moved, and will move more than that which adheres: for to move is twofold; one kind of mover being that which is moved by something else; and another that which is moved by itself. But that which is more remote from the thing moved is nearer to the principle than that which is between⁷. Again, it is not necessary that the mover should be moved except by itself. According to accident, therefore, the other will reciprocally move. I assume, therefore, that it may happen that it does not move. Hence, one thing will be that which is moved; and another that which moves being immoveable⁸. Farther still, it is not necessary that the mover should be in its turn moved; but either it is necessary that something immoveable should move, or that itself should be moved by itself, if it is necessary that motion should always exist. Again, with that motion with which it moves, it will also be moved; so that a thing which heats will be heated⁹. However, neither of that which first moves itself, will
one

⁷ That is, that which is more remote from the last thing moved, is more allied, and more adapted to the nature of the principle, than that which is between this, and the more remote of the things moved.

⁸ This is the second argument demonstrating that a thing which is self-motive will not be of such a nature, that each of the parts will move the other: for it has been shown above, that it is not necessary that every mover should be externally moved by something else; but that the first mover, if it is necessary it should be moved, is moved by itself. If, therefore, it is supposed that B is moved by A, it is true to say that A is not necessarily moved by any thing externally: for if A should at any time be in its turn moved by B, it moves B according to accident, because it will happen that A is among things which move because they are moved by something else. But that which moves accidentally, may also not move. If, therefore, B is assumed not to move, neither will A be moved. B therefore will be that which is moved, and A will move being immoveable. Hence it is not necessary that the parts of that which is self-motive, should be reciprocally moved by each other.

⁹ It was before demonstrated that if any thing moving essentially is moved, it will move and be moved according to the same form, so as that a thing which imparts heat will be heated. But

one part, or many parts severally move themselves: for if the whole should be itself moved by itself, it will either be moved by some one of its parts, or the whole will be moved by the whole. If therefore it is moved, because some one of its parts is moved by itself, this part will be that which first moves itself; for if it were separated, this would itself move itself, but the whole will no longer move itself. But if the whole is moved by the whole, these parts would move themselves accidentally. Hence, if they do not move themselves necessarily, let it be assumed that they are not moved by themselves. Of the whole therefore, one part will move being immoveable; but the other will be moved: for thus alone is it possible that any thing can be self-motive ¹.

Again, if a whole line should move itself, one part of it will move, but the other will be moved. The line A B, therefore, will be moved by itself, and by A². But since one thing moves, being moved by something else, but another being immoveable; and since one thing which is moved also moves, but another does not move any thing, it

this is impossible: for that which imparts heat, being now hot in energy, heats. But that which is heated (*i. e.* which is receiving heat) is not yet hot in energy; so that the same thing will be both hot and not hot, according to the same, which is impossible. This therefore, Aristotle says, will happen, if in that which is self-motive, one part heats, and another is heated: for the motion of that which is self-motive being one, it is necessary that it should be hot, and at the same time not hot, which is impossible.

¹ If it is entirely necessary that a self-motive nature should subsist between that which is immoveable, and that which is alter-motive, or moved by another, and if it is necessary that it should so subsist, as either for the whole to be moved by the whole of itself, or for the whole to be moved by a part, or a part by the whole, or as having one or many self-motive parts in itself, or as having one part of itself which moves, being immoveable, and another part moved, and all the rest are subverted, Aristotle very properly concludes, as if speaking of a line, that of the whole one part will move being immoveable, but the other will be moved; for thus alone is it possible that any thing can be self-motive.

² That is, if the whole line itself moves itself, it must necessarily so subsist as for one part of it to move, and another to be moved. The whole of A B, therefore, must be said to be so moved by itself, as that A in it must move being immoveable, and B as being moved. The whole, therefore, is said to be self-motive, as consisting of an immoveable mover, and that which is moved. But this he will afterwards explain.

is

is necessary that a thing which itself moves itself, should consist from that which is immoveable, but moves; and besides this, from that which is moved and does not move from necessity, but just as it may happen: for let A be that which moves indeed, but is immoveable; and let B be that which is moved by A, and moves C. But this is moved indeed by B, but does not move any thing: for though through many media it may some time or other arrive at C, yet let it arrive through one only. The whole, therefore, A B C itself moves itself. But if I should take away C, A B will indeed move itself; for A is that which moves, and B is that which is moved; but C will not itself move itself, nor in short, will it be moved. Nor will the part B C move itself without A: for B moves because it is moved by something else, and not because it is moved by any part of itself. Hence A B will alone itself move itself. It is necessary therefore, that a thing which itself moves itself, should have that which moves being immoveable, and that which is moved, but does not necessarily move any thing. These likewise must either both touch each other, or the one must touch the other³. Hence, if that which moves is continued, (for it is necessary that the thing moved should be continued) it is evident that the whole will itself move itself, not because some part of it is such as to move itself; but the whole will itself move itself, and will at the same time move and be moved; because there is some part of it which moves and is moved: for the whole does not move, neither is the whole moved; but A indeed moves, and B is alone moved. It is however dubious,

³ Aristotle appears now to unfold what he had before concisely said, first giving a triple division to things acting or suffering according to motion: for since these things are two, the mover and that which is moved, and the mover either moves being immoveable, or moved by another; and that which is moved, is either moved itself moving, or moving nothing;—this being the case, there will be two extremes, that which moves being immoveable, and that which is moved indeed, but does not move another. And that which is the middle of, and is common to both, will be that which is moved indeed by another, but which moves another. Aristotle, therefore, distinguishing these three, and exhibiting them in one line, shows in which of these that which is self-motive first subsists.

if

if any one takes away⁴ from A (if that which moves but is immoveable is continued) or from B which is moved; whether the remaining part of A will move, or of B will be moved: for if this be the case, A B will not be that which is first moved by itself; since though something is taken away from A B, nevertheless that which remains of A B will move itself. Or shall we say that nothing prevents both, or one of them, viz. that which is moved, from being divisible in capacity, but indivisible in energy; and that if it were divisible it would no longer possess the same power? Hence, nothing prevents a thing from being primarily inherent in capacity in things divisible. From these things, therefore, it is evident that the nature which primarily moves is immoveable: for whether that which is moved, and is moved by something, immediately stops at the first immoveable, or at that which is itself moved indeed, but moves itself and is permanent; in both ways it will happen that the first mover in all things which are moved, is immoveable⁵.

CHAP.

⁴ Aristotle having said that a self-motive nature is not self-motive through having a part which moves itself, but through the whole moving itself, afterwards doubts with respect to the whole being self-motive primarily: for, says he, if any one takes away from A, (if that which moves, being immoveable, is continued); or from B which is moved, and is continued; or from both A and B, will the remaining part of A move, or of B be moved, or not? for in either way, it seems an absurdity will occur: for a part being taken away, if that which remains does not move, or is not moved, it will be absurd; since that which is moved was not a part in it, but the whole. This however he omits to divide and confute as easy to be inferred. But if the remainder of A moves, or the remainder of B is moved, A B will not be primarily moved by itself; since though a part is taken away from A B, yet that which remains will still move itself after the ablation.

⁵ Aristotle here concisely reminds us of what he had before shown, viz. that every thing which is moved, whether naturally, or violently, is moved by something, and that every thing which moves, either moves being itself moved by something else externally, and this to infinity; or if this is absurd, either it is necessary to stop at something which first moves being immoveable, or at that which is self-motive, which moves indeed, being moved, but is not externally moved, but by itself, and which contains in itself the cause of being moved, and of standing still: for those are self-motive natures, which contain in themselves the principle of standing still, and being moved. He has also shown, that in that which is self-motive, that which moves being immoveable, moves essentially, a self-motive nature being composed from that

CHAPTER VII.

SINCE, however, it is necessary that motion should always be, and not fail, it is necessary that there should be something perpetual which
first

that which moves being immoveable, and from that which is moved indeed, but does not necessarily move. As a consequence, therefore, to what he had before shown, he now concludes, that the first mover, in all things that are moved, is immoveable; since that which is self-motive is the first of all things that are moved, and in this the mover is immoveable.

Since, however, Aristotle appears to differ from Plato in his assertions about a self-motive nature, it will be well to consider this difference. And that the self-motive indeed, is the principle of motion and of every thing that is moved, is clearly acknowledged by both philosophers; Aristotle here asserting that if it be requisite to consider whether the cause and principle of motion, is that which moves itself, or that which is moved by another, in both ways, every one must acknowledge, that the first mover in all things which are moved, is immoveable; but Plato in the Phædrus clearly affirming, that the self-motive nature, is the fountain and principle of motion. In the tenth book of his Laws also, the Athenian guest thus concluding, says, "We assert, therefore, that the principle and first of all motions, subsisting in things which stand still, and in those that are moved, and which itself moves itself, is necessarily the most ancient, and the most excellent of all mutations." Both philosophers likewise call an animal self-motive. But Aristotle says, that an animal is primarily and properly self-motive, consisting from soul and body; of which the body indeed is moved, but the soul, according to him, moves being immoveable. Plato, however, is of opinion, that every soul is primarily and properly self-motive; or, as it appears to the most accurate of his interpreters, the rational soul; and that through this, the animal becomes self-motive, receiving from the rational soul a vestige of self-motion. And that Plato indeed is of opinion, that soul is properly self-motive, is evident from the definition which he gives of it in the Phædrus, and still more clearly in the tenth book of the Laws, when he says, "what other name can we give to the soul, than that we have now given, which asserts it to be an essence able to move itself, and which we all of us denominate soul?" That he also is of opinion that the animal is self-motive, through the soul being self-motive, is likewise evident from the Phædrus: for he there says, "every body which owes its
being

first moves, whether there be one or many such natures; and which first moves being immoveable. That each of those things therefore, which

being moved to something external, is inanimate, but that which derives its motion internally from itself, is animated, as if this were the very nature of soul; viz. the moving itself, and causing that which participates it to appear self-motive. Hence Plato makes the self-motion of the animal, an argument of the self-motion of the soul, and the latter the cause of the former. There is a difference, therefore, in the assertions of the two philosophers, so far as Plato acknowledges all mutation, of whatever kind it may be, both the energetic and the passive, to be motion. And in the *Timæus* indeed, he says, that the soul is moved through the whole of itself; but in the tenth book of the *Laws*, he says, "that soul is the leader of every thing in the heavens, the earth, and the sea, by its motions, the names of which are, to will, to consider, take care of, consult, form true and false opinions; rejoicing, grieving, daring, fearing, hating, loving; together with all such primary motions as are allied to these."

Aristotle however, thinking fit to call natural mutations alone motions, is of opinion that soul energizes, but is not moved. And in his first book *On the Soul*, he evidently denies physical motions of the soul, when he says, "to be moved, being predicated in a twofold respect, viz. either essentially, or according to accident, it must now be considered whether the soul is moved essentially, and participates of motion. But since there are four motions, viz. lation, alliation, increase, and diminution, it will either be moved with one of these motions, or with more than one, or with all of them." These motions also, Plato denies of the soul, in the nine motions prior to those of the soul, in the tenth of the *Laws*, but asserts those to be the motions of the soul which we have just now cited. And it is evident that Aristotle also ascribes these motions to the soul; and he knew that these proceed from the soul into the soul. He does not, however, call them motions, but energies and passions: for that the soul knows and perfects itself, Aristotle well knew, who has philosophized so much about the soul. But in consequence of having attributed to bodies, a power destructive of motion, consistently with himself, he does not think fit to call soul but the animal self-motive; motion in the body being apparent, according to the being moved alone; and considering this alone to be motion, he inserts motion in the thing which is moved. So that the disagreement between the philosophers, is in this case, not about the thing, but about words, as it is in most other instances.

But the cause of this difference appears to be this, that Aristotle every where wishes to preserve the usual signification of words, and to frame his arguments from things evident to sense; but Plato frequently despises these, directing his attention to intelligible contemplations. But Aristotle wishing to show according to what kind of motion he now assumes the self-motive, and that it is corporeal motion, according to which soul, both in his opinion and that of Plato, is immoveable, makes this the principle of his demonstration, that every thing which is moved, is necessarily continued, and divisible into things perpetually divisible. But body is a thing of this kind primarily. What else then will be properly self-motive according to this motion, except

which are immoveable indeed, but move, is perpetual, does not pertain to the present enquiry⁶. But that it is necessary there should be something,

cept an animal? For neither is body able to move, nor soul to be moved with this motion. But body is indeed moved, and soul not being moved, moves immoveably. Hence he does not admit that any one whole can be self-motive; because neither can that which is moved according to this motion, move primarily, nor can that which moves be moved. He also clearly adduces the absurdity, when he says, a thing being one and an individual in species, would both be carried and carry according to the same motion, and would also be changed in quality, and produce a change in quality; so that a man would teach and at the same time learn, would be made well, and impart health, according to the same health. It would also be at the same time in capacity and energy, and would not yet be, and at the same time would be according to that thing which it is said to be. And in reality, being one simple thing, it will not be self-motive: for the soul possessing all reasons or productive principles, has some of these at hand and energetic, but others at rest and in capacity in herself. And by those which are in energy, she moves those that are in capacity, which are consequently moved. And thus the whole soul is said to be self-motive. To these conceptions which are Platonic, Aristotle also assents: for according to him, there is one intellect in the soul in capacity, and another in energy; and the intellect which is in capacity becomes in energy, through that which is in energy; the soul teaching herself, and learning from herself, investigating and discovering herself: for every dianoetic disciple, as Aristotle informs us, in the beginning of his posterior Analytics, and evidently all enquiring and invention, are produced from knowledge presubstisting according to energizing intellect. On this account perhaps, though he defines self-motion according to natural motions, yet he indicates that in the soul, that which teaches and that which learns are the same; because the soul can learn and teach herself, yet not as being *one simple essence*, which he calls *an individual in species*, but as being divided into a subsistence in capacity, and a subsistence in energy. Hence too, he brings the reasoning to this absurdity, that the same thing being one and an individual in species, will be at the same time in capacity and energy, and will not yet be, and already exist. Hence, if any one considers the soul, as divided into a subsistence in capacity, and a subsistence in energy, it will no longer be absurd, that the same thing should be in capacity and energy. The soul, therefore, according to Aristotle, is self-energetic, self-gnostic, and self-inventive; yet not as being one and simple, but as being composed from a subsistence in capacity, and a subsistence in energy. He does not, however, think fit to call it self-motive, because he contemplates motion in bodies alone: for these are primarily continued, and divisible into things always divisible; and on this account, motion also is continued and divisible, and through motion, time. But it may be said, does it not follow from Aristotle's definition of motion, viz. that it is the energy of that which is in capacity, so far as it is in capacity, that the soul is moved according to Aristotle, and is self-motive, since it proceeds through itself from a subsistence in capacity, to a subsistence in energy? To this it may be replied, that the definition which says,

something, which is itself always immoveable indeed, is void of all external mutation, both simply and according to accident, and is motive of another, will be evident to those who thus consider the affair. But let it happen, if some one is disposed to admit it, in certain things, that they will sometimes be, and sometimes not, without generation and corruption ; for, perhaps, it is necessary, that if any thing without parts at one time is, and at another is not, every thing of this kind should at one time be, and at another time not be, without mutation ; and that of principles which are immoveable indeed but motive, it may also be possible that some of them may at one time be, and at another not ; but it is not possible that all should be of this kind. For it is evident, that there is a certain cause to things, which move themselves, of their existing sometimes, and sometimes not ; for it is necessary that every thing which itself moves itself, should have magnitude, if nothing without parts is moved. But there is no necessity

that motion is the energy of that which is in capacity, so far as it is in capacity, is common to all mutation, as well that which belongs to the soul, as that which is corporeal ; and in short to that which proceeds from an existence in capacity to an existence in energy. But the proper definition of motion so far as motion, is, that it is the energy of that which is moveable, so far as it is moveable. Hence Aristotle does not think fit to call all mutation simply, motion, but that which is usually so called, and belongs to bodies : nor yet the whole of this ; for he distinguishes generation and corruption from motion. For no one would say, that a thing which does not yet exist is properly moved ; but that which is moved, ought to be something in energy, and to possess something in capacity, energizing according to which, it is said to be moved.

⁶ Since there are many things, which are indeed immoveable themselves but move others ; for such are all the souls of animals, through which the animal is self-motive, consisting of a body which is moved, but of a soul which is indeed immoveable, but moves the composite ;—this being the case, Aristotle says, it does not pertain to the present enquiry, whether each of those things which are immoveable indeed, but move, is perpetual. For the enquiry is not now, whether all souls are immortal ; since these are the things which in self-motive natures move being immoveable ; for the speculation about the soul belongs to another treatise. Nor, in short, is it now proposed to investigate, whether all the natures which move being immoveable, are perpetual.

It is here also necessary to observe, that instead of *ἀκίνητων μὲν μὴ κινουμένων δὲ*, as in the printed text of Aristotle, we should read *ἀκίνητων μὲν κινουμένων δὲ*, as is evident both from the sense of the whole passage, and the commentary of Simplicius.

that

that the nature which moves should have magnitude, as is evident from what has been said. Hence, no one of those natures which are indeed immoveable, but which do not always exist, is the cause why some things are generated, and others corrupted, and this continually⁷; nor yet any one of those which always indeed move these, but are themselves moved by others; for neither each, nor all of these, is the cause of perpetuity and continuity; since for a thing thus to subsist is perpetual, and from necessity; but all these are infinite; and all of them do not subsist at once. It is evident, therefore, that though there should be ten thousand principles which are immoveable indeed, but move; and many of those things which move themselves should be corrupted, and others be generated, and this thing being immoveable should move that, and another thing this; nevertheless there is something which comprehends or contains, and this besides particulars; which is indeed the cause why some things are, and others are not, and is the cause of continued mutation. And this indeed is the cause to these; but these are the causes of motion to others. If, therefore, motion is perpetual, the first mover also will be perpetual, if it is one, but if there be many first movers, there will be many perpetual movers. But it is necessary to think that there is rather one than many, and finite rather than infinite movers; for the same things happening, finite things are rather always to be assumed; since in things which subsist naturally, it is necessary,

⁷ Aristotle shows that the cause why some things are generated, and others corrupted continually, is neither one of immoveable natures, but which do not always exist, nor yet any one of those natures, which always indeed move these, but are themselves moved by others; for of that which is always and continued, no one of these is the cause, which he signifies by the word *sach*; since if this cause is not perpetual, and mutation is perpetual, when this cause is not, either mutation will not be, and will neither be perpetual, nor continued, or there will be some other cause of it, since this not existing, it is generated. But when he says, that neither each nor all of these is the cause of perpetuity and continuity, he concisely takes away one of things not perpetual from being the cause, through the words, "since for a thing thus to subsist is perpetual and from necessity." And that it is not possible for all such to be causes, he demonstrates through the words, "but all these are infinite, and all do not subsist at once." For they are infinite, as being generated to infinity, and on this account do not all of them exist at once.

that the finite, and that which is better, if possible, should rather be inherent. But it is sufficient, though it be one, that the first of things immoveable, being perpetual, should be to other things the principle of motion. From this also it is evident, that the first mover should be a certain one and perpetual; for it has been demonstrated, that it is necessary motion should always exist. And if it always is, it is also necessary that it should be continued; for that which always is, is continued; but that which is successive is not continued. If too, it is continued, it is one; but the motion is one, which is from one mover, and of one thing which is moved: for if another and another thing moves any thing, the whole motion is not continued but successive.

CHAPTER VIII.

FROM these arguments some one may believe, that there is a certain first immoveable nature; and again, if he looks to the principles of motive natures. That there are some things, therefore, which at one time are moved, and at another are at rest, is evident. And from this it becomes manifest, that neither are all things moved, nor all things at rest, nor that some things are always at rest, and others are always moved; for things which verge to both these, and possess a power, at one time of being moved, and at another of being at rest, afford a demonstration concerning these. Since, however, things of this kind are manifest to all men, and we also wish to show each nature of the two, viz. that some things indeed are always immoveable, but others always moved, and since we have proceeded as far as to this, and have established as principles, that every thing which is moved, is moved by something, and that this is either immoveable or moved, and is always moved either by itself or by another, we have at length assumed, that the principle of things which are moved, is that which itself moves
itself,

itself, and that the principle of all things is that which is immoveable. But we see indeed, and evidently, that there are things of such a nature as to move themselves; as the genus of things animated, and of animals. These also afford an opinion, that motion might happen to be generated, when, in short, it was not, because we see this takes place in animated natures; for these, as it seems, when they have been without motion, are again moved. This then it is necessary to assume, that these move themselves according to one motion, and according to this not properly; for the cause is not from the animal, but other natural motions are inherent in animals, according to which they are not moved through themselves; such as augmentation, diminution, and respiration, with which every animal is moved when at rest, and is not moved according to the motion which is produced from itself. But the cause of this is that which contains, and many of the things which enter into the animal. Thus, for instance, food is the cause of some motions: for when it is concocted animals sleep, and when it is distributed they awake, and move themselves, the first principle of motion being external. Hence they are not always continually moved by themselves; for to each of the natures which move themselves, something else is present, which moves, being itself moved and changed. In all these, however, that which first moves, and is the cause of a thing moving itself, is also moved by itself, but according to accident: for the body changes its place; and therefore that which is in the body, and which moves itself by a lever⁸. From hence it may be believed, that if there
is

⁸ Aristotle having multifariously shown, that there is something which first moves being immoveable, says, that this may be believed by looking to the principles of motions, viz. to the souls of animals, and to those principles which appear to be immoveable principles of motions; for if these neither appear to be the principles of every motion of the animal, for they are not the principles of increase, or diminution, or respiration; but the souls of animals are alone the principles of local motion according to impulse, nor of this properly, since they receive the principles of this externally, and are not immoveable in every way, but are accidentally moved, in consequence of being moved in conjunction with the bodies that are moved by them;—if this be the case, they evidently are not properly the principles of motion, but there is some other principle prior to these.

•
But

is any thing which ranks among things immoveable indeed, but which move and are themselves moved according to accident, it is impossible that it can move with a continued motion. So that if it is necessary, that there should be continued motion, it is also necessary that there should be some first nature, which moves being immoveable, and this not according to accident; if there ought to be, as we have said, in things, a certain unceasing and immortal motion, and if being ought to abide in itself, and in the same: for the principle remaining, it is also necessary that the universe should remain⁹, since it is in continuity with

But when Aristotle says, that the cause of augmentation, diminution, and respiration is that which contains, he means the body which has a circular motion, and the surrounding air which is the cause of respiration. Having therefore shown, that the mover in self-motive natures, is not properly the principle of motion, because it has the principle of its motion externally, he in the next place shows, that neither is that which moves in self-motive natures, properly immoveable; for in all these, that which first moves, viz. the soul, is the cause of itself moving itself; since through the soul the animal is self-motive. This therefore which first moves, is moved by itself through the body as a medium. It moves itself, however, with such a motion as this according to accident; for moving the body, it makes it to change its place by its impulse, as with a lever, and being in body changes its place also together with the body. Hence it moves itself as with a lever accidentally; because it moves the body in which it resides. But Aristotle assimilates the motion produced in animals from the soul to a lever, either because the soul has the cause of moving the body externally, as levers which are the instruments of things that primarily move, or because levers always move the bodies they impel, by coming into contact with them, and not being separated from them. Thus also the soul always being present with the body, moves it: or rather Aristotle assimilates this motion to a lever, because it is violent, and not according to nature to the body; for the natural motion of each of the elements in the body is different from this, of earth indeed downward, and of fire upward. Hence the body becomes weary when moved with the motion produced by the soul, and is not able to endure it, when continued for a long time; though it is not wearied through the natural motions of the elements to their proper places; a token of which is, that each of these when approaching near to its proper place, is more swiftly moved. Aristotle however says, that the soul moves itself as with a lever not precedaneously, but according to accident: for it precedaneously moves the body as with a lever.

⁹ The cause of the perpetuity of that which is moved, is the first mover; for this is manifested by the words, "The principle remaining, it is also necessary that the universe should remain." For it is necessary that the universe should remain, since it is in continuity with the principle. But the principle will remain, if it is neither moved accidentally, nor essentially. Every principle too, which

with the principle. It is not, however, the same thing, for any being to be moved accidentally by itself and by another; for to be moved by another, belongs also to some of the principles in the heavens, viz. to some of those which are moved with many motions; but the other belongs to corruptible natures alone¹.

which is properly so called, is perpetual; for the principle being destroyed, it can neither itself be at any time produced from any thing, nor any thing else from it, as Plato says in the Phædrus. As the universe likewise is in continuity with the principle, i. e. is proximately and immediately moved by a perpetual principle, it is also necessary that it should perpetually remain. For the principle always moving after the same manner, it is impossible that the nature which is proximately moved by it, should not be perpetual; since if *this* were corrupted, *that* would no longer be the principle, nor would it always move. For principle always subsists in conjunction with that of which it is the principle; and the mover in conjunction with the thing moved.

¹ Aristotle having said, that in things which are immoveable, indeed, but which move themselves according to accident, it is impossible to move with a continued motion, it becomes doubtful how the celestial orbs, since they are self-motive animals, and have a mover essentially immoveable, and not moving itself according to accident, but accidentally moved by another; for the planets are moved by the inerratic sphere with the motion of that sphere,—it becomes doubtful, how they are at the same time moved with a continued motion. He solves this doubt, therefore, by saying, that it is not the same thing, for any being to be moved accidentally by itself, and to be moved by another; for to be moved by another, belongs also to the planetary spheres, which are moved with one motion, and that their own, about their own poles, but with another, that of the inerratic sphere, in consequence of their own poles being moved about the poles of that sphere. And it is possible to be moved with one continued motion by the inerratic sphere, which is continually moved, and continually moves; for the planets are not moved by themselves according to accident, because that which moves is in the whole and the whole is not moved. For things which are moved in a circle, are moved according to parts, and not according to wholes. But it belongs to corruptible things only, to be moved accidentally by themselves.

CHAPTER IX.

IF, however, there is any thing of such a nature, as always to move being immoveable, and it is itself perpetual, it is also necessary, that the nature which is first moved by this should be perpetual. But this is manifest, indeed, because there would not be generation and corruption, and mutation in other things, unless something moved being moved; for that which is immoveable, will always move with the same and with one motion, after the same manner, because it is not always changed with reference to that which is moved; but that which is moved by the immoveable, or by that which is now moved², because it is differently affected with respect to things, will not be the cause of the same motion, but, through being in contrary places or forms, will cause each of other things to be moved with contrary motions, and at one time to be at rest, and at another to be moved. From what has

² Aristotle having said, "but that which is moved by the immoveable," adds, "or by that which is now moved;" because the inerratic sphere is proximately moved by the immoveable, but the planetary spheres by the inerratic sphere, being now moved. But he says, "in contrary places or forms," because the sun and the other stars at one time approach near to us, through the inclination of the zodiac, and at another time are remote from us. They are also similarly disposed towards the south; and at one time become more elevated, and at another nearer to the earth. But they are in contrary forms, the more cold, or the more hot, because according to their different positions, they are the producing causes of these contrary forms, and things of this kind. Perhaps too, Aristotle here alludes to what Plato says in the Phædrus, viz. "that every soul exercises a providential care over that which is inanimate, and revolves round all heaven, at different times becoming situated in different forms;" for, on account of the contemplation of the forms which are there, and which are different, the motions of the heavenly bodies also become different; and from these motions, the diversity in the sublunary region derives its subsistence.

been

been said also, that becomes evident of which we doubted in the beginning, viz. why all things were not either moved or at rest; or some things were always moved and others always at rest; and some things were sometimes moved, and sometimes not. For the cause of this is now manifest; because some things indeed are moved by that which is perpetually immoveable, and therefore are always changed; but others are moved by that which is moved and changed, and therefore are themselves necessarily changed. But another thing, as we have observed, is immoveable; as being that which remaining simply, and after the same manner, and in the same, produces one simple motion.

CHAPTER X.

By making, however, another beginning, these things will be more apparent; for it must be considered, whether it is possible that there can be any continued motion or not, and, if it is possible, what it is; and what is the first of motions. For it is evident, that if it is necessary motion should always exist, and this is the first and continued motion, the first mover will move according to this motion, which is necessarily one and the same, and continued, and the first. But since there are three motions, one according to magnitude, another according to passive quality, and another according to place, which we call lation, it is necessary that lation should be the first; since it is impossible there should be increase, unless alliation had a prior subsistence; for that which is increased, is partly increased by the similar, and partly by the dissimilar; for the contrary is said to be aliment to the contrary: and every thing accedes, becoming similar to the similar. It is necessary, therefore, that the mutation into contraries should be alliation. If also a thing is changed in quality, it is necessary there should be that which

S q

produces

produces the change in quality, and which makes a thing from being hot in capacity, hot in energy. It is evident, therefore, that the thing which moves, does not subsist similarly, but at one time is nearer, and at another more remote from that which is changed in quality. But these cannot subsist without lation. If, therefore, it is necessary that motion should always exist, it is also necessary that lation should always be the first of motions. And if of lations, one is prior, and another posterior, it is necessary that the first motion should be the first lation.

Again, the principle of all passions is condensation and rarefaction; for the heavy and the light, the soft and the hard, the hot and the cold, appear to be certain densities and rareties. But condensation and rarefaction are concretion and secretion³, according to which generation also and corruption are predicated of essences or substances. It is also necessary, that things which grow together, or which are separated, should be changed according to place. The magnitude likewise of that which is increased or diminished, changes according to place. Further still, hence also, to those who consider the affair, it will be evident that lation is the first motion; for that which is first as in other things, so likewise in motion, may be predicated multifariously; for that is said to be prior, without which other things will not be, but which can itself exist without others; that also is said to be prior, which is first in

³ Whether generation and corruption are concretion and secretion, according to the opinion of Democritus, Anaxagoras, and Empedocles, and all such as supposed the first bodies to be impassive, from these perfectly generating other things; or such as supposed one element which has an intermediate subsistence, as Anaximander, who says, that other things are produced from the condensation and rarefaction of this,—still the thing investigated is true. Or whether generation and corruption are according to change in quality, thus also the assertion is sane, that generation and corruption are accomplished according to concretion and secretion; since, as he says, these two are the leaders of all change in quality.

Here also, Aristotle is desirous of according with his preceptor Plato. For Plato, in the tenth book of his *Laws*, says, that local motion is the first of all motions; and that from this concretion and secretion derive their subsistence, and from these increase and diminution.

time;

time ; and that which is first in essence⁴. Hence, since it is necessary that motion should exist continually, and either that which is continued or that which is successive may exist continually, but rather that which is continued ; and it is better to be continued than successive ; since likewise, we always conceive that what is better exists in nature, if it be possible for it to exist, and it is possible to be continued, which will be afterwards demonstrated, but is now supposed, and it is not possible that this can be any thing else than lation ;—this being the case, it is necessary that lation should be the first motion. For there is no necessity that a thing which is moved according to lation, should either be increased, or changed in quality, and therefore, neither that it should be generated or corrupted ; but no one of these could exist, unless the continued motion exists which is produced by the first mover.

Farther still, lation also is the first motion in time ; for perpetual natures can alone be moved with this motion. In each of those things, however, [it may be said,] which have generation, it is necessary that lation should be the last motion. For after a thing is generated, it is first necessary that there should be change in quality and increase ; but lation is the motion of things, which are now perfect.

[In answer to this, it must be observed,] that it is necessary something else should be prior, which is moved according to lation, and which is also the cause of generation to generated natures, not being generation itself ; as that which generates is prior to that which is generated. But generation may seem to be the first of motions, because it is necessary that a thing should first be generated. This indeed takes place in each of the things which are generated ; but it is necessary that something else should be moved prior to things which are generated, itself subsist-

⁴ Aristotle, in the fourth book of his Metaphysics, delivers a more perfect division of prior and posterior ; but here investigating the prior and posterior in motion, he assumes only such things as are useful to its signification. For position, if, in short, it is in motion, must be assumed according to time. Or perhaps the position of prior bodies, must also itself be said to be prior. It deserves also to be noticed, that in the Metaphysics, Aristotle conjoins a subsistence according to nature, and according to essence, but here he divides them.

ing without being generated ; and it is necessary that there should be something else prior to this ⁵. But since it is impossible that generation should be first (for if this were the case, every thing that is moved would be corruptible) it is evident, that no one of the successive motions can be prior. But I call successive motions increase, afterwards change in quality, diminution, and corruption ; for all these are posterior to generation. Hence, if generation is not prior to lation, neither will any other mutation. In short, that which is generated appears to be imperfect, and to proceed to the principle ; so that what is posterior in generation, is prior by nature. Lastly, lation is inherent in all things which are generated. Hence, some vital natures are entirely immoveable, through the want of an organ, as plants, and many genera of animals ; but with others motion is present when they are perfect. If lation, therefore, is more inherent in things which have obtained more of nature, this motion also will be the first of the others according to essence : as well for the above reasons, as because that which is moved departs the least from essence of all motions, in being borne along. For according to this motion alone, nothing of the being of a thing is changed ; as of that which is changed in quality, the quality is changed, and of that which is increased and diminished, the quantity ⁶. But it is

⁵ It is necessary that something else which is moved according to place, should be the cause of that which is generated, and which is not then itself generated ; and again of the generation of this there must be some other pre-existing cause, which is not generated but then is, and is locally moved : so that prior to every generation of particulars, there is local motion, according to which the cause of generation is moved, not being then generated. And of this there is some other cause, which is locally moved with a perpetual motion ; and is not in short itself generated. For man and the sun generate man, as was before observed.

⁶ Aristotle here denominates that which is first according to nature, first also according to essence, conformably to what he says about these in his *Metaphysics*. But he syllogizes and demonstrates categorically as follows : Lation is inherent in things in generation the last of all. That which is posterior in generation, is prior by nature, and by essence. Lation, therefore, is the first of other motions, both according to nature and according to essence. And that lation, indeed, is present with things in generation in the last place, he shows from things which are essentially more imperfect, as plants and zoophytes, not being at all locally moved, and that local motion

is especially manifest, that the nature which itself moves itself, especially moves properly with local motion. But we say, that this is the principle of things which are moved and move, and is first to things that are moved; viz. that which itself moves itself. That motion, therefore, is the first of motions, is from these things evident⁷.

motion is present with more perfect natures the last of all. But that what is posterior in generation is prior in nature and essence, he shows from that which is generated being imperfect, since while it is in the act of being generated it is still *in becoming to be*, and proceeding in consequence of this to its own perfection, as to the principle, and that which is first by nature. For perfection is a principle, as that for the sake of which and the end. But the perfect is prior to the imperfect both by nature and essence; and that for the sake of which a thing subsists is prior to that which subsists for its sake: since a subsistence according to nature to every thing, is according to its proper perfection. And essence and principle are the perfect: for it is the province of the perfect to generate. As, therefore, perfection being last in generation, is first in essence and nature, so likewise the motion with which generated natures are last moved, is first in nature and essence. Aristotle also adds another demonstration, that local motion is more perfect than the other motions, and on this account is first, both according to nature, and according to essence. For local motion, says he, does not change any thing in the condition of subsistence to the thing moved. Neither according to essence, as generation and corruption; nor according to quality, as alteration; nor according to quantity, as increase and diminution. But that which preserves the nature and essence of a thing, is more perfect both by nature and essence, than things by which they are not preserved.

⁷ It has been before shown, that a self-motive nature subsisting both in time and essence prior to things which move and are moved, is the principle of such things; and also, that the self-motive nature moves peculiarly and properly with a local motion. If, therefore, local motion is the proper motion of the principle and cause of things which are moved, but the motion proper to the principle and cause of things that are moved, is prior to other motions, both in nature and time, the conclusion is evident, that local motion is the first of other motions, in nature, in essence, and in time.

CHAP.

CHAPTER XI.

WHAT however the first motion is must now be shown: and, at the same time, that which is now and was before supposed, that there may be a certain continued and perpetual motion, will be evident by the same method. That no one, therefore, of the other motions can be continued, is from these things manifest. For all motions and mutations are from opposites into opposites. Thus, for instance, the boundaries to generation and corruption, are being and non-being; but the boundaries to change in quality, are the contrary passive qualities; and to increase and diminution, either magnitude or parvitude, and the perfection and imperfection of magnitude, are the boundaries. But contrary motions are those which are into contraries. And that which is not always moved with this motion, but had a prior existence, must necessarily prior to this have been at rest. It is evident, therefore, that the thing which is changed, will be at rest in the contrary. The like also takes place in mutations; for corruption and generation simply assumed, are opposed to that which is simply assumed, and each particular to each. Hence, if it is impossible to be at the same time changed according to contrary mutations, mutation will not be continued, but there will be time between them; for it is of no consequence whether the mutations according to contradiction, are contrary, or not contrary; if only, it is impossible that they can at the same time be present to the same thing: for this is not at all useful to the argument. Nor if it is not necessary to be at rest in contradiction, neither is mutation contrary to rest: (for non-being perhaps is not at rest; but corruption

ruption is a motion to non-being) but only if time subsists between ; for thus the mutation is not continued. For neither is contrariety useful in things which are prior, but the not being able to exist together at the same time. But it is not proper to be disturbed, because the same thing will be contrary to many, as, for instance, motion to permanency, and to the motion which is to a contrary ; for this alone ought to be assumed, that a contrary motion is, in a certain respect, opposed both to motion and rest, just as the equal and the moderate are opposed to that which surpasses, and to that which is surpassed ; and that neither opposite motions, nor mutations, can subsist together at the same time⁸. Again, in generation and corruption, it may seem to

⁸ All other motions besides lation, are from opposites into opposites. But things which are from opposites into opposites, are either opposites or contraries. Aristotle, however, confines himself to contraries ; since generation and corruption are opposites, but not contraries : but it is impossible that contrary motions, or such as are in any respect opposite, should be one and continued. From which he infers, that all other motions, besides lation, cannot be continued. And that each of them indeed, is from an opposite into an opposite, he shows by enumerating the opposite boundaries to which they are moved. For to generation and corruption, being and non-being are the boundaries ; but to alliation, the contrary passive qualities, heat and cold, whiteness and blackness, and things of this kind. But to increase and diminution, magnitude and parvitude, or rather the perfection and imperfection of magnitude, are the boundaries ; for magnitude is common both to the perfect to which increase tends, and to the imperfect to which diminution tends. But that the motions to contraries and opposites are contrary and opposite is evident. For this is the definition of contrary motions. That it is not possible also that there can be one and a continued motion from opposites and contraries is manifest. For if it were possible, that which is tending to whiteness, would at the same time be tending to blackness ; and that which is changing into health, would also at the same time be changing into disease ; that which is increasing would at the same time be diminishing ; and that which is generating would at the same time be corrupting, if there is one and the same motion from contraries. But if there is not one motion from contraries, contrary motions will be interrupted by rest. This Aristotle demonstrates by using the axiom, that a thing which is not always moved with this motion, but had a prior existence, must necessarily prior to this have been at rest. For if that which tends to whiteness did not rest, and without ceasing to be whitened tended to blackness, it would then at the same time be whitened and blackened ; so that at the same time it would become white and black, arriving at the end of the motion. But if ceasing to tend to whiteness it should become white, and from white should change to black, when it obtains the form of the white,

to be perfectly absurd, if it is necessary that what is generated, should immediately be corrupted, and remain, for no time. Hence, from these things credibility may be obtained in other mutations; for it is natural that the thing should similarly take place in all of them⁹.

white, it will entirely be at rest for a certain time. For thus from being itself white, and no longer tending to whiteness or blackness, the mutation will be produced. For neither does it at the same time tend to whiteness, and is white; nor is it at the same time genuinely white and blackened. Since if this were the case, it would at the same time be, and not be at the end. But if not at the same time it is, and is corrupted, there will be a certain time in which that which is moved will rest in the end.

But Aristotle having shown of motions which are from contraries to contraries, that is of motions properly so called, that it is impossible for them to be continued, speaks also in common of mutations, that is, of generation and corruption: for these are mutations only, and not motions. And he shows, that the same thing takes place in these also, which was demonstrated of motions. For that which was not before generated man, but is about to be generated, must necessarily have rested before for a certain time in this form from which it becomes man. For seed remaining for a certain time seed, thus changes into man; since it is impossible that opposite mutations, as also opposite motions, can be produced at once. For that which is becoming to be, will not prior to the being generated, change into the being corrupted, if corruption is a mutation from being; but that which is becoming to be is not yet. And if this be the case, neither will the mutations be continued; for both have beginnings and ends, into which being opposed to each other they change. But he says, that there will be time between them. And he does not say rest, guarding against the objection, which he shortly after solves. For it is not true, that as in contrary motions, that which is moved according to such motions, rests between, so likewise being and non-being, which are changed into opposites, rest between. For that which rests since it is a certain being, rests also in being. But non-being cannot rest in a certain non-being. It is, however, necessary that there should be a certain time between these, of the mutation from the one to the other.

⁹ That mutations from opposites into opposites are not continued, but are interrupted by time, Aristotle shows from generation and corruption, syllogizing in capacity as follows: if generation and corruption are not continued, but are interrupted by time, it may also be credible that other mutations which are from opposites into opposites are not continued. But the antecedent is true, and therefore the consequent. And that generation and corruption are not continued, he shows from its being absurd, that what is generated should immediately be corrupted, and remain for no time in the form for the sake of which it was generated. For though sublunary natures flow continually, yet there is also a certain permanency in them, as in flowing natures; in order that there may be a certain distinction and boundary of forms, and a gnostic order and comprehension.

CHAP.

CHAPTER XII.

BUT that there may be a certain infinite motion, one and continued, and that this is a circular motion, we shall now assert. For every thing which is locally moved, is either moved in a circle, or in a right line, or in that which is mixed from both these: hence if neither of these motions is continued, neither can that be continued which is composed from both of them. But that a thing which is locally moved in a finite right line, cannot be moved continually, is manifest. For to do this it must return; but that which returns in a right line, is moved with contrary motions. For the motion upward is contrary to the motion downward, according to place; the motion to the anterior, to that which is to the posterior part; and the motion to the right hand, to that which is to the left. For these are the contrarieties of place. But what the motion is which is one and continued, has been before defined, viz. that it is of one thing, and in one time, and in that which has no difference according to form. For there are three things, viz. that which is moved, as man or God; when, as time; and the third thing, that in which the motion is produced; and this is place, or passive quality, or form or magnitude. But contraries differ in species, and are not one. And the differences of place are those which have been enumerated¹. But this is an *indication* that

¹ Aristotle having shown that none of the other motions and mutations can be continued, but if there is a continued motion, it must from necessity be motion alone, proceeds to demonstrate what that motion is, which can be one and continued. But the *infinite* here, signifies *that which is without*

that the motion from A to B is contrary to the motion from B to A, that they stop and cause each other to cease, if they are produced at the same time. The like also takes place in a circle; for instance, the motion from A to B is contrary to the motion from A to C; for they will stop each other though they are continued, and there will not be a regression, because contraries corrupt and impede each other. Motion, however, to that which is oblique is not contrary to that which is to the upward place². But it is especially evident, that it is impossible for the

without bound and perpetual: for motions which have boundaries, in returning between them rest. When also he adduces *man* or *God* as instances of that which is moved; the latter signifies that which is perpetually moved; for this is immortal and divine; but man is the paradigm of things moved in a part of time. The motion therefore is one and continued, which is of one thing, and in one time, and according to one form; as if a man should be tending to whiteness for the space of one hour, or if the heavens are perpetually moved in a circle. Things, however, which are moved in a right line, though they return, yet are moved from contrary to contrary places, viz. from below to above, and from above to below. But these are the differences of place according to contrariety; through which the motions also which tend to them are contrary. But contraries are things which being under the same genus differ in the extreme. If, therefore, contrary motions are not produced according to one form, and which is without difference, the motion of things which return in a right line, is neither continued, nor one.

² Aristotle uses the word *indication* here, because arguments from things consequent are conjectural, and not demonstrative; just as we syllogize from a female having milk, that she has been delivered of a child; for the having milk is consequent to the having been delivered. But demonstrative arguments infer things posterior from such as are prior, and things caused from causes. We collect, therefore, demonstratively, that a female has milk from her having been delivered of a child, because the latter is the cause of the former. That the motions, therefore, destroy each other does not precede, but follows from their being contrary; for contraries destroy each other; but not all things that destroy each other are contraries. For negation destroys affirmation, and things opposed according to other modes destroy each other, and yet at the same time are not contraries. For the *destroying* is not the cause of *being contrary*, but is *consequent* to it. And hence the demonstration is from indication.

Not only however things oppositely moving in a right line, cause each other's motion to cease, but in a similar manner, things oppositely moving in a circle. They are opposed, however, not as things in a right line beginning from contraries, the one from A, for instance, being above, and the other from B beneath; but they are opposed as beginning from the same point, and not being moved to the same parts of the circle. As if both should begin from the point A, which is in the circle, but one of them should be moved to the part B of the circle, and the other to the part C.

For

the motion in a right line to be continued, because that which returns must necessarily stop, not only if it is moved in a right line, but also if it is moved upon a circle. For it is not the same thing to be moved in a circle, and upon a circle; since that which is moved at one time continues its motion, and at another, when it has arrived at the same thing from which it began to be moved, again returns³. But that it is necessary it should stop, is not only rendered credible by sense, but also by reason.

But the principle is this; for since there are three things, the beginning, middle, and end; the middle compared with each of these is both; and in number indeed it is one, but in definition two. Besides, it is one thing to be in capacity, and another to be in energy. Hence any point whatever of a right line, which is between the extremes, is in capacity indeed the middle, but is not in energy, unless it divides the line, and having stood still, again begins to be moved; but thus that which was the middle becomes the beginning and end, the beginning indeed of the posterior, but the end of the prior motion. I say, for instance,

For things which being thus moved, meet each other, stop each other; since the boundaries in a circle, are not as in right lines contrary, because there are not, indeed, any boundaries in it. Nevertheless things oppositely moved in a circle stop each other, though the motions are continued, and there is not a regression as in a right line. For the things oppositely moved, do not stop each other through regression, but through opposite motion. But Aristotle procures credibility of the motions being contrary which destroy each other in a right line, when they are renewed, from motions which are not opposite, and which are not produced oppositely, not being destructive of each other, but only different from each other. Thus the motion from the right hand to the left hand, and, in short, to parts obliquely situated, is not contrary to the motion upward, though these motions are different, and are neither continued, nor according to the same form; but as not being opposed, they may subsist together. But the motions in a right line, which are diametrically opposite, destroy each other; which is more than to be only specifically different.

³ Aristotle says, that it is not the same thing to be moved in a circle, and upon a circle. For that is said to be moved in a circle which continues its motion, as the sun continually performs its course; but a thing is said to be moved upon a circle, though it should not *continue* its motion. Thus in the circle ABC, if a body is moved from the point A, and through BC returns to A, and afterwards recedes, and through CB returns to A, it then moves upon a circle, but is not moved in a circle, or circularly.

if A which is locally moved, should stand still at B, and again should be moved to C. But since it is continually moved, the point A can neither have approached to the point B, nor have receded from it, but can only be in *the now*, and not in any time, except in that whole time, of which that moment or *now* is the division. If any one, however, asserts, that it has approached and receded; A which is locally moved, will always stand still. For it is impossible for A to have at the same time approached to B, and receded from it: it will therefore be in another and another point of time. Hence that will be time which is in the middle; so that A will rest in B, and in a similar manner it will also rest in the other points; for the same reasoning applies to all of them. But since that which is locally moved, viz. A, uses B as the middle, end, and beginning, it is necessary that it should stop, because it makes two things, just as if it should be mentally conceived. But it recedes from the point A, i. e. from the beginning, but accedes to C, when it has finished its motion and stood still⁴. Hence this must be

⁴ When Aristotle says, "I say, for instance, if A which is locally moved should stand still at B, &c." he speaks of interrupted motion. For conceive ABC to be a right line, upon which a body is moved. Because therefore the body rests in B, and afterwards the motion being repeated, proceeds to C, there is not one motion, but two motions. Afterwards, when he says, "but since it is continually moved, &c." he speaks of a continued motion from A to C, so that the moveable body does not rest in B, nor in any other point between A and C; Aristotle therefore says, that the moveable body neither approaches to B, nor recedes from it, nor is in B in any time, but is in it only for a moment. The reason is, because the point B is not in energy, but only in capacity. Hence that which is moveable in energy, cannot approach to, and recede from that which is not in energy, nor can be in it for any time, but only for a moment of time; because a moment has the same relation to time, that a point has to a line. Aristotle adds, "that it can only be in *the now*, and not in any time, except in that whole time, of which that moment or *now* is the division;" by which words he shows that the moveable body may after a manner and improperly be said to be for some time in the point B, so far as it is in a moment which is contained in that time. But he calls *the now* the division of time: for a moment, since it is indivisible, cannot be a part of time. For since time is continued, every part of it is continued and divisible, as was demonstrated in the sixth book. But it is said to be the division of time, because it divides time, and separates the future from the past. As therefore Socrates is said to be

be said in answer to the doubt: for it has this doubt. For if the line A is equal to the line F, and A is continually moved from the extremity to C, but at the same time A is in the point B, and D is moved from the extreme line F to G equably, and with the same celerity with which A is moved; certainly D will arrive at G, before A will have arrived at C. For that which was first impelled, and which first departed, must necessarily have arrived the first. A therefore did not at the same time accede to B, and recede from it; and hence it arrived later at the end: for if it had receded at the same time, it would not have arrived later; but it is necessary that it should have stood still. It must not, therefore, be admitted, that when A approaches to B, D is at the same time moved from the extreme F; for if A approaches to B, it will also

be in the city, not because the city is his proper place, but because the place in which Socrates is, is contained in the city; so the moveable body may be said to be for some time in B, so far as it is in a moment of that time.

In the next place he proves by a deduction to an impossibility, that the body which is continually moved from A to C, neither approaches to B, nor recedes from it. For if it approaches and recedes, it will always stand still; but this consequence is evidently false and impossible. For how can that which is continually moved always stand still? In the first place, this is proved of the point B, and afterwards of the rest; because the same reasoning applies to all the others. If any one, however, says Aristotle, asserts that the moveable body has approached to B and receded from it, it will either approach and recede in the same instant, or in different instants. But it cannot in the same instant, because to approach and recede are contraries, and cannot exist at once. It must be, therefore, in different moments. Hence there is one moment in which the moveable body approaches to B, and another moment in which it recedes from B. But if this be the case, it is necessary that between these two moments time should intervene; for this was demonstrated in the sixth book. In that time, therefore, the moveable body will be at rest, since it has now approached to B, and has not yet receded from it. What is here said of B must be understood of every other point. And thus the moveable body which is continually moved through the line AC, will every where stand still.

Lastly, Aristotle having just proved what he had asserted about continued motion, now assigns the reason of what he said about interrupted motion; viz. that the moveable body will rest in B. The reason, says he, is, because it makes two things, viz. it makes B to be the end of the first motion from A to B, and the beginning of the second motion from B to C. Hence, from one medium B, it makes two things, i. e. end and beginning; not indeed in reality, because it does not yet divide the line; but as Aristotle says, it may be *mentally conceived* to do so, that same point having the relation of end and beginning.

recede,

recede, and not at the same time. But it was in a section of time, and not in time. Here therefore it is impossible thus to speak, viz. in that which is continued: but in that which returns, it is necessary thus to speak; for if G were moved to D, and again having receded was carried downward, certainly it has in this case, used D as the beginning and end, viz. one point as two. Hence it is necessary that it should have stood still, and not at the same time have approached to D, and receded from D; for at once it would be there, and would not be in the same now. The solution however formerly given, is not to be adduced here; for it cannot be said, that G is in D in a section of time, and that it has neither approached nor receded; for it is necessary that it should arrive at an end which is in energy, and not in capacity. The point therefore which is in the middle is in capacity; but this is in energy. And it is indeed the end downward, but the beginning from above. After the same manner therefore, there is an end and beginning of motions. Hence it is necessary that that which returns upon a right line should stand still; and therefore it is not possible that there can be a continued perpetual motion upon a right line. After the same manner a reply must be made to those who ask the question of Zeno⁵, and who
 who

⁵ The question of Zeno which Aristotle now mentions, is as follows: if motion is, there will be something which in a finite time will have passed through infinites. For in consequence of there being a bisection to infinity, there will be infinite halves in every continued quantity, because every part of it has a half. But that which is moved through a finite quantity, will have passed through infinites, in the finite time in which it passed through the finite quantity. Zeno, therefore, assuming that it is not possible for any thing to pass through infinites in a finite time, because in short, infinites cannot be passed through, subverts the existence of motion. The true solution of this doubt is, that every thing continued, contains in itself in capacity, and not in energy, those things according to which it may be divided; a line indeed points, but time *nows* or instants. But he who divides into halves and numerates, assumes these in energy. He also uses one point as two in dividing that which is continued; for he makes it a beginning and an end; just as he does, who is moved in a right line and returns. And as he is no longer moved as in a continued quantity, nor with a continued motion, but uses the same point as a beginning and end, and becomes situated in it, and again recedes from it, this also he does who enumerates every half; for he divides the continued, and assumes in it certain middles in energy. But being divided it no longer
 longer

who demand whether it is always necessary to pass through the half: for these say they are infinite; and it is impossible to pass through infinites. Or as some in a different manner make the same inquiry, who require it to be granted them, that together with the half being first moved through, every half also may be numbered as it is generated. Hence, when the moveable thing has passed through the whole line, it will happen that an infinite number will be numerated. But this is confessedly impossible. In the first discussions, therefore, concerning motion, we solved this argument, through time containing in itself infinites; for there is nothing absurd in admitting, that something may pass through infinites in an infinite time; but the infinite is inherent in length and in time, in a similar manner. This solution indeed is sufficient in answer to the interrogator; for it was asked, whether infinites could be passed through, or numerated in a finite time. But this solution is not sufficient so far as pertains to the thing, and to truth: for if any one dismissing length and the interrogation whether infinites can be passed through in a finite time, makes these enquiries about time itself, (for time has infinite divisions) this solution will be no longer sufficient. But the truth which we mentioned a little before must be asserted: for if any one divides a continued line into two halves, he uses one point as if it were two; since he makes it both a beginning and end. He also does this who numerates, and who divides into halves. But thus dividing, neither a line nor motion will be continued: for continued motion is of that which is continued. And in the continued there are infinite halves, yet not in energy, but in capacity. But if the motion should make them in energy, it will not be continued, but will stand still; which evidently happens to him who numbers the halves; for it is necessary that he should numerate one point as if it were two: for it will be the beginning of one half, and the end of the other, if he does not

longer remains continued: for neither magnitude, nor motion, nor time, are any longer continued when divided. Hence he who divides, no longer shows infinites inherent in that which is continued and finite; since when divided in energy, it no longer remains continued.

numerate

numerate one continued line, but two halves. Hence to him who asks, whether infinites can be passed through, either in time, or in length, we must reply, that this is partly possible, and partly not: for it is not possible for infinites in energy to be passed through, but it is possible for infinites in capacity: for he who is continually moved passes through infinites accidentally, but simply does not: for it happens to a line that there are infinite halves⁶; but the essence and being are different. It is also evident that unless the point of time by which prior and posterior are divided, is always attributed to the posterior, the thing itself being considered, the same thing will be at the same time being and non-being, and when it will be in generation, or becoming to be, will not be in generation. The point, therefore, is common to both the prior and posterior, and is one and the same in number, but is not the same in definition; for it is the beginning of the one, and the end of the other. But so far as pertains to the thing it is always of the posterior passive quality: for let the time be A B C; the thing D. This in the time A is white, but in the time B is not white. Hence in C it is white and not white: for in any point of A, it would be true to say, it is white, if it was white in all this time; and in B not white. But C is in both. It must not, therefore, be granted that it was white in the whole time, but the last *now* or moment C must be excepted: and this is now posterior. And if it should become not white, and the white should be corrupted in the whole of A; it is generated or is corrupted in C. Hence, it is true to say, that it is first white, or not white in that; or when it is generated, it will not be; and when it is corrupted it will be; or it is necessary, that it should be at the same time white and not white, being and non-being⁷. But if it is necessary that a thing which
before

⁶ By the assertion that it happens to a line to have infinite halves, Aristotle means that a line may be divided to infinity into halves; for a line has the capacity of being thus divided, but not of being infinite halves. Hence Aristotle says, that the essence and being of a line, are not according to the infinites in it, because these are in it, in capacity; but the essence of a line is according to the being one and continued, which are inherent in the line in energy.

⁷ Thus far Aristotle has taught us that a point of time, that is, a moment or *the now*, is both a beginning and end, the end of the preceding, and the beginning of the following time; so that
it

before was non-being should become being, and when it is becoming to be it is not,—if this be the case, time cannot be divided into indivisible times: for if D was becoming to be white in the time A, and at the same time is made white, and is in another indivisible adhering time, i. e. in B; if it was becoming to be in A, but is in B, it is necessary that there should be a certain intermediate generation; so that there was time in which it was generated: for the same reasoning will not apply to those who say there are not indivisible times; but in the last point of the time in which it was becoming to be, it was generated and is; to which point nothing adheres, nor is successive. But if there are

it is common to both times, and is found in each, as the boundary of each. Now, however, he demonstrates, that though this is true with respect to time, yet it is not true with respect to the moveable thing. That we may not be deceived, therefore, he shows that this moment, with reference to the moveable thing, ought only to be attributed to the posterior, and not to the prior part. In order to demonstrate this he assumes a continued time, A C B; of which time, A is the prior part, as, for instance, the first hour; and B the other continued part of the first time; as, for instance, the second hour. But C is a moment, and the middle term, by which those two hours are connected. Afterwards he assumes a thing which he calls D; and he supposes this to be white in the whole time A, i. e. in the first hour, and not white in the whole time B, i. e. in the second hour. Because, therefore, the middle point C, is in A as its end, and in B as its beginning, this absurdity seems to be collected, that the same thing D is in the same point of time C, white, and not white. That this absurdity, therefore, may be avoided, Aristotle says that the point C ought to be alone attributed to the time B; so that D may be said to be not white in the whole time B, but may be said not to be entirely and simply white in the whole time A, but to be white in the time A, except in the moment C, in which it is not white.

In the next place, what he has just demonstrated of that which *is*, he now demonstrates of that which is *becoming to be*, and of that which is *tending to corruption*: for if D is becoming to be white in the time A, and is made white in the time B, it must not be said, that it was becoming to be white in C, but that it was made white in it. In like manner if that which is white, is tending to corruption in A, and is corrupted in B, it must be said that it was corrupted tending to corruption in C, and not that it is in it; otherwise the same absurdity will follow as above. But he says, “it is first white or not white in that.” He says, *white*, with respect to generation, and *not white*, with respect to corruption: for when it is becoming to be white in A, it begins to be white in C; and when the white is tending to corruption in A, it begins to be non-white in C. He also says *in that*; i. e. in the point C.

indivisible times, they will be successive⁸. It is evident, therefore, that if it was generated in the whole time A, there is not a greater time in which it was becoming to be, and was generated, than that in the whole of which it was alone generated⁹. These, therefore, and such as these are the arguments which some one may believe in, as *appropriate*.

⁸ Aristotle here shows what was proved by other arguments in the sixth book, viz. that time does not consist of divisible times: for if D (as in the above example) is becoming to be white in the time A, and was made white and is white in the time B, these two times A and B cannot be indivisible; which is thus proved. That which is becoming to be is not yet; from whence it is evident that D is not white in the time A, because in this time it is becoming to be white. But we suppose the same D to be white in the time B. Because, therefore, it is not white in A, and is white in B, it is necessary there should be a middle generation, through which from non-white it becomes white; and consequently it is necessary there should be a middle time. Thus the adversary is led to an absurdity, that is, to contradiction: for he supposed the time B to cohere to the time A; but now it is proved that there is another intervening time.

Aristotle in the next place notices a certain objection: for some one may say, that the argument which Aristotle lately used against those who admit indivisible times, is equally hostile to himself, contending that there are divisible times: for as the advocates for indivisible times say, so likewise Aristotle asserts, that a thing is becoming to be white in A, and is white in B. Hence it is not white in A. Whether therefore, A and B are divisible or indivisible times, it will always be true that a thing is not white in A, because in that time it is becoming to be white; and also, that it is white in B. Hence, whether A and B are divisible or indivisible, it is necessary to admit a middle generation, and consequently a middle time; which is false. Aristotle replies, that this reason does not militate against his assertion: for the time A being divisible, the thing in A is becoming to be white so as to be white in the extreme point A, i. e. in C. Hence it is not first white in B, but in C; and therefore, there is no need of a middle generation between A and B; but it is so becoming to be white in A, that in the extremity of it C, it is white. This, however, the objector cannot say; because according to his assertion A is indivisible, and therefore cannot have in itself any extremity, in which a thing may be said to be white.

⁹ Aristotle, from what he has above demonstrated, collects this corollary, that there is not a greater time in which any thing was becoming to be, for instance, in which a thing is becoming to be white, than the time in which it is becoming to be, and was generated: for if a thing is becoming to be in the time A, it actually is generated in the extremity of A, as we have just now shown. When, therefore, you say that a thing was generated in the time A, you assume the whole time A, and do not exclude its extremity: for how could it be without its extremity? Again, when you assume that a thing is becoming to be, and is generated, you assume nothing besides A, because the thing is first said to be generated in the extremity of A.

But

But to those who consider the affair logically, from these arguments also, it may appear that this very same thing may happen¹: for every thing which is continually moved, if it is not impeded by any thing, was first moved to that to which it arrives by lation. Thus if it arrives at B, it was also moved to B; and not then only when it was near, but immediately as soon as it began to be moved: for why now rather than before? The like also takes place in other things. But that which is moved from A to C, will again come to A, when it is moved continually. When, therefore, it was moved from A to C, it was then also moved with the motion from C. Hence it is at the same time moved with contrary motions: for the motions are contrary which are upon a right line². At the same time also, it changes from this, in which it is

¹ Aristotle calls *appropriate* arguments those syllogisms, which he usually denominates demonstrative; but afterwards he announces, to show this very thing *logically*. But logical syllogisms are those which are not formed through things appropriate and proximate to the thing proposed; as were the former syllogisms, through the difference of the motion in a right line, and through the magnitude of the subject of such a motion; but are formed through things more common and universal, are also capable of being adapted to other things, and are usually called by Aristotle dialectic syllogisms, as subsisting through *probable* arguments.

² The logical reasoning which is here proposed by Aristotle consists of a prosyllogism, and a principal syllogism, in which the conclusion of the prosyllogism is taken for the minor.

The prosyllogism is as follows: Whatever is moved with a continued motion, as soon as it departs from the first term, is said to be moved to the last term, to which it arrives with that motion. But that which is moved upon the right line A B, according to the opponents, is moved with a continued motion from A to B, and from B by returning to A. Hence, immediately as it is moved from A, it is moved to the last term, to which it arrives in the last place, viz. it is moved to A. But the principal syllogism is this: the motions from A to B, and from B to A, upon the right line A B, are contrary. But the moveable thing, while it is moved from A to B, is also at the same time moved from B to A, as was proved in the foregoing prosyllogism. Hence it is at the same time moved with contrary motions, which is absurd. In the first place, Aristotle gives the major of the prosyllogism. In the second place, when he says, "*If it arrives, &c.*" he confirms that major proposition. Thirdly, when he says, "*But that which is moved, &c.*" he adds the minor of the same prosyllogism. In the fourth place, when he says, "*When therefore it was moved, &c.*" he collects the conclusion of the prosyllogism, which he takes for the minor of the principal syllogism. Fifthly, when he says, "Hence it is at the same time, &c." he collects the principal conclusion. And sixthly, when he says, "For the motions are contrary, &c." he adds the major of the same principal syllogism.

not³. If, therefore, this is impossible, it is necessary that it should stand still in C: and hence there is not one motion; for the motion which is intercepted by standing still is not one.

Farther still, from these things also, it is more universally evident concerning all motion: for if every thing which is moved, is moved with some one of the abovementioned motions, it will also rest with some one of opposite rests; for there is not any other besides these. But that which is not always moved with this motion (I mean motions which are different in species, and not if any thing is a part of the whole), it is necessary first to rest with an opposite rest: for rest is the privation of motion. If, therefore, the motions are contrary which are made through a right line, and it is not possible for any thing to be moved at the same time with contrary motions; that which is moved from A to C, cannot at the same time also be moved from C to A. Since, however, it is not at the same time moved, but is moved with this motion, it is necessary that it should have rested before in C: for this is the rest opposite to the motion from C. From what has been said, therefore, it is evident that the motion is not continued⁴. Besides, this reasoning is
more

³ This is the second logical reason, which is connected with the foregoing: for from the same principles, from which he had before deduced this absurdity, that the same thing would be at the same time moved with contrary motions, he now deduces another absurdity, that the thing is moved, that is, recedes from the boundary in which it yet is not. But it was said that when a thing is moved from A to C, it is at the same time moved from C to A. But while it is moved from A to C, it is not yet in C. Hence, before it is in C, it departs from C, which is evidently absurd. In order to avoid this absurdity, it is necessary to confess that there is not one continued motion, but two separate motions from A to C, and from C to A.

⁴ This is the third logical reason, in which the demonstration is more universal, extending to every mutation, and which comprehends both generation and corruption: for he uses privation, because all mutations, whether according to place, or according to quality or quantity, or according to essence, are produced from appropriate privation. Very properly, therefore, does he say, that he shall speak more universally about all motion, that is, about all mutation: for every thing which is changed into that which it was not before, changes from not being this particular thing, and from its proper or appropriate privation, to being this particular thing, as is demonstrated in the first book of the Physics. But the reasoning of Aristotle is as follows: He
assumes

more appropriate than what has been before said : for that which is not white, is at the same time corrupted, and becomes white. If, therefore, the alliation into white and from white is continued, and does not remain for any time ; that which is not white will at the same time be corrupted, and become white, and become not-white : for there will be the same time of three things⁵. Again, it does not follow that if time

is

assumes that things which are not perpetually but sometimes moved, are moved with some of the abovementioned motions from opposites to opposites : for they are either moved according to generation and corruption, or according to increase and diminution, or according to alliation, or according to lation in a right line. But it is evident that things which are not always moved, sometimes rest with some of the rests which are in the opposites to which they are moved : for neither is there any other motion besides those, nor any rest besides these. He syllogistically infers, therefore, that that which is not perpetually moved, is either moved with some one of the abovementioned motions, or rests with some one of the rests opposed to these motions. But that which is moved with some one of these not perpetual motions, prior to being moved with it, must necessarily rest with a rest, which is between this motion, and that which is opposed to it. That, however, which rests between, is not moved with a continued motion. And thus, indeed, he demonstrates universally of all mutation produced from privation. Afterwards he speaks of the lation which returns in a right line, and about which it was proposed to show that it is not continued : for if the motions in a right line are contrary, that which is from above to beneath, to that which is from beneath to above, or the motion from A to C, to the motion from C to A, and on this account that which is moved from C to A cannot be moved at the same time with both motions, it is necessary that it should have first rested in C : for this was the rest opposed to the motion from C, subsisting between the two motions, and cutting off their continuity. It is evident, therefore, that the motion in a right line is not continued. And such is the whole demonstration of the thing proposed.

⁵ What Aristotle now says, is as follows : If the motion from contraries to contraries is continued, at the same time that from which the mutation proceeds is corrupted, and becomes that to which the mutation tends, in the same instant. So that a thing which is not white, will at the same time be corrupted, and become white. If, therefore, the returning is continued, it will be at the same time changed to white, and from white to not-white. Hence these three things will be in the same instant, which Aristotle calls time : for he says, there will be the same time of three things ; the corruption of that which is not white, the generation of the white, and the mutation from white to not white ; so that the same thing will be white, and something of white will be already changed : for this it is to change from white.

This consequence is thus proved. In the first place, it is certain that non-white tends to corruption, and white is becoming to be at the same time : for while it is becoming to be white from

non-

is continued, motion also is continued ; but it is successive. But how can the same thing be the extreme of contraries, as of whiteness and blackness⁶? The motion, however, which is made upon a periphery is one and continued ; for nothing impossible happens : for that which is moved from A, is at the same time moved to A, according to the same impetus ; for to that to which it comes, to this also it is moved. It is not, however, moved at the same time with contrary or opposite motions : for not every motion which is from this, is contrary to that which is to this, or opposite. But that motion is contrary which is made upon a right line : for to this there are contraries according to place ; for instance, the motion through a diameter⁷ ; since this is very much

non-white, non-white is tending to corruption, and is becoming to be white. But that at the same time also it is becoming to be non-white is evident from the assertion of the opponent, that there is one continued motion from non-white to white, and from white to non-white. Hence it follows, that while it is moved from non-white to white, it is at the same time moved from white to non-white. But when it is moved from white to non-white, then it is becoming to be non-white.

⁶ It does not follow that if any thing is in the continued, that thing itself is also necessarily continued ; since if this were the case, all things that are in time, and which are much distant from each other, though they should be most dissimilar would be continued. Time, therefore, is continued, but the motions in it, which are to contraries and from contraries, will not be continued with each other, but successive : for things are successive, between which there is nothing of a kindred nature. But between motions to opposites, there is not motion but rest, which is not of a similar form to motion ; so that the motions which are thus produced, are not continued, but successive to each other. But that it is not possible for contrary motions to be one continued motion, Aristotle shows from the definition of things continued : for those things are continued which are conjoined to one common boundary, and of which the boundaries are one. But of contraries, there is not a common boundary ; nor is it possible that the extremes of contraries, according to which they are conjoined, should be one : for the extremes of contraries are also contrary to each other ; and contraries are not one : for how, says Aristotle, can the extremes of whiteness and blackness be one and the same ? So that contraries, of which the boundaries also are contraries, will not be continued with each other.

⁷ Aristotle here alludes to the diameter of a circle, the boundaries of which are most distant from each other. Hence the reciprocal motions in a diameter are contrary. But he says, the motion is opposite, which is according to the same length : for those in a diameter are contrary, because they are most distant from each other. In like manner the motions upward and downward,

much distant. But that motion is opposite which is made through the same length. Hence nothing prevents [that which is moved in a periphery] from being continually moved, and not failing at any time: for the motion in a circle is from the same to the same; but the motion through a right line is from the same to another. The motion in a circle also is never in the same things, but that in a right line is frequently in the same. Hence that which always becomes in another and another, may be moved continually; but that which is frequently in the same things may not: for it is necessary to be at the same time moved with opposite motions. Neither, therefore, in a semicircle, nor in any other periphery, is it possible to be moved continually: for it is necessary frequently to be moved through the same things, and to be changed with contrary mutations: for it does not conjoin the end with the beginning; but the motion of a circle conjoins these, and is alone perfect⁸. It is also evident from this division, that neither can any

ward, to the right hand and the left, to behind and before, according to nature, are contrary, as being motions from things contrary according to place to contraries. But the motions in any other casual right line, when they return, are opposites indeed, but not contrary.

⁸ From this argument also, Aristotle shows the difference between the motion in a circle, and the motion in a right line; according to which differences the motion in a circle may be continued, but that in a right line cannot: for the motion in a circle, says he, is never in the same things; i. e. says Alexander, is never situated in the same things; because no point in the periphery is in energy, in which being situated it will stand still, or in short, will be present and depart. But the motion according to, and in a right line, necessarily is present with, and departs from the same things. The consequence, however, of never being in the same things, is the not having a necessity to stand still; but the becoming frequently situated in the same things, is attended with the necessity of standing still in that in which it becomes situated again and again: for in that in which it is situated in energy, from that also it departs. But it is necessary that standing still should subsist between the being situated in and departing from a thing, as was before demonstrated. Things, therefore, which return in a right line become situated twice in the same point, ending and again beginning in it; since the same interval is twice successively moved through; the thing which is moved, ceasing to be moved in the point from which it returns, and again beginning its motion from it; and this it does as often as it returns. Hence the motion which always becomes situated in another point, may be continued; but that which is frequently situated in the same point cannot.

• other

other motions be continued : for in all of them it happens to be often moved through the same things ; as, for instance, in alliation, through intervening media : in the motion of quantity, through middle magnitudes ; and in a similar manner, in generation and corruption : for it is of no consequence, whether those things are made few or many, in which the mutation takes place ; nor whether any thing intermediate is added or taken away ; for it happens in both ways frequently to be moved through the same things⁹. From hence, therefore, it is evident that neither do those physiologists speak well who say, that all sensible natures are always moved : for it is necessary that some of these motions should be moved ; and according to these, alliation especially takes place : for they say that all things flow, and are diminished ; and besides this, they call generation and corruption alliation. But the arguments now employed, universally show of all motion that it is not possible to be continually moved with any motion, except that which is circular ; so that it is not possible to be continually moved, either according to alliation, or according to increase. Thus much, therefore, has been said by us to prove that there is neither any infinite mutation, nor any continued motion, except that which is in a circle¹.

CHAP.

⁹ The other motions which are here alluded to by Aristotle are, increase, diminution, alliation, generation, and corruption : for in all these, says he, it happens to be often moved through the same things ; and as often as they are bounded by rest : for in alliation, when a thing is changed from black to white, and again from white to black, and this frequently, the restings between the becoming black and the becoming white, being many, and bounding the motions, make the motions also to be many : for there is one motion from the beginning of being whitened to the end, and another in the being blackened. These, therefore, are the things which he says have an intermediate subsistence in alliation. In the motion also according to quantity, there are magnitudes between the motions according to increase and diminution ; in which it is necessary to rest : for these being many, make also the motions to be many. And in a similar manner in generation and corruption : for all these motions being bounded, it is necessary that the things moved should return, and be moved with contrary or opposite motions.

¹ Aristotle having shown that no motion or mutation can be continued except circulation, which is inherent in the heavenly bodies alone, reproves those physiologists who say, that all sensible bodies are perpetually moved : for if all things indeed were moved in a circle, like the celestial

CHAPTER XIII.

BUT that circulation is the first of motions is evident: for every motion, as we have before observed, is either in a circle or in a right line, or mixed from both these. It is necessary, however, that those should be prior to these: and the motion in a circle is prior to that which is in a right line; for it is simple and more perfect: for it is not possible for any thing to be moved through an infinite right line; since that which is thus infinite does not exist. Nor if it did could any thing be moved through it; since that which is impossible cannot take place. But to pass through the infinite is impossible; and the motion which is made upon a right line, if it returns, is a composite, and becomes two motions; but if it does not return, is imperfect and corruptible. The per-

celestial bodies, it would be possible for all things to be perpetually moved. But it is evident from the phenomena, that sublunary natures are moved with other motions, being changed in quality, increased and diminished, and locally moved in a right line, and besides this generated and corrupted: for according to those physiologists these motions are in sensibles: for when they say that all sensible natures flow and fail, they admit generation and corruption. They also evidently admit alliation, because they call generation and corruption alliation. If, therefore, it has been demonstrated, that it is impossible for any thing to be continually moved, according to any one of these motions, and universally, that no motion can be continued except the motion in a circle, it is evident that neither can alliation, nor increase and diminution be continued, which they also saw existing in sensibles. But the followers of Heraclitus, looking to the never-failing flux of generation, and perceiving that all bodies are acceding and departing, and never truly are, as the Timæus of Plato also says, very properly asserted that all things flow, and that it is not possible to enter into the same river twice: for though they surveyed the rest which is between opposite motions, and which Aristotle has unfolded, yet they considered it as of no consequence with respect to the whole flux: for one swallow does not make spring, as Aristotle himself well observes in his Ethics.

3 T

fect,

fect, however, is prior by nature, by reason, and by time to the imperfect², and the incorruptible to the corruptible. Farther still, the lation which may be perpetual, is prior to that which cannot. Circulation, therefore, may be perpetual; but of other motions neither lation nor any other can be perpetual: for in these there must necessarily be standing still; but if there is standing still the motion is corrupted.

CHAPTER XIV.

But it happens reasonably, that the motion in a circle is one and continued, and not that which is in a right line: for of the motion which is in a right line, the beginning, middle, and end are bounded, and it contains all these in itself; so that there is *whence* that which is moved began, and *where* it will end: for every thing rests in boundaries; either *from whence*, or *whither* it is moved; but these in a circular motion are indefinite: for why is any one of those things which are in a circular motion the boundary rather than the rest? Since each is similarly beginning, middle, and end; so that some things are always and never in the beginning and end. Hence a sphere, in a certain respect, is moved and is at rest: for it occupies the same place. But the rea-

² The motion which is perfect and perpetual, such as circulation, is prior by *nature*, because this being taken away, the other motions which are imperfect and corruptible, are taken away; such as are the motions in a right line. The perfect, however, is not taken away together with the imperfect; for the motion in a circle being the cause of the generation and corruption of things moved in a right line, evidently co-subverts, but is not co-subverted. In the next place, Aristotle adds, that the perfect is prior by *reason*, which signifies by *essence*: for the perpetual and perfect are prior by essence to the corruptible and imperfect. And in the third place, the perfect is prior by *time*; because the perpetual is prior to that which is not perpetual, and the perfect to the imperfect.

SON

son of this is, that all these things happen to the center: for it is the beginning, middle, and end of magnitude³. Hence, since this is external to the circumference, there is not any place where that which is moved can rest, as if it had finished its motion; for it is always carried about the middle, and not to the extremity. On this account the whole in a certain respect, always remains and rests, and yet is continually moved. But this happens reciprocally: for because circulation is the measure of motions, it is necessary that it should be the first motion⁴: for all things are measured by that which is first; and because it is first, it is the measure of others. Farther still, the motion alone in a circle can be equable: for things which are moved in a right line, are moved anomalously from the beginning, and to the end; for all things, by how much the farther they are distant from that which is at rest, are moved by so much the swifter; but in a circular motion alone, neither the beginning nor the end are naturally adapted to be in it, but are external⁵. Indeed, that motion according to place is the first of motions,
is

³ The center is the *beginning* of the circle, because the circle subsists according to an equal distance from the center; but it is the *end*, because all the lines from the circle are terminated in the center; and it is the *middle*, because it is every where equally distant from the circle. Since, therefore, the motion in a circle, neither tends to the end nor to the beginning, nor to the middle, separately as in a right line, but is about the center, that is about the beginning, middle, and end, not having a separate subsistence, on this account it is also capable of being continued and is produced in the same place: for that which is moved is always equally distant from the end, and does not approach to it more and less, nor is compelled to arrive at the end, nor to depart from its place; that round which the motion is effected always remaining.

⁴ Aristotle shows that circulation is the first of motions, because it is the measure of other motions. And that it is a measure indeed, is evident from the phenomena: for night and day are the time of circulation; and by this, and the parts of this, we measure all motions. In the fourth book of the Physics also, Aristotle demonstrates that circulation is the measure of other motions, when he discourses concerning time. But that a measure is prior to the things which it measures is evident; since every thing which is measured, is measured by the most simple of the things in the same species; as number by the monad. And the more simple is prior to the more composite.

⁵ Aristotle says that the cause to circulation of its motion being continued and in the same, which is that the beginning and end are not in the circle, but external to it,—this also he says is

is testified by all those who have made mention of motion: for they attribute the principles of it to those things which produce this motion: for separation and concretion are motions according to place. Thus too, friendship and strife move: for the latter of these separates, and the former congregates. And Anaxagoras says that intellect which is the first mover separates; and they also think similarly, who say that there is no such cause as this, but that things are moved through a va-

the cause that it alone is able to be moved with an equable motion. And he shows that this motion is more perfect and prior by nature: for the equal is more perfect than, and is prior to the unequable. Again, according to the addition in a right line, and its unequability, he infers the equability of circulation: for things moved in a right line, both according to and contrary to nature, are moved anomalously from the beginning to the end: for of things which are moved contrary to nature, and by violence, those that are thrown are moved more swiftly towards the beginning, but more slowly when at a distance, the power of that which throws them failing. But those that are attracted, are indeed moved more slow in the beginning, but more swiftly when they draw near to that which attracts them. And things which are moved according to nature, are moved more swiftly when they become near to their proper places: for all things, says he, which are moved according to nature, by how much farther they are distant from that which is at rest, that is, from that in which they are at rest according to nature, and prior to having been moved with this motion according to nature, are moved by so much the swifter: for a clod of earth, after having been at rest on high which is contrary to its nature, being moved downward according to nature, is more swiftly carried downward, and fire more swiftly upward. And this is because they hasten from a beginning foreign to their nature, to their proper end. But the motion in a circle alone, through being always equally distant from the beginning and end, which are the center, is always equably moved, neither being moved from, nor to it, but about it: for the beginning and the end are not in the circle, so that it may tend from and to it; but they are external, or rather within it. Hence being equally distant about the center, it is always similarly moved. But that which is moved according to nature, when drawing near to its proper place, is moved swifter, either as to that which is of a kindred nature, or because when drawing near it is less impeded and divided. But that which is less may be more easily divided. Or because when it is more near to its proper place, it is more similar to it, and is not similarly contrary as that was whence it began its motion. Or it is because when it begins its motion to its proper place, having but just changed from its contrary, and not being yet perfectly liberated from the qualities of its contrary, it becomes more free from them as it proceeds. If, therefore, it is moved with this motion through the mutation into that to which it is changed, when it is perfectly and genuinely changed into this, it is moved more swiftly; for then also it possesses the inclination according to which it is moved more perfect.

cuum:

uum : for these also assert that nature is locally moved ; since motion through a vacuum is lation, and is as it were in place. But they fancy that no other motion is in first natures, but in those things which are composed from these : for they say that composite natures are increased, diminished, and changed in quality, in consequence of atomic bodies being congregated and separated. Those also think after the same manner, who produce generation and corruption through density or rarity ; for they orderly dispose these by concretion and separation. To these also those may be added, who make soul the cause of motion : for they say that which itself moves itself, is the principle of things which are moved ; but animal, and every thing animated, moves itself with local motion. We also say, that a thing which is locally moved is alone properly moved. But if it rests indeed in the same place, but is increased or diminished, or changed in quality, we say that it is in a certain respect moved, but is not simply moved⁶. That motion, therefore,

⁶ It is usual with Aristotle after demonstrations, to adduce the testimonies of philosophers prior to him, as being in concord with his demonstrations ; in order that through demonstrations he may instruct the reader and compel him to assent ; but through the testimonies of others, may strengthen his belief : for he does not, Simplicius adds, use the testimony of the moderns, as is the custom of the moderns. This, therefore, he now does, and in the first place, adduces the testimony of those physiologists prior to him who make mention of motion, and who deliver as the principles and causes of motion things which produce local motion ; for separation and concretion are local motions. But friendship and strife, which are producing causes with Empedocles, move according to lation. Intellect also, which according to Anaxagoras orderly arranged and moved from the beginning the homoiomerie, is likewise said by him to separate them. Such therefore is the concord of those who place a producing cause over the generation of things. Those likewise who do not mention a producing cause, but speak concerning motion through a vacuum, as the followers of Democritus, these also say, that nature is moved according to local motion, viz. natural things and the first and atomic bodies : for these they call nature, and assert that these being moved according to their inherent gravity, through a vacuum yielding to and not resisting them, are locally moved. They likewise not only assign this as the first, but as the only motion to the elements ; but they ascribe the other motions to the composites from the elements : for they say, that things are increased and diminished, changed in quality, generated and corrupted, in consequence of the concretion and separation of the first bodies.

In

fore, always was, and will be through the whole of time; what the principle also is of perpetual motion; and farther still, what the first motion is, and what motion can alone be perpetual, and that the first mover is immoveable, has been said.

CHAPTER XV.

Now, however, we shall assert that the first mover is necessarily without parts, and has no magnitude, those things being first defined which are prior to this assertion. But of these one is, that it is not possible for any thing finite to move in an infinite time: for there are three things, that which is moved, that which moves, and the third, that in which it is moved, viz. time. But these are either all of them infinite, or all finite, or some are, for instance, two, or one. But let A be that which moves; B that which is moved; and infinite time C. Let D, therefore, move some part of B, and let this part be E. It will not therefore move in a time equal to C; for it moves more in a greater time; so that F is

In the next place Aristotle says, that those who assert that there is but one principle and element, as Thales, Anaximenes, Anaximander, and Heraclitus, these also being physiologists, admit lation to be the first of motions: for through density and rarity they produce generations and corruptions. But density is a certain concretion, and rarity a certain separation. And those indeed, who assert that there is but one element, appropriately call the passive qualities about it, density and rarity; but those who admit many, concretion and separation. Both these, however, and those indicate local motion. In the fourth place, he adduces as witnesses, those who make the soul to be the cause of motion, as Plato; who demonstrating in the Phædrus that soul is self-motive, says that to other things also which are moved, it is the fountain and principle of motion. And these indeed proximately attribute local motion to the soul: for though, according to them, soul is the cause of other motions, as being the fountain and principle of all motion, yet it is the cause through local motion; just as Aristotle also says, that the other sublunary motions are produced by the first mover, through the local motion of the heavenly bodies. In the last place, in order to procure belief that lation is the first of motions, he adduces as a testimony the usage of names,

not

not an infinite time. Thus then, by adding to D, I shall consume A; and by adding to E, I shall consume B. But I shall not consume the time by always taking away the equal, because it is infinite. Hence the whole force A will move the whole magnitude B in a finite time, which is a part of C. It is not therefore possible, that any thing can be moved by that which is finite, with an infinite motion. Hence it is evident, that it is impossible for that which is finite to move in an infinite time. And in short, that it is not possible there can be an infinite power⁷ in a finite magnitude, is from these things manifest: for let

⁷ Aristotle having proposed to show that the nature which is the proximate cause of a perpetual motion, for this is the first mover, in addition to being immoveable, is also impartible and without magnitude, and having demonstrated that an infinite magnitude has not any existence, first demonstrated that it is impossible for it to be a finite magnitude possessing a finite power, because being such it is impossible for it to produce a perpetual motion. It remained, therefore, for him to demonstrate, that neither is it possible for it to be a finite magnitude possessing an infinite power; which he demonstrates not only of the first mover, but universally, that it is not possible there can be an infinite power in a finite magnitude. But he demonstrates this, previously assuming as a most evident axiom, which also he had before used, that a thing which possesses greater and more power, moves in a less time than that which possesses less power. Hence that which is moved by a finite power, will also be moved by an infinite power, since it is more moved, in a less time. Previously assuming these things, therefore, as evident, he shows, that the very contrary to what is admitted will happen to him who says, that there is an infinite power in a finite magnitude. For that which is moved by a finite power, may also be moved by an infinite power, as he demonstrates. But it was admitted, that a thing which is moved by a less power, may also be moved by a greater power, and in a less time. But that a thing moved by a finite power may also be moved by an infinite power, he demonstrates by bringing the conclusion to an impossibility, that the same thing will be moved by an infinite and by a finite power, in the same time. But this is impossible, since it is acknowledged that a greater power moves the same thing in a less time. He says, therefore, that there is not any time in which an infinite power can move. For as there is not any ratio of an infinite to any finite power, so neither will an infinite power in the least time, move in any ratio to the time in which a finite power moves. If, therefore there is a ratio of every finite to every finite time, there will be no time in which an infinite power can move. He omits, however, the absurdity consequent to this: for if it does not move in time, neither will this infinite power move, nor is it motive. But he demonstrates the opposite by supposing it to move in time: for he says, let the time be A, in which that which is finite, moves and changes any thing, with an infinite power. But that which has a finite power will move the same thing in a longer time A B. If, therefore,

let there be always a greater power, which makes the equal in a less time, as, for instance, a power heating, or sweetening, or throwing, and in short, moving. It is necessary therefore, that from that which is finite indeed but possesses an infinite power, that which is passive should suffer, and more than from another: for infinite power is greater.

therefore, we double that which possesses a finite power, it is evident that it will move the same thing in a less time than A B. In a similar manner if it is increased, it will again move in a less time; and thus by always increasing and doubling the magnitude and power in proportion, the time will be diminished. But by always adding to the magnitude, and taking away from the time, we shall at length arrive at the time A, in which this very same thing was supposed to be moved by an infinite power. A finite power, therefore, will move the same thing in an equal time with an infinite power: for the power being increased by the double always remains finite, because every double of that which is finite is finite. If, therefore, this is absurd, that an infinite and a finite power should move the same thing in an equal time, an infinite power will not move in that which is finite in any time. Hence it will not move; and consequently there will not be an infinite motive power in a finite nature: for if there were, it would move; and it would move that which is moved, in time.

Simplicius adds, that every one who pays attention to what is here said by Aristotle, will, in his opinion, enquire concerning the first mover, whether he moves temporally, or without time: for if temporally, in the first place, how does Aristotle, when speaking of that which possesses infinite power, say that it is impossible there can be any time in which it moves? And in the next place, if the first mover is immoveable, and immutable according to every mutation, not only essentially, but also according to power and energy, how can time, which is the measure of motion, measure the immoveable energies of the first mover? But if he does not move in time, how will that which is first moved by him be moved in time? To this it must be replied, that of movers, such as move being moved, as things which move corporeally, by impelling, drawing, and throwing, these move in time; not simply through moving, but through being moved: for time is the measure of motion; and motion is in that which is moved, and not in the mover. But that which first moves, being immoveable both according to essence and energy, as being established above all motion, has also energies without time, because they are above time; and produces motion from himself, in that which is moved by him: for if that which is moved, is not the first of beings, because it is moved by something, it is necessary that motion should derive its subsistence in that which is moved, from an immoveable nature, and time in that which is temporally moved, from a nature without time: for not *to move*, but *to be moved*, is measured by time; because motion is in that which is moved. But as the motion of that which is first moved, being infinite, has not the infinite subsisting at once as a whole, but infinitely *becoming to be*; thus also the time which measures the first motion is infinite, as proceeding to infinity.

Besides,

Besides, there cannot be any time: for if there is a time *A* in which an infinite force heats, or impels; let the time be *AB* in which some finite force does this: by always adding a greater finite force to this, I shall at length arrive at that which moves in the time *A*: for by always adding to that which is finite, I shall surpass every finite; and by taking away, I shall in a similar manner diminish. A finite, therefore, will move in an equal time with an infinite magnitude. But this is impossible. Hence nothing finite can possess an infinite power. Neither, therefore, can there be a finite power in that which is infinite⁸; though there may be a greater power in a less magnitude. Let *AB*, therefore, be infinite. Hence *BC* has a certain power, which in a certain time will move *D*, viz. in the time *EF*. If therefore I take the double of *BC*, it will move in half the time *EF*: for let there be this proportion. Hence it will move in the time *FH*. Thus therefore, always assuming I shall never pass through *AB*; but I shall always assume a time less than the given time. The power, therefore, will be infinite: for it surpasses every finite power. But of every finite power it is necessary that the time also should be finite: for if it moves in a certain time which is so much, a greater power will move in a less, but yet in a definite time, according to conversion of proportion. But every power is infinite, as well as every multitude and magnitude which surpasses every finite power.

⁸ Aristotle now proposes the third theorem, which is no other than a reciprocation of the second; for it was before asserted that there is not an infinite power in a finite magnitude; but now, on the contrary, it is said that there is not a finite power in an infinite magnitude. In order to prove this, he previously observes, that by how much the greater any magnitude is, by so much the greater force does it contain: for though it may be possible that a lesser magnitude may possess a greater force than some greater magnitude, yet if the latter is increased, it will possess a much greater force: for instance, it may be possible, that one degree of fire may possess a greater force than two degrees of air; but fire will possess a much greater force, if there are two degrees of it. Hence though when magnitudes of a different genus are assumed, the lesser may possess a greater force than the greater, yet in the same genus, the greater will always possess a greater force.

This also may be demonstrated as follows: Let us assume in a finite magnitude a certain power, the same in genus with that which is in an infinite magnitude, and which measures the power placed in the infinite magnitude. That there cannot therefore be an infinite power in a finite magnitude, nor a finite power in an infinite magnitude, is from these things manifest ⁹. Concerning, however, things which are locally moved, it will be well, in the first place, to propose a certain doubt: for if every thing which is moved is moved by something; with respect to such things as do not move themselves, how are some of these, in a certain respect moved continually, that which moves not touching? As, for instance, things which are thrown. But if he who moves at the same time moves something else, as the air, which moves being moved; it is similarly impossible to be moved, when the first neither touches nor moves. But all must be at the same time moved; and cease to be moved, when the first mover ceases, though he should act like a stone*, viz. should move that which moves. It is necessary, however, to assert this, that the first mover causes either such air, or water, or something

⁹ Aristotle now delivers another demonstration, that there cannot be a finite power in an infinite magnitude; clearly asserting some things himself, and leaving us to supply the rest: for let us assume, says he, a certain power the same in genus, i. e. of a similar species with the finite power which is in an infinite magnitude, existing in some finite body. If gravity is in an infinite body, let us assume the same in a finite body; and if levity, in a similar manner. But he assumes the power to be of a similar species, because he is willing that the power in the infinite magnitude should be measured by the power in the finite magnitude: for powers of a dissimilar species, do not measure each other. The finite power, therefore, in the finite magnitude, will measure the finite power in the infinite magnitude; in such a manner however, as either to be adequate, or not to be adequate, but so that something will remain according to the last addition. But if this be the case, either the infinite magnitude will be measured by the magnitude in which the power was contained that measures the power in the infinite magnitude, and thus the magnitude will no longer be infinite, since it is measured;—or the whole will not be measured, though the power in it is measured, and thus that which is left of the infinite magnitude will not possess power. Hence the finite power will not be in an infinite magnitude, but in a finite magnitude, which is measured together with the power.

* i. e. Like the load-stone, which not only moves iron when near it, but through this moves another piece of iron.

else

else of this kind, to move, which is naturally adapted to move and be moved. Yet it does not at the same time cease to move and be moved ; but it ceases to be moved, when the mover ceases to move. Still, however, it moves ; and therefore it moves something else which adheres. And of this there is the same reason. But it ceases when a less power of moving is impressed in that which adheres. And it finally ceases, when that which is prior no longer causes it to move, but alone to be moved. It is however necessary, that these should at the same time cease, viz. that which moves, that which is moved, and the whole motion. This motion, therefore, is ingenerated in those things which may at one time be moved, and at another be at rest ; and is not continued, but appears to be so : for it is either of those things which are successive, or of those things which touch each other ; since that which moves is not one thing, but many things adhering to each other. Hence a motion of this kind is produced in air, and in water ; which some assert to be an antiperistasis¹. But it is impossible to solve in any

¹ Aristotle here mentions two doubts pertaining to motion ; of which one is, how it is possible that a stone or dart, for instance, when thrown upward, continue their motion, after they depart from that which throws them ; since they neither move themselves nor appear to be moved by the jaculator, because they cease to be touched by it, after the beginning of the motion : for the doubt is not solved by saying that bodies of this kind are moved by the air urging them behind ; since the same question will still remain, how that proximate air moves, no one touching it.

He dissolves however the proposed doubt by saying, that the thing which first moves, for instance, the hand, moves the medium through which the stone or dart is thrown, that is, the contiguous air ; that then one part of the air impels another part near to it, and this another, till that part of the air which adheres to the stone carries the stone. But the motion of the projected body begins to languish, when the motive power impressed on the parts of the air begins to fail ; and the motion entirely ceases, when the aforesaid power vanishes, viz. when it ceases to be as great as is requisite to carry the moveable body any farther. He adds, that the motion of throwing does not belong to bodies which are moved with a perpetual continued motion, but to those which sometimes cease from motion, as darts and stones. That these also when they are thrown are not moved with a continued motion he shows from this, that they are not impelled by the same mover, but by another and another ; as by the hand, the air, or water, and by various parts of the intermediate body ; all which receive an impetus from the prior, and transfuse it to the

any other way, the subjects of doubt, than in that which we have mentioned. But an antiperistasis makes all things to move and be at the same time moved; and consequently likewise to rest. Now, however, one certain thing appears to be continually moved. By what therefore? for it is not moved by itself². But since among beings it is necessary, there should always be a continued motion, and this is one, and it is necessary that there should be one motion of a certain magnitude (for that which is without magnitude is not moved), and of one thing, and by one thing; for otherwise it will not be continued, but the one will adhere to the other, and be divided; hence that which moves if it is one, either moves, being moved, or being immovable. And if indeed it is moved, it will necessarily follow that it will be changed, and will be at the same time moved by something. Hence the progression will stop, and we shall arrive at that which is moved by the immovable: for it is not necessary that this should be at the same time changed, but it will always be able to move something; since that which thus moves is without labour; and this motion is *equable*, either

things near them. But he observes that a throwing may take place in air and water, because these elements yield and are agile, but not in earth on account of its great thickness and resistance.

² Some ancient philosophers asserted that the motion of throwing is effected by an antiperistasis. But an antiperistasis is when some body being expelled by another, a change of place is effected, and the expelling body occupies the place of the body expelled; the body expelled, expels also that which is near it, and that again, the body adhering to it, when there are many bodies, till the last occupies the place of the first expelling body. This opinion Aristotle corrects: for though, says he, an antiperistasis should take place in the motion of throwing, yet this will not be the entire cause why projectiles are carried through air or water, but that cause also which he before adduced: for in the aforesaid antiperistasis all things at the same time move, and are moved; that is, as well the parts of air through which the dart is carried, as the dart itself, at the same time move and are moved, since the parts of air impel the dart behind, and are in the anterior part impelled by the dart. But as all these at the same time move and are moved, so likewise their motion ceases at the same time, which does not happen in the motion of throwing: for the cause of the antiperistasis ceasing, and he who threw the dart being quiescent, yet the dart continues its motion. Since, however, it is not moved by itself, another cause of its motion must be assigned, viz. the jaculator, from whom its impetus proceeds.

alone,

alone, or in the most eminent degree: for the mover has not any mutation whatever. *It is likewise necessary that neither should that which is moved by the immoveable have any mutation, in order that the motion may be similar*³. But it is necessary that the first mover should either be in the middle, or in a circle: for these are principles. Those things also are moved most swiftly which are most near to the mover: and such is the motion of the universe. Hence that which moves is there⁴. It is, however,

³ The motion is *equable* which the immoveable moves, because it always subsists similarly, with respect to that which is moved by it. Aristotle also adds, concerning that which is moved by the immoveable, that it is necessary it should always preserve the same habitude to the mover, in order that the motion may truly remain similar and equable: for that motion alone is properly and perfectly equable, in which the mover and the thing moved subsist immutably, and with a perpetual similitude of subsistence with relation to each other. But it is evident that a celestial body is a thing of this kind, circulating, and being proximately moved by a cause immoveably moving. Hence Aristotle at the same time demonstrates the perpetuity of the heavens, and through this of the whole world, together with the perpetuity of motion, and the immutable sameness of the first mover; though he again demonstrates the perpetuity of these in his books on the Heaven.

⁴ Since it was usual, as it seems, with the ancients to enquire where the mover of the heavens resides, and the Pythagoreans appear to say that it is in the center, Aristotle adds this also to the discussion concerning the first mover. And he says, it is necessary that it should be in the beginning of that which is moved, this being the principal place. But there are two beginnings in a sphere, the middle, and the circumference. He says, therefore, that it is necessary the mover should be in one of these. But since things most near to the mover, are most swiftly moved, and the motion of a *circle* is most swift, i. e. of the *circumference*, the mover will be there: for the middle being immoveable, does not appear to be adapted to the mover. Eudemus, however, says, that the first mover is in the greatest circle which passes through the poles of the world: for this circle is most rapidly moved; and the mover appears to begin to move whence he can move most rapidly and easily. If, however, the first mover is impartible, and entirely separate from bodies, being himself by himself perfectly exempt from the whole corporeal world, it will be proper to say that he is every where and no where; *every where*, as filling all things with divine light; and *no where*, as being unmingled with the illuminated natures. But if the Pythagoreans say, that he is established in the center, but Aristotle says, that he is in the inerratic sphere; the former indeed thought the center to be more adapted than other things in the universe, to the participation of the connecting and establishing goodness of the demiurgus; but Aristotle thought that the inerratic sphere is the first participant of demiurgic motion. Hence, the Pythagoreans call the center the abode of Vesta, and the tower of Jupiter. But Aristotle says that

however, dubious, whether any thing which is moved can move continually, but not as that which impels again and again, in consequence of being continually successive: for it is requisite either that it should impel, or draw, or do both, or receive something different, viz. one thing from another, as was before observed of things which are thrown. But if being divisible, air or water moves, yet they move as being always moved; and in both ways, it is not possible that the motion can be one, but adhering. Hence that motion alone is continued which is produced by the immoveable: for always subsisting similarly, it will also continually subsist similarly, with respect to that which is moved⁵. These things, therefore, being determined, it is evident that it is impossible for that which first moves and is immoveable, to have any magnitude: for if it possessed magnitude, it is necessary that it should either be finite or infinite. But that it is impossible there should be an infinite magnitude, has been before demonstrated in the Physics. And that a finite magnitude cannot have an infinite power, and that it is impossible for any thing to be moved in an infinite time by that which is finite, has been just now demonstrated. But the first mover pro-

that the motion of the inerratic sphere, is the measure of other motions, as being the first and most collected, and as shadowing forth through its swiftness the impartibility of the mover. There is no reason to fear, therefore, lest we should move the first mover according to accident, by asserting that he is in the inerratic sphere: for, properly speaking indeed, he is not in the heavens, but the heavens are in him; since that which is in any thing, is comprehended by that in which it is. But the first mover comprehends the whole world, in his infinite power.

⁵ Aristotle mentions another doubt, which pertains to the continuity and power of the first mover, viz. whether it be possible, that a thing which so moves as to be moved, can produce a perpetual motion, and so continued, as not only not to be interrupted by intervening rest, but to be perfectly equable, and every way similar to itself. And he answers, that it is not possible: for a mover of this kind will either impel, or draw the thing moved immediately, or by the intervention of other bodies, as was before observed of projectiles. But by none of these modes will he produce a motion entirely continued, and perfectly equable and perpetual; since a thing thus moved will be subject to defect. Hence that alone which is immoveable, and perpetually subsists after the same manner, can alone produce a motion equably continued and perpetual: for such a mover is immoveable and immutable, according to essence, power, and energy, and always possesses the same habitude to that which is moved, so as to move similarly and equably.

duces

duces a perpetual motion, and in an infinite time. It is evident, therefore, that it is indivisible, without parts, and has no magnitude⁶.

⁶ There are three things which have been demonstrated by Aristotle concerning the first mover; that he is one; that he is immovable; and that he is without parts. Having, therefore, concisely reminded us of two of the demonstrations, he now mentions the third, which shows that it is impossible for the first mover, who being immovable produces a perpetual motion, to possess any magnitude: for this magnitude will be either infinite or finite. But there cannot be an infinite magnitude, as was demonstrated in the third book of this treatise: for it is usual with Aristotle to call the first five physical books eminently, **CONCERNING PHYSICAL PRINCIPLES**; just as he calls the three last, **CONCERNING MOTION**. But neither can the first mover possess a finite magnitude, since it is necessary that every finite body should either have an infinite or a finite power. If, therefore, neither a finite body has an infinite power, as has been demonstrated, nor a finite power can move for an infinite time, which has also been demonstrated; and if it has been shown that the first mover produces a perpetual motion for an infinite time; for it is necessary that the first motion should be imparted by the first mover;—these things, therefore, having been demonstrated, it is evident that the first mover is indivisible, without parts, and possesses no magnitude.

Simplicius adds, in this manner, therefore, the truly dæmoniacal* Aristotle terminates the doctrine concerning natural principles, in supernatural theology as in a summit; and shows that the whole of a natural and corporeal composition, is suspended from an incorporeal and intellectual goodness, which is above nature, and without any habitude to inferior beings. And in this, indeed, he accords with Plato. But Plato discovers the intellectual God, the artificer of the world, from the essence itself of the mundane body: for separating true being from that which is generated, he defines the former by a perpetual and invariable sameness of subsistence, as being allotted an essence, the whole of which is established at once and together, without interval, and impartibly in eternity; but asserts that the latter has its subsistence in becoming to be, as being changed and moved, and having its existence co-extended with the circulations of time; and on this account also is suspended from its cause as incapable of being self-subsistent: for it is perfectly impossible, says he, that it should be generated without a cause. But the cause of that which is generated is true being, lest admitting that there is something generated prior to that which is generated, we should proceed to infinity; and for the same reason, the immutable is the cause of that which is mutable. Plato, therefore, in the *Timæus*, discovers the demiurgus of the world, who is truly an intellectual God, and is always established in eternity, with an invariable sameness of subsistence; recurring from the mutable essence of the world to its immutable cause. But Aristotle, from the motion and mutation, and the divisible and finite subsistence of bodies, ascends to an immovable, immutable, and indivisible cause: for he demonstrates

* Aristotle from his transcendent knowledge of nature was called *dæmoniacal*; just as Plato from his superior knowledge of things divine was called *divine*.

that

that it is necessary there should be a perpetual motion in beings, and consequently that there should be something which is perpetually moved, since motion is in that which is moved. He also demonstrates that every thing which is moved, is moved by something; and that the first mover is necessarily immovable, and the immutable cause of perpetual motion, to the natures which are proximately moved by it. But that *generation* with Plato, and *motion* with Aristotle, signify *mutation*, we may easily learn from this, that Plato divides that which is generated, as being changed, oppositely to that which possesses an invariable sameness of subsistence; but that Aristotle when he says, every thing which is moved, is moved by something, speaks not only about things which are properly moved, but also about such as are generated and corrupted, and in short, such as are changed. In many places also he says that the immovable is immutable: for it not only surpasses motion properly so called, but also generation and corruption. But it appears to me, that this wonderful man clearly refuses to apply the term *generation* to things perpetual; because the phantasy easily supposes that things which are said to be generated, have a temporal beginning. And in this manner, indeed, the multitude are affected, not being able to co-extend their conceptions with perpetual fabrications; but adding a temporal beginning to that which is said to subsist from a cause, and to be generated, they also appear to understand with facility, if any one supposes a beginning, middle, and end, of the fabrication of things. The greater part of the wise too, looking to that which may be easily understood by their readers, in this manner fabricate the world, asserting that things first, second, and third, were generated. And perhaps these wise men think they may be pardoned in so doing, since theologians also do not refuse thus to unfold the generations of the gods, adapting their conceptions to the capacity of their readers. But Aristotle perceiving, as it appears, that the multitude always erroneously understand such assertions, and conceive at the same time a temporal beginning, could not endure to speak of the world as being made; and clearly refuses to call things perpetual generated. Hence he uses the word *motion*, which signifies the same thing as *generation*, but does not require a temporal beginning. Indeed, that he does not refuse the term *generated*, when applied to things which have their being to infinity, is evident from the third book of the Physics, when speaking of the infinite, he says, "Since to be is multifariously predicated, as a day and a contest, in consequence of another and another being always *generated*, so likewise the infinite." The beginning of the demonstration, therefore, is with both philosophers the same, leading from the mutable to the immutable. But afterwards, the one says that every thing which is moved, is moved by something; and the other, that whatever is generated, has its generation from a cause. And the one demonstrates that the first mover is immovable, immutable, and without parts; but the other, that the cause of that which is generated is true being. That however which is without parts, the whole of which is at once, and which possesses an invariable sameness of subsistence, is a thing of this kind; and which, indeed, the being perfectly immutable signifies.

Since, however, some are of opinion that Aristotle asserts the first mover, whom he celebrates as intellect, eternity, and God, to be alone the final, but not the producing cause of the world, and especially of the heavens, which he frequently says are perpetual, and on this account unbegotten, and that he moves as the desirable, it will be well to show that in this also he accords with his preceptor, who asserts divinity, not only to be the final, but also the producing cause of the heavens, and
of

of the whole world. Plato then, in the *Timæus*, when he says, "Let us relate through what cause the composing artificer constituted generation and this universe: he was good, &c." evidently asserts divinity to be both the final and producing cause of the world. Also when he says, "Placing intellect in soul, and soul in body, he fabricated the universe, that it might be the most beautiful, and the most excellent work according to nature;" and nearly through the whole dialogue, he celebrates the demiurgus, as looking to good. In the speech also of the demiurgus to the celestial gods, he clearly shows that the demiurgus himself proximately produces celestial natures, but sublunary through the celestial. For the first demiurgus says to the junior, or celestial gods, "Gods of gods of whom I am the demiurgus and father." And in the course of his speech, he adds, "Three genera of mortals remain; but these not being generated, the heaven will be imperfect;" now calling the world *heaven*, in the same manner as Aristotle. He proceeds, "But it is necessary that these should be generated, if the world is to be sufficiently perfect. These, however, being generated by me, and participating of life, will become equal to the gods. In order, therefore, that mortal natures may exist, and that this universe may be truly all, convert yourselves according to nature, to the fabrication of animals." But the words, "These however being generated by me," manifest that if they were generated by a cause which possesses an invariable sameness of subsistence, or as Aristotle would say by an immoveable cause, they would necessarily be perpetual. And that Aristotle indeed asserts, that God or the first mover is the final cause of the world, is doubted by no one. That he also admits him to be the producing cause appears to be sufficiently evident from his asserting in the division of causes in the second book of the *Physics*, *the producing cause to be that whence the principle of motion is derived*. Again, he says, "it is that whence the first principle of mutation or rest originates. Thus he who consults is a cause of this kind, and a father of his child; and in short the maker of that which is made." What assertions, therefore, can more perspicuously manifest than these that the first mover is a producing cause? In the first book also of his treatise *On the Heaven*, he clearly says, "that neither God nor nature *make* any thing in vain." And in the same book he says, "that eternity derives its appellation from subsisting always, being immortal and divine; whence also being and life are imparted to other things, to some more accurately, and to others more obscurely." But it is evident, that as all things partake of good through the final cause, so likewise they are and live through the demiurgic cause. In his first book too, *On Generation and Corruption*, he evinces that the first mover is a producing cause, when investigating the causes of perpetual generation, he thus writes: "But there being one cause whence we say the principle of motion is derived" (and this as we have before observed is according to Aristotle a producing cause) "and matter also being one cause, the former must be said to be a cause of this kind. For of this cause we have before observed in our discourses concerning motion, that there is one such cause immoveable, through the whole of time, and another which is perpetually moved." Aristotle, therefore, asserts, that the producing cause is twofold: the one immoveable, which is the cause of all things; but the other perpetually moved, (or the celestial orbs,) which is the cause of sublunary natures. In the first book likewise of his *Metaphysics*, praising Anaxagoras, and prior to him Hermetimus, as not only assigning the material causes of the universe, but also beholding intellect as the producing and final cause, he thus writes: "He therefore who asserted, that as in
animals,

animals, so also in nature, intellect is the cause both of the world, and of all order, will appear like one sober; when compared with those antients that spoke rashly." Having observed, therefore, that Anaxagoras, and prior to him Hermotimus, mentioned a cause of this kind, he adds, "Those therefore who entertained this opinion, together with establishing a principle of things, which is the cause of their subsisting in a beautiful manner, established also a principle which is the cause of motion to things." Hence, he praises those who admitted intellect to be a final and producing cause; just as a little before he praised Anaxagoras, because asserting intellect to be the principle of motion, he preserved it impassive and unmingled*.

If some one, however, should enquire why Aristotle does not so evidently assert God to be the producing, as he does that he is the final cause of the world, in answer to this, what was before said concerning a generated nature, must now be repeated. For since that which makes, makes that which is generated, and that which is generated, appears to co-introduce a temporal beginning of generation, on this account Aristotle refuses even to call perpetual bodies *generated*, though he frequently and clearly denominates the cause of them, a producing cause. And, perhaps, if it should be said, that the terms *generated*, and *to make*, are properly adapted to things in generation and corruption, which co-introduce a partial time, other appellations are to be used, in speaking of perpetual natures. And we may observe, indeed, that Aristotle does not refuse to call motion perpetual, though motion has its being *in becoming to be*; but he does not chuse to assert of it *perpetual generation*; because that which is generated appears to be generated, not existing before, and again tends to corruption.

* Simplicius informs us, that his preceptor, the celebrated Ammonius Hermæus, wrote a book to prove, that Aristotle considered God to be the producing cause of the world. From this work, which is unfortunately lost, some of the above observations of Simplicius are derived.

THE END OF THE EIGHTH AND LAST BOOK OF THE PHYSICS.

ADDITIONAL

ADDITIONAL NOTES
TO
THE PHYSICS.

ADDITIONAL NOTES
TO
THE PHYSICS.

Page 208. *And concerning place indeed, that it is, and what it is, has been said.*

AGREEABLY to our promise we here present the reader with what we conceive to be the most important part of the beautiful digression of Simplicius concerning place.

Let us now consider what Proclus, the Lycian philosopher, who was the preceptor of our preceptors, has said on this subject, who is the only one of all that we know, that has thought fit to call place body. He, therefore, employing the axioms of Aristotle concerning place, and admitting a fourfold division of the investigation about it, says, it is necessary that it should either be matter or form, or the boundary of the containing body, or an interval equal to the distance between the boundaries of that which contains. For if it were neither any thing belonging to the things which it contains, nor to the things which surround it, change of place would be impossible, since nothing either in it, or about it would sustain a mutation. But the things which are in place, are matter and form; and the things which surround it are the boundary of that which contains, and that which is between. Having shown, therefore, that place is neither matter nor form, through the same arguments which Aristotle employs, and also subverting its being the boundary of that which contains, through the absurdities attending the
assertion,

assertion, he infers that place is the interval between; and in this manner, he adapts the demonstration to his own opinion. Since, however, he unfolds his opinion clearly and concisely, it will perhaps be better to cite his own words. It remains, therefore, says he, if place is neither the form nor matter of that which is in place, nor the boundary of that which contains, that the interval which is between the boundaries of that which contains, must be conceived to be the first place of every particular thing; but of the whole world, the whole mundane interval is the place, which interval is different from the world. This interval, therefore, is either nothing or something. And if indeed it is nothing, local motion will be from nothing to nothing; all motion subsisting according to something belonging to beings; and natural places will be nothing; though it is necessary that every thing which is according to nature, should be something pertaining to beings. But if it is something, it will either be incorporeal or corporeal. And if incorporeal, an absurdity will ensue. For it is necessary that place should be equal to that which is in place; but how can body, and that which is incorporeal become equal? For the equal is in quantities, and in homogenous quantities, such as in lines to lines, superficies to superficies, and bodies to bodies. Place, therefore, is a body, if it is an interval. But if it is a body, it is either moveable or immoveable. And if it is in any respect moveable, it is necessary that it should be moved according to place; so that again place will be in want of place. But this is impossible, as it also appeared to be to Theophrastus and Aristotle, the latter of whom says, that a vessel is a moveable place, but place an immoveable vessel, as if place were naturally immoveable. But if place is immoveable, it is either indivisible by the bodies which fall into it, so as for body to proceed through body; or it is divisible, as air and water, by the bodies which exist in it. If, however, it is divisible, the whole being cut, the parts will be moved on both sides of the divided place; and place will be the first moveable, since the parts of it will be moved. But it has been demonstrated that it is immoveable. In the next place, the parts being cut, we must again enquire, where that which is cut betakes itself. For there will again be found another interval between the parts of that which is cut, which receives the divided part; and into which this proceeding, is said to be in place. And this will be the case to infinity. Place, therefore, is an indivisible body.

But

But if it is indivisible, it is either an immaterial or a material body. And if material, it will not be indivisible. For all material bodies, in consequence of other material bodies proceeding into them, sustain division from them; as when our body falls into water. But immaterial bodies alone, are not naturally adapted to be divided by any thing. And this from necessity. For every immaterial body is impassive; but every thing which may be divided is not impassive. For division is a passive quality of bodies, dissolving union: since of that also which is continued, so far as it is continued, you will not find any other passive quality than division which destroys its continuity. That we may collect together, therefore, all that has been demonstrated, place is an immoveable, indivisible, immaterial body. But if it is this, it is evident that it is more immaterial than all bodies, both than those that are moved, and those that are immaterial in the bodies that are moved. Hence, if light is the most simple of these, for fire is more incorporeal than the other elements, and light than fire, it is evident that place will be the most pure and genuine light in bodies. Let us, therefore, says he, conceive two spheres, the one of one light, but the other composed from many bodies, and let them be equal to each other in bulk. Let, however, one of them be established together with the center, but the other be introduced into this; and you will then see the whole world in place, moved in immoveable light; and this, indeed, (i. e. the world) will be according to the whole of itself immoveable, in order that it may imitate place, but will be partly moved, that, in this respect, it may have something less than place.

After this, Proclus confirms his opinion from the authority of Plato, who says in the Republic, that the light which is similar to the rainbow is place; and also from what is said in the Chaldean oracles concerning the fontal soul, viz, "that it abundantly animates light, fire, ether, and the worlds." For he says, that this is the light which is above the empyrean world, being a monad prior to the triad of the empyrean, etherial, and material worlds. He says, that this light also first receives the perpetual allotments of the gods, and unfolds in itself to those that are worthy, self-visitve spectacles. For in this, says he, according to the oracle, things void of figure and impression, become figured and impressed. And perhaps he would say, that this light is to be called place, as being a certain type of the whole mundane body, and as making things which are without interval to receive interval.

But

But after this he doubts against himself, how body can pervade through body, and whether this light is inanimate, or participates of soul. It is impossible, however, says he, that it should be inanimate; it is also more excellent than the animated natures which it contains; and the oracles likewise assert that it is animated, and this prior to other things. But if animated, how is it immoveable? And he solves the first doubt, indeed, from the impassivity of immaterial bodies. For an immaterial body, says he, neither resists, nor is resisted; since that which is resisted, has a nature capable of suffering from things which resist. But neither is it divided, since it is impassive. Hence, neither can that absurdity be adduced, that the universe pervades through the smallest thing. For if it is not naturally adapted to be divided, neither can it be cut into things equal to that which is the smallest. But if this cannot take place, neither will the universe pervade through it. But he solves the second doubt, by saying, that it is animated by the frontal soul *, and has a divine life, and is established according to the self-motive in essence, but not in energy. For if we admit, says he, a twofold self-mobility in soul, one according to essence, but the other according to energy, and if we call the former immoveable, but the latter moved, what should hinder us from asserting, that place participates a life of this kind, and that *it* lives according to an immutable essence, but *the world* according to an essence self-motive in energy? And if you wish, says he, to survey the motion of place, according to energy, you will behold it motive of moveable bodies, which evolve with interval the parts of place, since neither are they able to be in every place, nor is place able to be present to all things, according to each part of itself. And this is a medium between soul which moves without interval, and body which is moved with interval. For life, indeed, so far as life imparts motion; but place which is the first participant of life, imparting motion according to the parts of itself, peculiarly unfolds local motion, causing each of the parts of the thing moved to desire to be in the whole itself, but since it is not able through the natural peculiarity of interval, causing it to subsist in becoming to be partly in the whole. For every thing which desires to be something, but falls off from *being* that which it desires, through a defect of nature,

* The frontal soul which is celebrated by Plato in the *Timæus* under the appellation of the *Crater* or bowl is the goddess Juno.

desires

desires to have a subsistence in *becoming to be* that, which, through imbecility, it is not able to *be*. For it is requisite, says he, that between an incorporeal and intransitive life, such as is that of the fontal soul, and a transitive and corporeal life, the medium should be, a life which is intransitive indeed, but corporeal: it appears also to me, says he, that the centers of the whole world, as one, are established in this light. For if the oracles say, that the centres of the material world are established in the ether which is above it, we must say that according to analogy, as we ascend, the centres of the highest world are established in the light of this world. He adds, may we not also say, that this light is the first image of the paternal supermundane profundity, and on this account is supermundane also?

But of those, says Simplicius, who admit place to possess form, and assert it to have a power superior to bodies, I should say, that the great Syrianus, the preceptor of Proclus, is one, who in his commentaries on the tenth book of Plato's *Laws*, thus writes concerning place. He says then, that place is an interval adapted by its proper sections and divisions, which it possesses from the different reasons* of soul, and the illumination of demiurgic forms, to be the receptacle of different bodies: according to certain parts making itself to be the proper receptacle of fire, to which he says fire in the *Timæus* is said to tend; but according to other parts making itself to be the proper receptacle of earth, to which earth naturally tends, and in which it abides. Hence also now both things which are moved and such as are permanent according to nature continue in place. But neither the motion, nor the permanency of interval, is subservient to the nature of bodies, nor is imparted from it. Thus far Syrianus.

In addition to the above-mentioned opinions concerning place, the following is the hypothesis of Damascius † of Damascus, the preceptor of Simplicius, a man most inquisitive, and who laboured much in philosophy. His disquisitions on place, appear to me to be no less admirable than novel. From the utility of place, therefore, he wishes to discover its essence, and he thus writes: Every thing in generation, in consequence of falling off from a nature impartible, and without interval, both according to

* i. e. Productive principles.

† In the Introduction to my translation of Plato, and in the additional notes on the *Parmenides*, I have given some admirable extracts from that incomparable MS. of this philosopher *περι αρχων*, On Principles.

essence and energy, has a twofold separation, the one according to essence, but the other according to energy, or passion. That also in generation which is according to energy is twofold; the one being connascent with essence, according to which essence is in a continual flux; but the other proceeding from essence, according to which it energizes differently at different times, possessing extended, and not at-once-collected energies. And the separation indeed of energy, is immediately in want of motion; and motion is consubsistent with it. The separation also according to motion, becomes either energetic or passive. But the separation of essence becomes likewise twofold; the one being a divulsion into multitude; but the other passing into bulk. And the separation according to magnitude and bulk, becomes immediately connected with position, in consequence of the parts falling into different situations. Position likewise is twofold; the one being connascent with essence, as of my body, the head is upward, and the feet downward; but the other being adventitious, as at one time, I have position in a house, and at another, in the forum. And it is evident, that the former continues, as long as the thing exists, but that the other becomes different at different times. But we properly say, that those things have position, the parts of which are extended, and are distant from each other. Hence position appears properly to belong to magnitudes, and the boundaries which they contain, because these are distant according to continuity. But numbers although they are separated, yet at the same time do not appear to have position, because they are not distant and extended; unless you should say that these also receive magnitude and interval. For all intervals, in consequence of destroying a subsistence collected into one, cause that which is in them to be changed into another, in which also they are said to be placed, by position losing as it were independent power; just as by departing from themselves in their energies, they are said to be moved, and to change. Of these intervals, therefore, in order that they may not be perfectly extended to the indefinite, there are collective measures; time indeed being the measure of some things, according to the energy in motion; but of others, definite multitude, which is number, being the measure, according to a distinction of essence; and of others definite magnitude, as a cubit, or something of this kind, according to continuity. Of others again, place is the measure, according to a dispersion of position. Hence things that are moved are said to be moved in time; but they are said to have position of essence, and motion itself, in place, so far as essence itself also participates of being moved.

moved. And that place indeed subsists about position, and is something belonging to things situated, is evident. For we say, that those things are in place, which have position ; and upward and downward, are the differences of place, surveyed according to position ; in the same manner, as the right hand and the left, before and behind.

But that place bounds, measures, and orderly arranges position, you may learn from hence. For we say, that a thing has position, though it should be disorderly posited, in any way whatever ; but a thing is then said to have its proper convenient position, when it receives its proper place, just as any thing, whatever it may be, proceeds into being, but then has its proper opportune subsistence, when it exists in a becoming time. Through place, therefore, every part of a thing has a good position ; the head of my body indeed upward, but the foot downward : the liver in the right hand parts ; but the heart in the middle : and the eyes, through which seeing, we walk, are before ; but the back by which we carry burthens, is behind. These indeed are differences through place ; just as of the parts of an embryo, one is fabricated before another, through time, and one age orderly proceeds prior to another ; nor are the Trojan confounded with the Peloponnesian transactions. For prior and posterior are the differences of time, just as upward and downward, and the other four divisions are the differences of place ; as also Aristotle acknowledges. The parts of the world, therefore, have their proper position in the whole on account of place. Hence, speaking superficially, *place simply so called is, according to this conception, that which bounds the position of bodies ; but speaking of place as having a natural subsistence, it is that which bounds the position according to corporeal parts, conformably to nature, both with respect to each other and to the whole, and also the position according to the whole with respect to the parts.* For as different parts of the earth and the heavens are arranged in different situations, on account of place, and some parts are northern, but others southern, so the whole heaven and the whole earth, being parts of the world, have a convenient measure of position, and an orderly distribution on account of place ; the former being allotted the circumference of the universe, but the latter possessing the middle of it. And it is place which imparts co-incidence to the parts of the universe. If likewise *place* (τόπος) is denominated from *conjecture* (ἐκ τούτου παρῆν lege ἐκ τούτο παρῆν) becoming place from being situated near to

things *conjectural* *, as being a certain *conjecture* of intellectual distinction, thus also what has been said of place will accord with this etymology. For to *images*, which have a *conjectural* subsistence, place imparts an establishment, and a similitude to their paradigms. For unless each of the parts of things which are separated by interval, was situated according to its proper place, an image would never be similar to its paradigm ; but every order, convenient measure, and elegant arrangement would vanish. And, indeed, if you take away place, you will see the disposition of bodies extraneous, and disordered, and tending to perfect indefiniteness. For in what position will each of the parts stop, when they are not adapted to any ? On this account, therefore, things which are naturally moved, are moved, in order that they may obtain their proper position ; and things which are permanent, abide in a convenient measure of position, through a love of place. Hence place is the cause of something to bodies, and to all corporeal natures, and what it is may perhaps be understood from what has been said.

It will follow, however, from this, that such a place is neither the boundary of that which contains ; for how is this the cause of order or distinction, since it is rather defined by the things which exist in, and are comprehended by it ; nor yet will it be body. For though some one should say that it is an immaterial body, which has parts distant and different from each other ; this also will require that which may arrange it, and cause this part to be situated in the middle, and that in the circumference. Nor is it possible that a thing of this kind can be interval. For through the same causes, interval in consequence of possessing difference, and having its parts differently situated, will also require a certain convenient position. Place, therefore, appears to be the measure of things posited ; just as time is said to be the number of the motion of things moved. Since, however, position is twofold, the one being essential, and the other adventitious, place also will be twofold, the one becoming the perfective element of that which has position, but the other subsisting according to accident. There is also a certain difference of essential position, so far as, in a certain respect, wholes themselves have the proper position of their proper parts, both with respect to each other, and to the universe ; or so far as parts have a proper position with reference to

* Sensible objects are *conjectural*, because the proper knowledge of them belongs to *opinion*.

the

the whole, and the remaining parts. Hence place also becomes twofold ; the one peculiar, belonging to individual places ; but the other being defined according to position in the whole. For as whole is twofold, the one belonging to each of the parts, according to the definite and distinct subsistence of each, according to which we say, that the earth is a certain whole, and not the earth only, but also an animal and a plant, and each of the parts in these : but the other being more comprehensive, as when we say the whole world, the whole earth, and the whole air, and of each *wholeness* * there are proper parts ; —in like manner of place, we say, that one is the convenient position of the proper parts of a thing, as of my parts in the whole of my body ; but another the convenient position of the whole as of a part, in the place of its more comprehensive *wholeness*. Thus the place of the earth, is the place of terrestrial natures ; and this so far as earth possesses the middle of the universe. For though the earth should be deprived of its position about the middle of the universe, it would still retain the convenient position of its proper parts, in their proper whole ; but it would not then possess its convenient position as a part of the universe. Hence, if the whole earth were hurled upward, it would fall again to the middle ; and the parts which it contains would preserve their formation with respect to each other, even when it was removed from the middle. Thus also a man suspended in the air, would have the convenient order of his proper parts ; but he would no longer have the convenient order as of a part to the whole. And since parts belong more to things more total, than wholes themselves do ; for they do not so much vanquish subordinate, as they are vanquished by more excellent natures ; and this because first are in a greater ratio to second natures, than second to third natures : this being the case, though a clod of earth should have a proper convenient position in the air, yet it would tend downward through a desire of that which is more total. For that which is peculiar is every where dead and cold, when divulsed from that which is common and deprived of its appropriate connexion ; just as plants when torn up by the roots, though they are in complete possession of all their parts, yet immediately droop, in consequence of being divulsed from their common wholeness. For all things live on account of the one mun-

* The world is a *whole of wholes*, which *wholes* or *wholenesses* are the celestial and elementary spheres. See the Introduction to my translation of the *Timæus* of Plato.

dane

dane animal. Hence, as long as every thing is rooted in the world, through proximate wholenesses, so long it lives, and is preserved ; but if it is divulsed from its proximate, it is also torn from the common wholeness. Thus, therefore, the natural tendencies of bodies and their permanencies in their proper places are preserved, by admitting place to be a thing of this kind. And the local motion of things which are moved, is nothing else than the assumption of different positions, at different times, till that which is moved obtains its appropriate position, the intermediate air or water being divided, and receiving the position which it then has, as long as that which is stronger proceeds. The position also of the parts of the air, is that which a clod of earth or I receive, when moved. The place too which I change, is not definitely my peculiar place, but the place of the surrounding air ; in a different part of which, I also am naturally adapted to become situated at different times. Hence it being dubious how things which are moved are moved in place, since things in place may be justly said to be at rest, rather than to be moved, let us see how the philosopher Syrianus states the doubt, and gives the solution of it :—

“Some one may ask,” says he, “how things which are moved, are moved in place, since things moved, are rather *from whence, whither*. For, in short, things in place appear to be at rest. May we not therefore say, that things which are moved, are in place and not in place? For they are not in the first, and as it were proper place of themselves ; since if they were they would be at rest. But they are in place, surveyed according to its extent ; just as we say that the sun is in the constellation called the Lion, because the extent of the Lion comprehends the sun. We also say that a flying eagle is in the air, and that a ship sailing with a prosperous wind is in the sea : for all these have place considered in its extent, or assumed with a greater latitude, but they have not a first and peculiar place, as long as they are moved.” And most of those, indeed, who speak about place, appear to me especially to direct their attention to this external place. For on being asked, what is the place of the earth, they reply, that it is the middle of the universe ; which is the peculiar place of the universe, and of the earth as in the universe. On being also asked what is the place of the heavens, they say, that which surrounds. But they do not in their reply adduce that place of the earth which gives convenient position to its parts ; and in a similar manner that place of the heavens through which its parts are orderly arranged. Hence all men, as it seems, assert that place is separate from

from that which is in place. For in reality that which pertains to each particular from more total place, is separate from that which is in place, and is not precedaneously the place of that thing. They also consider place as immoveable, looking to this more common place, and which is considered in its extent. For the peculiar place of every thing, and which is coessentialized with it, is also moved together with it. But common place abides, being peculiar to that which is more total and comprehensive as body.

Afterwards Simplicius, having discussed this conception about place, enumerated the doubts which may be urged against it, and added a solution of those doubts, farther observes, that he wishes to show, that this opinion is not entirely novel, nor unknown to the most celebrated philosophers. For Theophrastus, says he, in his Physics, appears to have had this conception about place, in what he says as doubting on this subject. "Shall we assert," says he, "that place is not a certain essence by itself, but is predicated from the order and *position* of bodies, according to their natures and powers; and in a similar manner in animals and plants, and in short things of dissimilar parts, whether they are animated, or inanimate, but which have a formed nature? For there is a certain order and position of the parts of these, with respect to the whole essence. Hence each is said to be in its own place, from having its proper order; since also each of the parts of a body desires and demands its own place and position." I will also show, that the divine Jamblichus bears testimony to this opinion; for in the second chapter of the fifth book of his Commentaries on the Timæus, he thus writes: "Every body so far as it is body, is in place. Hence place subsists connascent with bodies; and is by no means absent from the first progression of them into beings, and from their most proper essence. Hence Timæus very properly, together with the origin of bodies, primarily also introduces place. Such, therefore, as do not make place to be allied to cause, drawing it down to the boundaries of superficies, or void receptacles, or certain intervals, at the same time indeed introduce foreign opinions, and deviate from the whole intention of Timæus, who always conjoins fabrication with nature. It is necessary, therefore, as he produces bodies allied to their cause, in like manner, we should behold place as suspended from the cause, which Timæus unfolds." So that Jamblichus rejecting other
conceptions:

conceptions which make place to be external to the things in place, says, "that place is connascent with the things which it contains." Afterwards he adds, "What opinion, therefore, determines the perfect about place, and that which is allied to its essence? Is it not that which admits it to be a corporeal power sustaining and establishing bodies, exciting them when falling, collecting them when scattered, and giving completion to, and comprehending them on all sides. And it is evident, if place gives completion to bodies, that it will not be separate from that which is in place. But it will comprehend them, so as to be the boundary and collector of bodies."

Simplicius adds, "What then shall we say, that so many and such great men have erred in their opinion about place? Or rather, following what each of them has written about place, let us show that no one of them has erred in his conceptions on this subject; but that place being multiform, different philosophers have contemplated and unfolded different forms of place. That we may, therefore, now be able to perceive the common conception about place, and may contemplate under it the above-mentioned diversities of opinion, let us again assuming another beginning, discuss this affair as follows: That which is properly one, as subsisting without interval, without separation, and without change, is the boundary and measure of all things neither requiring to be bounded, nor to be measured by any thing. The united* also, in consequence of being as it were vanquished by *the one*, is likewise unindigent of that which produces a perfection of this kind. But I do not mean by the united the continued; for this already possesses interval; but I mean that which has not arrived at any separation whatever of parts: for the continued is separated according to many modes. And one thing indeed is separated according to the magnitude of essence or power, as quantity which is called continued; but others are separated according to multitude, as quantities which are properly called discrete. Some things also subsist according to an extension of being, such as perpetual natures, and which we say exist according to so much time. Since, however, they entirely depart from the bound which is characterized by unity, and tend to infinity and indefiniteness, they are indigent of parts, and of limits which may preserve them bounded

* By *the united* here, Simplicius means the whole of an intelligible and intellectual essence; or what is properly called *true being*.

and

and unconfused. And some indeed subsist according to a diffusion to infinity, but others according to the confusion alone which is in danger of acceding to other things already separated. And number, indeed, stops the divulsion to infinity of discrete multitude, comprehending its separation in definite forms; but magnitudinal measure bounds the indefinite diffusion of quantity endued with interval. But of one kind of that which is as it were the magnitude of extension according to being, viz. the immoveable, eternity is the measure, collecting it into one; but of the other kind, the moveable, time is the measure, collecting it into number. And such measures indeed as these, do not permit quantity to be diffused to infinity, neither in paradigms*, nor in images. There is something else, however, which takes away the confusion of the things separated in all these, and which is the cause of the parts not being confounded with each other, according to their proper wholeness, but of each receiving its appropriate order and position. For it is not without a cause, that in numbers the monad is arranged prior to the duad, but the duad prior to the triad, and so of the rest. Nor is it from chance that odd and even numbers are alternately arranged, and squares † in a following order, having the intervals between each other increased according to the duad; and such other elegant theorems of the essential order of numbers, as we learn in arithmetic. After the same manner also, the separation is arranged of other incorporeal forms. The same cause also arranges the position according to parts both of plants and animals. Hence the head, hands, and feet are disposed as we see them, with respect to each other, in animals, and the roots and branches in plants. And not only does place determine the order of the parts with respect to each other, but also the position of every whole as of a part existing in a greater whole. Thus the earth is allotted the middle of the universe, but the heavens the circumference; and middle are posited in middle natures. These things, however, have in a certain respect been remarked before.

* Viz. in intelligible and intellectual natures.

† Thus in the series of numbers in a natural order 1. 2. 3. 4. 5. 6. 7. 8. 9. 10. 11. 12. 13. 14. 15. 16. &c. it is evident that odd and even numbers are alternately arranged, and the intervals between the squares are increased by the duad. For between 1 and 4 there are two intervals or numbers; between 4 and 9 there are four intervals; between 9 and 16 there are six intervals, or thrice two; and so of the rest.

In addition, therefore, to what has been already said, it may be observed, that a certain common conception of all place will be that which asserts it to be, that which gives distinction to the position of every thing which has a separate subsistence among beings. But with respect to *distinction*, one kind subsists according to receptacle, another according to comprehension, and another according to the order of the position of a thing with respect to other things. All these too may be seen both in incorporeal and corporeal natures. For the intelligible orders are allotted as different places, the different receptacles of the intelligible world. Hence Orpheus speaks of it as containing the diversities of allotments ; and place is frequently called by him a comprehension or enclosure. Hence they call tranquil Syria, the place of the gods, and the Egyptians thus denominate Isis, as comprehending the characteristic properties of many gods. Plato also says, that the intelligible and supercelestial place is that according to which the order of intelligible forms is distinguished and bounded. But according to this signification we say, that every number is arranged in its proper place, when the monad is first, the duad next, afterwards the triad, and so of the rest. And squares, as was before observed, have their places, and different squares different places, according to an orderly arrangement. Soul also is said to be the place of forms, according to this species of comprehension. And we call things which give distinction and bound to arguments demonstratively places ; as, for instance, arguments from contraries, or from similars, and from genera or species. In like manner, in corporeal natures also, some according to the distinction of receptacle, have thought matter to be place ; but that form is place according to the distinction of comprehension. But since of place, one kind is connascent, and another external ; according to the connascent, some call place the form according to superficies, in consequence of the whole being placed in this. But according to external comprehension, as things which have position are situated in it, some, as Aristotle, define place to be the boundary of that which contains. Others again define it to be an incorporeal interval, by this definition appearing to avoid many absurdities which attend the former hypotheses. And the arguments which have been lately adduced from Damascius, appear to me to define place according to the order of position of each thing to others, and as being incorporeal indeed, but sensible, and in bodies ; and this definition is also, as we have shown, confirmed by the testimony of Theophrastus, and the divine Jamblichus.

blichus. For as position itself is incorporeal, since it is neither the body which is moved, nor that in which it is moved, so likewise the distinction of position, is according to this conception incorporeal. Hence also the differences of place, viz. upward and downward, on the right hand and on the left, behind and before, are incorporeal, although they are beheld subsisting in body. For we say the right hand, not only according to the different structure of it, but because likewise it is situated in the right hand parts of the body, as also is the liver. But in incorporeal natures indeed, the place of numbers will be that which distinguishes and bounds the order of their position with respect to each other. And in a similar manner we must speak of the place of intellectual and psychical * forms. In bodies, however, as has been before observed, place is that which imparts to the several parts of bodies order and a proper convenient position, towards each other, and towards the whole. It likewise imparts an appropriate position in the common whole, as, for instance, in the whole world, through a proximate whole. And Aristotle appears to have especially directed his attention to this signification of place, according to which one body is situated in another; one whole in another whole, as, for instance, I in the air, but a more partial in a more total whole, though perhaps proximate place desires to be equal to that which is in place. For we say, (Aristotle observes) that a thing is in the heavens, because it is in the air, and the air is in the heavens. We also say, that it is in air, yet not in the whole of air, but through its extremity, and that which contains it, we assert to be in the air. But place of this kind comprehends and receives, so far as it is more total. All place, however, subsists according to the distinction of position. Plato also calls matter the place and region of forms, as receiving the position of the forms which fall into it, and giving distinction and bound to their interval and separation. For forms when subsisting by themselves possess the separation of parts contracted, and without distance; but when they are separated and become distant from each other, according to material indefiniteness, they then possess a material order of separation and interval, as being immaterial prior to the order of separation. Matter, therefore, is the place of forms, both as a receptacle, and as the cause of divisible position, and of an order of this kind. Place also is an interval, as a previous description

* i. e. Belonging to soul.

and type of the bodies which exist in it; the one peculiar, as the place of the celestial spheres; but the other common, as the place of the elements which are mingled with each other. For fire and air, water and earth, and different bodies, are produced in the same interval, according to the common aptitude of the interval.

Nor is it at all wonderful, that body should be the place of body, the more immaterial of the more material, and that which is prior by nature of that which is subordinate, according to the opinion of the philosopher Proclus. For the most celebrated philosophers acknowledge, that the celestial spheres* are entire, and full as far as to the centre; and the more inward are evidently contained in the more outward. Thus the sphere of the moon is contained in that of Mercury; that of Mercury in the sphere of Venus; and so of the rest. The sublunary elements also, animals and plants, are contained in all the celestial spheres, though more proximately in the sphere of the moon, as being more allied to it. Each, therefore, of the things that contain, becomes the place of that which is contained, as comprehending and receiving it, and giving bound and distinction to its position. Hence, neither according to this are they as in a whole, but as in place. Since, therefore, the Assyrian theology asserts, that there is another more divine body, and which is ethereal, above this world, (but it was also known to Orpheus, in the following lines :

All things receive enclos'd on ev'ry side,
In *æther's* wide ineffable embrace :
Then in the midst of *æther* place the heaven †.

* These spheres are vivific immaterial light, and therefore can penetrate each other without divulsion and confusion. For they have nothing of the density and gravity of earthly bodies. Hence they are similar to mathematical bodies, so far as they are immaterial, free from contrariety, and exempt from every passive quality; but are different from them so far as they are full of motion and life.

† This is a part of the Oracle delivered by Night to Jupiter, who, prior to the fabrication of the universe, is said by Orpheus to have betaken himself to the Oracle of Night, to have been there filled with divine conceptions, to have received the principles of fabrication, (and if it be lawful so to speak) to have solved all his doubts. See Proclus in Tim. p. 63, and p. 96; the additional notes to my translation of the Timæus, or the notes to my translation of Pausanias, p. 277.

Astronomers

Astronomers also know the starless and truly inerratic sphere, which they place from necessity, above what is called the inerratic sphere, since finding that this sphere which contains many stars, is moved one degree from the west in a hundred years, they require another sphere, which may cause this apparent circulation to revolve from the eastern parts)—Since, therefore, as I began to say, Proclus has an abundant testimony, that there is a certain body more divine, and more venerable than this world, he very reasonably asserts it to be the place of this whole world. But it is evident, that since each of such bodies as receive and comprehend others possess interval, that they also contain different parts, and a proper place, both as interval, and as imparting convenient position to the order of the parts.

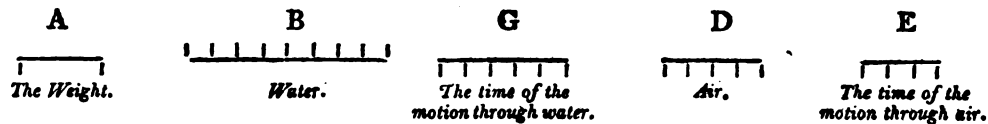
Again, therefore, I say, that each of the philosophers who have spoken about place, directed his attention to a certain conception of it, which is true, and does not deviate from its common character. But if all of them have not in their definitions comprehended all the conceptions of place, it is by no means wonderful. For it is not unlikely that there are also other characters of it, which are not yet apparent. I also add this to what has been said, that our preceptor Damascius has well defined place according to convenient position, and is the first we know, who has distinctly unfolded it according to this definition. He has not, however, added other significations of place, which are asserted both of incorporeal natures, and bodies. For I think it is well said, that *place is the distinction and measure of position*. But position will also be in incorporeal natures according to order; as in numbers we say, that the duad is situated prior to the triad. And it is likewise in body according to the difference of interval. This therefore I say is to be remarked, that admitting there are three measures, the one of separation, which is number, another of the extension in motion, which is time, and a third of interval, which is place, he does not distinguish the twofold nature of interval, the one as of bounded magnitude, according to which we say one magnitude is a cubit, and another a finger in dimension; but the other of magnitude as having position, according to which we call one thing upward, but another downward, one thing on the right hand, and another on the left.

But though he frequently says, that place is the measure of position, yet he does not distinguish it from the measure of magnitude. I think, however, it is proper to assert, that

number

number is the measure of separation ; magnitude of interval ; place of all-various position ; and time of the extension of generation.

Page 224. *Let the weight A therefore be impelled through B, &c.*



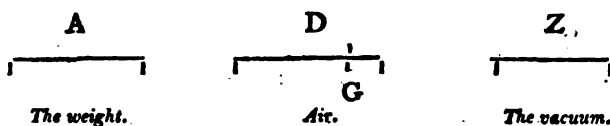
Let the density of water be estimated at 8, and the density of air at 4. There is, therefore, between these a double ratio. Again, let the time in which the motion through water is made, be estimated at six hours; and the time in which the motion through air is made, at three hours. Between these, therefore, there is also a double ratio. Hence it is evident that in these four terms, B,G,D,E, there is proportion, since proportion is identity of ratios.

As to what pertains to the series of the context, in the first place, Aristotle, that he may show this doctrine to be general, exhibits the thing proposed by the letters A,B,G,D,E. A is that which is moved ; B and D are magnitudes, through which A is moved. And B indeed is a more dense, but D a more attenuated magnitude. G is a longer time, in which A is moved through B ; for instance, six hours. But E is a shorter time, in which A is moved through D ; for instance, three hours. He says, therefore, that the proportion is preserved ; because by how much the more dense B is than D, by so much swifter will the motion through D be, than the motion through B. In the second place, he adds to the letters natural examples, and he calls B water, D air, and G a time doubly more extended than E ; and he shows that in these terms proportion is preserved. For as water is twice as dense as air, so the motion through air is twice as swift as the motion through water ; because the motion through air, for instance, is accomplished in three hours, but through water in six hours.

Page 225. *For let Z be a vacuum, &c.*

Aristotle here assumes a part of the magnitude D, i. e. of air, which he calls G. And as we have said that the whole space is passed through (for instance) in the time of three hours ;

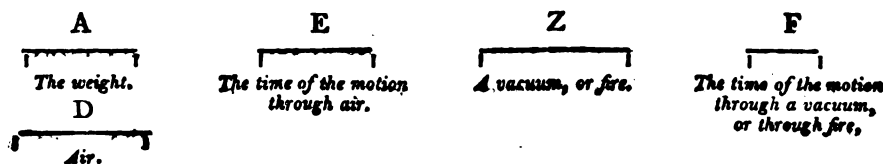
hours ; this part G is now supposed to be as much as the weight passes through in one hour. For if it passes through the whole space in three hours, it will pass through a third part of it in one hour. But the same weight in the same hour, will pass through the whole vacuum Z. Hence in the same time it passes through the whole vacuum Z, and the plenum G. It must be observed, however, that as a plenum may be considered as either unequal or equal to a vacuum, Aristotle here considers it as unequal, that is, as less. This will be evident from the following diagrams :



Through a mistake of the press here, the reader is requested, instead of, "If therefore it passes through A," to read "If therefore A passes through it."

Page 225. *But in as much time as E, &c.*

In the space Z which was before supposed to be a vacuum, Aristotle now places a body triply lighter than air ; for instance, fire. Whence from the ratio of proportion above explained, it follows, that the weight A will pass through fire Z, in the time F, which is one hour. For as fire Z is triply lighter than air D, so likewise the time E is triply greater than the time F. This proportion Aristotle calls *vice versâ* ; because in the first place Z is compared with D, so that Z may surpass in levity ; afterwards in the times, the time in which D is passed through, is *vice versâ* compared, and surpasses the time in which Z is passed through. And in the second place, if Z is a vacuum, a weight ought to be carried more swiftly through Z, because a vacuum does not resist : and consequently it less resists than fire. Hence it will come to pass, that the same weight will be moved through the vacuum Z, both more swiftly, and in the same time, than through fire Z, as will be evident from the following diagrams.



Page

Page 285. *And thus much concerning time, &c.*

The following is what appears to me to be the most important part of the beautiful digression of Simplicius concerning time. The Pythagorean Archytas, who was the first we have heard of that defined the essence of time, writes as follows about it, in his treatise on the Universe. "The once and time universal have as their peculiarity the impartible, and the non-subsistent : for *the now* is impartible, and as soon as it is spoken of and intellectually conceived, is past, and does not remain any one thing : for being continually in generation, or becoming to be, it is not at any time preserved according to number, though it is according to form ; since the present now, and the future time, do not remain any one such thing with the past time : for the past time is gone, and is no longer one thing ; and the present time as soon as it is intellectually perceived, and exists, is past. And thus *the now* always continually connects another and another thing which is becoming to be, and tending to corruption ; but yet according to such a form : for every now is impartible and indivisible, being one certain boundary of the past, and the beginning of the future ; just as in fractured right lines, the point about the fracture, is the beginning of one line, and the end of another. But time is continued, and not separated, as number, a word, and harmony : for of a word indeed, syllables are the parts ; and these are separated. Sounds also are the parts of harmony, and monads of number. But a line, a receptacle, and place are continued ; for the parts of these make common sections, which are always divisible : for a line is divided according to a point ; a superficies according to a line ; and a solid according to a superficies. Time also is one continued thing : for it is not of the nature of the once, nor is it motion which once was, *the now* not being present ; but it always is and will be. Nor will *the now* ever fail, since another and another will always be becoming to be ; different indeed in number, but the same in species or form. A line, however, differs from other continued quantities, because the parts of a line subsist in a receptacle and place ; but of time, the parts which have been are corrupted, and the parts which will be,

be, will be corrupted. Hence time, either altogether is not any one thing, or it is obscurely and scarcely one thing : for how can that of which the past is no longer any one thing, and the future is not yet one thing, but *the now* is impartible and indivisible,—how can such a thing as this have in reality a subsistence ?”

The divine Jamblichus, however, in the first book of his Commentaries on the Categories, says, that Archytas defines time as it is a certain number of motion, or the universal interval of the nature of the universe. But he interprets the definition, as being asserted of one motion indeed, yet not of one of the many : for the other motions relinquish time. Nor is it asserted of that which is common to the many ; since this is not one. But the definition is asserted of that motion which is in reality one, and which subsists prior to all the rest, as the monad of motions. Or it is justly the first, and the psychical cause of all motions, through its productive principles, springing forth as the first mutation. Of this motion time is the number, not as being produced afterwards, nor acceding externally, as Aristotle thought ; but subsisting prior to it in the order of cause, preceding it according to appropriate measures, and being essentialized in energy. Hence it unfolds into light, as it were, the self-motive processions of the essential reasons of the soul. But he says, that the ancients assert time to be the universal interval of the nature of the universe, in consequence of surveying the continuity in the productive principles of that nature, and their departure into division : for that which they demonstrate of the mutations in generation, that this *now* is near to the former *now*, and this motion to the former motion, this by a much greater priority, and in a more principal manner is surveyed in the essence of those natural reasons, or productive principles which rank as wholes ; which essence also gives completion to the interval of the most ancient time of all things ; this time imparting continuity to the reasons of nature. He adds, that the opinion of those still more ancient, accords with what he has said : for some defined time to be as the name manifests a certain dance of intellect, (οἱ μὲν τὸν χρόνον ἀφωρισάντο χορεία τινι τοῦ νοῦ) but others defined it to be the periods of soul ; others, the natural receptacle of these periods ; and others orderly circulations ; all which the Pythagoric sect comprehends. And now indeed, says he, we have distinctly unfolded in our expositions the definitions as two things ; but it is requisite to contract both these

into one, and to consider time as continued and at the same time separated, though it is more properly continued. In this manner, therefore, Jamblichus says, that both psychical and physical time are unfolded by Archytas. But he says, that in the passage from Archytas just cited, the apparent energy of time into that which is external is manifested. Hence he is of opinion, that not only time has a subsistence, according to Archytas, but also that there is a precedaneous time in beings, according to the well-disposed order of itself, and to which the prior and posterior of our actions are referred; which would not be the case, unless time had a prior subsistence. Jamblichus, however, thinks fit to understand the impartible and the non-subsistent, as pertaining to another and another time; the impartible being defined according to the forms of productive principles established in themselves; but the non-subsistent, according to the motions proceeding from these forms, since they do not preserve an impartible and immoveable essence. And they possess the impartible indeed, according to the energy and perfection abiding in beings; but the non-subsistent, according to the flux proceeding into generation from real being, because it does not preserve the purity of the first essence. And where, says he, is it necessary to understand the flux and exit of time? We reply, in its participants: for these always subsisting in becoming to be, cannot immoveably receive the stable essence of time; but at different times coming into contact with it, through different parts of themselves, their passion falsifies its nature. To be *now in generation* likewise, or *becoming to be*, is imparted to those natures which always participate of time from the indivisible *now*, and also to other things which at different times subsist differently in becoming to be. Hence also difference according to number, being always varied, is a sign of the difference of the participants; but the form remaining the same, indicates the sameness of the impartible *now*. In this manner, therefore, Jamblichus interprets Archytas, adding many other things as doubts, to the interpretation.

I think, however, that Damascius, though in a more debile manner, yet more adapted to the words of Archytas, understands time to be the number of a certain motion, not as of form and the immoveable, but as of that which is conversant with mutation. So that it is not only the number of psychical mutation, but in a similar manner of every mutation; and perhaps, because mutation is always of individuals, and is an individual,

on

on this account it is the number of a *certain* mutation ; for that which is universal is immutable. But time is the universal interval of the nature of the universe, because it is not only the interval of motion, but also of rest * ; which Aristotle, well understanding, says, “ That this it is for motion to be in time, for the being of it to be measured by time.” So that the interval of the being of rest, is measured by time ; just as time is said to be the measure of the motion of the extension of this being in generation. And Aristotle appears to transfer the interval of nature to the extension of the being of each particular thing. Hence, when he says, that time is the number of motion, he transfers the interval of nature to something more common adapted to things in generation ; which is beheld also in rest, and in short, in every generated and natural essence. On this account, Archytas says, that time is the universal interval of the nature of the universe, as being willing to survey time in natural things especially : for soul also participates of time, so far as she communicates with nature and generation ; just as she participates of eternity, when she runs upward to true being. Interval also is more adapted to time than number : for *nous* are not separated from each other, as monads are ; since nothing falls between *the nous* which is not a *now*. Hence time is continued and not separated, as a sentence is by a noun and a verb, by syllables and letters, and harmony by sounds. But since there is also another interval, that belonging to magnitude, Archytas adds, “ of the nature of the universe,” calling nature the germination which is always becoming to be and flowing, from being, of that which is generated. And as he proceeds, he renders it still clearer, that he does not define interval according to magnitude, but according to the continuity of the ever. But he calls time impartible, and non-subsistent ; the former, because he surveyed it according to the now, but the latter, because it does not remain the same in number : for such is the nature of things, which have their being in becoming to be. Hence motion, and prior and posterior are in these. And here we may see, that when he calls time impartible, and non-subsistent, and when he says, that time, in *the now*, differs from the past, he calls *the now* the same with time. But when he says, that *the now* is the end of the past, and the beginning of the future, then he calls *the now* different from time ; as also when he says, that *the*

* And nature is a principle of motion and rest.

now is indivisible, but time continued, and when he defines time to be number : for he does not call *the now* number, since it is indivisible. Archytas, therefore, as well as Aristotle, appears to have admitted time to be a *continued and indivisible flux of nows* ; and to have especially unfolded that time which is co-ordinate in generation, which is properly called time, and is truly an image of eternity. Theophrastus also, and Eudemus, who were the associates of Aristotle, appear to have had the same opinion, and to have taught the same things about time as Aristotle. But Strato of Lampsacen, blaming the definition of time, given by Aristotle and his associates, though he was the disciple of Theophrastus, who in all things accords with Aristotle, proceeded in a more novel path : for he does not admit time to be the number of motion, because number is discrete quantity, but motion and time are continued ; and the continued is not numerable. But if because another and another part of motion, and of these, the one is prior, but the other posterior, according to this, there is a certain number of motion, thus also length will be numerable : for this likewise is another and another quantum. And this is also the case with other things which subsist according to continuity : and the one is prior, but the other posterior. Hence of time there will be a time of time. Again, of number, there is not generation or corruption ; though things numerable are corrupted ; but time is continually generated and corrupted. And of number indeed, it is necessary that all the parts should be ; for if there are not three monads, there will not be the triad. But it is impossible that all the parts should be of time ; for the former and the latter time would subsist together : farther still, if time is number, the *monad* and the *now* will be the same, for time is composed from *nows*, and number from *monads*. In addition to this also Strato doubts, why time is more the number of prior and posterior in motion, than of prior and posterior in rest ; for in this there is similarly prior and posterior. This, however, from what has been said may be easily solved : for time is said by Aristotle to be the measure of the flux in generation, which is common to motion, and to its opposite rest, and all generated natures. But he calls time number ; not that it is simply number, for he shows that time is continued, as well as magnitude and motion ; but as bounded by the distinction of prior and posterior in its continuity, by those who are capable of perceiving time. So that the arguments from number do not subvert the conception of Aristotle. But Strato appears to object well against that which is said to be in time : for
if,

if, says he, to be in time is this, to be comprehended by time, nothing eternal will be in time. But Aristotle seems to call that which subsists in the whole of time eternal, and not temporal, as not being comprehended by time. But if time always has its being in always becoming to be, and that which is perpetual in time is a thing of this kind, as, for instance, the motion of the heavens, so as to possess the ever according to a circulation to infinity—if this be the case, it is true to say that every assumed time is comprehended by another time. Strato adding many other things in opposition to the definition given by Aristotle, asserts time to be quantity in actions: for we say, he observes, that a man has been travelling, sailing, and engaged in war for a long time; and in like manner, that he has been sitting, sleeping, and doing nothing for a long or a short time. Of those actions indeed of which the quantity is much, we predicate much time; but of those of which the quantity is little, a little time: for time is the quantity in each of these. Hence some assert that the same person came slower, and others that he came quicker; just as the quantity in these actions appears to each: for we say that is swift in which the quantity from which it began, and in which it ceased, is little; but that which is produced in it, we say is much. On the contrary we assert a thing to be slow, when the quantity in it is much, and the action little. Hence, says he, in rest there is not the swift and the slow: for all rest is equal to the quantity of itself; and neither is there much rest in a little quantity, nor a little in a great quantity. On this account also, he adds, we say that there is more and less time; but we do not say, that there is a swifter and slower time: for action and motion are swifter and slower; but the quantity in which the action is performed, is not swifter and slower, but more and less, as is also the time. But night and day, month and year, says he, are not time, nor parts of time; but the two former, indeed, are illumination and shadow, and the two latter are the period of the moon and the sun. But time is the quantity in which these are produced. And if that which is performed is one thing, and the quantity in which it is performed another, and this is time, that it is quantity indeed has been shown, but what kind of quantity it is, is immanifest. Hence neither from this can we obtain the conception of time. And that it is indeed a different quantity from that which is the peculiarity of motions and rests is evident; since we say that there has been much motion in a little time, when it has been swift; but a little motion in a great time, when it has

has been slow. What this is, however, the assertion does not render manifest. Hence, says he, we say that all things are in time, because quantity is an attendant on all, both on such as are becoming to be, and such as are. But we speak of many things according to the contrary: for we say, that the city is in a tumult, and that man and pleasure are in fear, because the latter are in the former. And such is the epitome of the opinions and doubts of Strato concerning time. All those too, whom we have mentioned, have made natural time the object of their consideration, though they may have indicated something about separate and exempt time, and which has a prior casual subsistence.

But of the more moderns, Plotinus appears to have been the first who investigated the first time *. And he says, that it is the life of soul in a motion changing from one life to another; unfolding it in a manner adapted to what he says about eternity: for he says, that eternity subsists about being, and is infinite life at once total and full, and every where without separation and interval. It will, however, perhaps be better to hear the intellectual words themselves of Plotinus. "If any one, therefore, should say that time is the life of soul, in a transitive motion proceeding from one life to another, will he appear to say any thing to the purpose? For if eternity is life in permanency, and an invariable sameness of subsistence, and already infinite, but it is necessary that time should be an image of eternity, just as this universe is an image of the intelligible world, instead of the life which is there, it is necessary to say that there is another life of this power of the soul, homonymous to it; instead of intellectual motion, the motion of a certain part of the soul; and instead of sameness and similitude of subsistence, and permanency, that which does not abide in the same, but employs different energies. We must also say that this life instead of being without separation and one, is the image of one, and exists in continuity; that instead of the infinite and whole, it is always advancing to infinity, with respect to that which is successive; and instead of an at-once-collected whole, that which always will be according to a part, and a whole which

* That is, time considered as having an exempt *causal* subsistence; which mode of subsistence is more excellent than that of time considered as subsisting *essentially*, i. e. according to the perfect possession of its characteristic properties, so far as time.

always

always will be : for thus it will imitate that which is already a collected whole, and already infinite, if it wishes to be always acquiring in being ; since it will thus imitate the being of eternity. But it is necessary not to consider time as external to soul, as neither is eternity there external to being ; nor as something consequent or posterior, as neither is eternity there ; but it must be surveyed as one thing, inherent in, and subsisting together with soul, in the same manner as eternity there subsists in and together with being. He adds, that time does not measure motion, but motion time ; since time is unapparent indeed, but motion apparent ; and things unapparent are known and measured by such as are apparent. He says, therefore, that the thing measured by circulation, and this is that which is manifest, will be time, not generated, but rendered apparent by circulation. He adds, is time, therefore, in us, or in every such soul, and is it similarly in all, and one in all ? Hence time is not divulsed, as neither is eternity, which subsists according to another (that is, according to true being) in every thing of a similar species. But Plotinus in what he here says, conceives time to be the transitive life of soul ; since eternity is the life about being, a life at once total and full, and every where undivided and without interval, as was before observed. And Plotinus appears to have had such a conception of time from analogy : for as in the intelligible world, after that which is first produced, and which he now calls being itself, intelligible life subsists, proceeding into the same with eternity, on which account, that which subsists after it is an animal and eternal ; so at the summit of a generated nature, the life pertaining to soul subsists after an impartible essence, and passes into the same with time.

Damascius, however, objects against Plotinus, that instead of eternity, he assumes an eternal intellect. May we not, however, say that the life which subsists about being, since it is immediately after being, is not life according to eternal intellect, and which is the third * intellect, but the life according to the middle of the intelligible order, and

* For in the intelligible order which consists of *being, life, and intellect*, each of these three is a triad consisting of a *superessential unity, power, and intellect* ; *power*, in each being analogous to *life*. But in the first triad or being, life subsists *occultly*, in the second *openly*, and in the third *according to participation*. The like also must be understood of *intellect*, in this order.

which

which Plotinus also calls intellect, as well as the summit of that order? But it appears to me that it likewise deserves to be considered, whether, though in intelligibles life and eternity are united, yet we being divided about the union which is there, do not at one time call the middle of that order *life*, at another time *eternity*, and at another whole and parts; as we learn in the *Parmenides**; but that in things connected with generation, the union which is in intelligible life no longer remains, in consequence of proceeding into the nature of an image, although it possesses something exempt from an image and generation. Psychical, however, is the image of intellectual life, and time of eternity, as Plato also says. Time, therefore, will not be simply the transitive, but the periodic life of soul; just as eternity is the intransitive life of intellect. And that is the first time which measures the transition of soul, since the psychical is the first mutation, and from it the rest are derived. And perhaps this is what Aristotle had in view when he said, that time would have no existence unless there were soul, because there would not be that which numbers. Let time, therefore, begin from soul, yet it is different from soul, and measures its transitive energies: for a certain measure, the middle of eternity and time, will connect and measure its essence and essential energies, which subsist between a nature impartible, and that which is divided about bodies.

But after Plotinus, let Jamblichus succeed, who also enkindles a light in our intellectual conceptions. Concerning the first and impartible † time, therefore, he says as follows, in his Commentaries on the Categories, explaining the words of Archytas. The energy of that which is impartible is not always generated like the flame of a lamp: for neither is it sensible, nor does it while flowing abide in proceeding; but it always is, and always energizes, and is never generated. Since, likewise, it is unbegotten, it is pre-established in the immoveable, in the same form according to number, and is incorruptible. But he says, that *the now* is always becoming to be. I think, however, it is immediately apparent, that what is generated once began to be generated, and is not

* See the notes to my translation of the *Parmenides* of Plato, in which it is shown that Plato denominates the middle of the intelligible order *whole and parts*.

† The *impartible* is that which is not consubstant with a nature subordinate to itself. Hence impartible time is that time which is not consubstant with sensibles.

always

always generated, and that *the now* is and is not generated or becoming to be. But if it is generated possessing motion in extension, it is not generated in *the now*: for rest is rather beheld according to *the now*, and not motion. But time, says he, is something continued, and the measure of continued motion: and the impartible must be considered as the generative cause of time. Where, therefore, is flowing and generated time, except in its participants? For these, says he, are always becoming to be, and are not able to receive immoveably the stable essence of the impartible. But with the different parts of themselves coming into contact with it at different times, they falsify its nature by the manner in which they are affected. To be generated, therefore, or to subsist in becoming to be, belongs to the perpetual participants of *the now*. But sameness continued according to one, in things which subsist differently at different times, is the peculiarity of the impartible now. Jamblichus, therefore, in what he here says, seems to admit one unbegotten *now* prior to participants, and that from this *nows* are imparted to participants. But as *the now*, so likewise there is one time prior to things temporalized, and many times which subsist in participants; among which one is past, another present, and another future; time, says he, well-arranging our actions, not in consequence of our actions being regularly disposed, according to the opinion of some, but because time has an essential existence: for it would not be possible, says he, to collect the first and second of actions, unless time subsisted by itself, to which the orderly in actions is referred. But what Jamblichus next says evinces that time essentially comprehends soul. Hence, says he, time is very properly defined to be the moveable image of eternity, in consequence of soul being assimilated to intellect; the reasons of soul to intellectual conceptions; and the impartible now which it contains to that which abides in one. The *all-comprehending* nature likewise of time is assimilated to the subsistence of all things *at once* of eternity, and to its always comprehending beings in itself; the moveable nature of this, to the stable nature of that; and the measure of *generation* to the measure of *beings*. Jamblichus, therefore, evidently admits eternity to be a comprehending measure, and time to be an essence indeed, but which measures generation; first the generation of soul, and from this that which proceeds from it. Afterwards that time remains which is co-ordinate with motion, and non-subsistent, in consequence of

having its being in becoming to be. He is likewise of opinion, that not only *the now*, but also time is established between two boundaries.

I will also add from his Commentaries on the *Timæus*, what he says about time. In the eighth book, therefore, especially agreeing with Plato, he delivers the connexion of time with eternity. Hence he particularly discourses about that time which is exempt from the world; which comprehends and supplies the measures of all the motion it contains; and which is different from natural time, the subject of the present investigation. But in the seventh chapter, he observes as follows: we must co-arrange the essence of time according to energy, with the orderly distribution of things, which proceeds together with fabrications, and is inseparable from the things perfected by itself: for when Plato says that the demiurgus while orderly distributing the universe produced time, he manifests that the subsistence of time is co-arranged with the orderly distribution proceeding from the demiurgus. The subsistence of time, however, precedes the period of the universe; as well as the distribution which disposes time in order, and has a proximately prior arrangement to it. It also collectively comprehends the whole of it in certain definite boundaries, in consequence of subsisting as the cause from which it is produced. We, therefore, also admit that there is an order of time, yet not an order arranged, but arranging, nor consequent to things preceding, but the primary leader of effects, and things of a more ancient nature. Nor do we admit that it is divisibly defined according to ratios or motions, or other definite powers, but that it is perfectly replenished with all demiurgic productions; nor that prior and posterior have an orderly subsistence in it, either according to mutations of motions, or evolutions of life, or transitions of mundane generations, or according to any thing else of this kind; but according to causal precedence, a continued connexion of productions, primary energy, and a power perfective of motions; and conformably to such particulars as these, we should define every thing pertaining to separate time. Farther still, we do not say, that time, and together with it the whole universe were generated together with the motion or life proceeding from soul, but from the intellectual distribution proceeding from the demiurgus; for together with this, time and the world co-subsist in him. The
ancient

ancient * treatise itself also clearly represents divinity orderly distributing and producing time, at the same time that he fabricates the world. And time may be admitted to be a measure, neither according to that which measures motion, or is measured by motion, or which manifests, or is manifested by circulation ; but according to one cause of all these subsisting at once. This therefore is what Jamblichus has written about the time which is exempt from generation, and subsists by itself.

About this time also, and the time which is imparted from this to the world, he writes as follows in the tenth chapter. Hence time likewise is as much as possible most similar to the paradigm of an eternal nature. It is also similar to eternity, and as much as possible, most similar to itself according to a nature consisting of similar powers. Through one energy likewise it is present ; proceeds according to it ; and bounds all generated natures after a similar manner, however different they may be. He speaks, therefore, about these, and adduces another demonstration as follows : The paradigm of the world indeed always *is*, but the world is continually in *generation*, or *becoming to be* through the whole of time ; so that it is and will be. What, therefore, the paradigm is in the intelligible order, that the world as an image is in the generated order. And what the paradigm is there according to eternity, that the image is here according to time. And that which in the intelligible is already present according to *the now*, this in sensibles is continually generated according to *the continued*. That also which is *being* subsisting in itself with invariable sameness, unfolds itself in these inferior realms, as that which was, and is, and will be. That likewise which is without interval there, is seen with interval here. Now therefore the middle twofold nature of time becomes apparent ; for it is the *middle* indeed of eternity and the universe ; but it is *twofold*, so far as it is consub-sistent with the world, and co-arranged with eternity. And it precedes the world indeed, but is assimilated to eternity. Such then is the explanation of the divine Jamblichus of that part of the *Timæus* relative to time.

Proclus also the Lycian philosopher, who was the master of our preceptors, in a certain respect philosophizes about separate time conformably to Jamblichus ; and endeavours to

* This ancient treatise, or *παλαιος λογος* to which Jamblichus alludes, is perhaps the *ιερος λογος*, or sacred discourse of Orpheus, which is unfortunately lost.

demonstrate, that it is not only an intellect, but also a god, as being rendered visible by the invocations of theurgists. But he says, that time has some energies which remain immutably within, but others which are extended to externals, and are mutable. And indeed about the time which is participated and inseparable from generation, he entertains the same opinion as Aristotle, conceiving that Aristotle says time subsists according to *the now* alone. But nearly all those posterior to Proclus, as far as to us, accord with Proclus, not in this only, but in every thing else. I except, however, Asclepiodotus *, the best of the disciples of Proclus, and our Damascius; the former of whom through

* Of this Asclepiodotus the philosopher and physician the following remarkable particulars are related by Damascius in his life of Isidorus. vid. Photii Biblioth. p. 1051. "Asclepiodotus had not in every respect an excellent genius, as many thought he had; but he was indeed most acute in doubting, yet was not very sagacious in understanding; nor consistent with himself. He was also deficient in apprehending things of a more divine nature, such as are things unapparent and intelligible, and which are peculiarly the objects of the conceptions of Plato. But in apprehending the more elevated Orphic and Chaldaic wisdom, and which transcends the conceptions of philosophers in general, he was still more deficient. He was, however, in physiology the most skilful of all his contemporaries; and also in mathematics, in which besides other things he obtained great renown. But in things pertaining to ethics and the virtues he always endeavoured to introduce something new, and to contract contemplation to things inferior and the phænomena; retaining, as I may say, none of the conceptions of the ancients, but violently drawing them down to a mundane nature. He was born, however, with a most excellent genius for music, yet he was not able to restore the lost enharmonic genus, though he divided and restrained the other two genera, which are denominated the chromatic and diatonic. But he could not discover the enharmonic, though he changed and transposed no less than two hundred and twenty *magades* *. The reason, however, of his not discovering it, is because the enharmonic intervals have the smallest measure, which they call *diesis*; but of this we have lost the sensible perception, and have also lost at the same time the other genus, the enharmonic. Asclepiodotus was also instructed in medicine by Jacob the physician, in whose steps he trod, and whom, in some things, he surpassed."

Damascius also informs us, that Asclepiodotus could read in profound darkness without a light, and recognise persons that were then present; and that he was adorned with all the splendors of life.

It is evident from this account, that when Simplicius speaks of Asclepiodotus, as a man of a transcendent genius, he alludes to his skill in physiology, as above mentioned by Damascius.

* The *magades* were square boxes which received the strings of lyres.

the

the transcendency of his genius, embraced more recent dogmas, and the latter through his industry, and affection for Jamblichus, did not hesitate to object to many of the dogmas of Proclus. By me, however, thus much will be said respecting the above mentioned opinions of these two philosophers, that if we investigate the cause of time as subsisting in intellects and the gods, it is necessary to assent to him who says that it is a *stable * intellect*, and a god: for he also who investigates the first causes of motion and generation,

* I know not how to account for the mistake which Simplicius seems to have made when he asserts that time according to Proclus, is a *stable intellect*, since in the place alluded to by Simplicius, (his Commentaries on the Timæus) Proclus expressly says, that time is a *proceeding intellect*. That the reader may be convinced of this, the following is an extract from that part of the Commentaries of Proclus on the Timæus, in which he unfolds the nature of time. The reader who is desirous to see the whole, which in my opinion is uncommonly beautiful, will find it in the additional notes to my translation of the Timæus of Plato. "How is time, said by Plato to be an image * of eternity? Is it because eternity abides in *one*, but time proceeds according to *number*? These things, however, rather indicate their dissimilitude than similitude to each other: for Plato nearly opposes all things to all, *proceeding to abiding, according to number, to one, the image, to the thing itself*. It is better, therefore, to say that divinity produced these two as the measures of things, I mean eternity and time, the one of intelligible, and the other of mundane beings. As the world, therefore, is said to be the image of the intelligible, so also the mundane measure is denominated the image of the intelligible measure. Eternity, however, is the measure as the one, but time as number: for each measures, the former things united, and the latter things numbered: and the former measures the permanency of beings, but the latter the extension of generated natures. But the apparent oppositions of these two, do not evince the dissimilitude of the measures, but the secondary are produced from more ancient natures: for progression is from *abiding*, and number from *the one*. May we not say, therefore, that time is on this account, an image of eternity, because it is productive of the perfection of mundane natures, just as eternity connectedly contains, and is the guardian of beings? for as those natures which are unable to live according to intellect, are led under the order of fate, lest by flying from a divine nature, they should become perfectly disordered; in like manner things which have proceeded from eternity, and are unable to participate of a perfection, the whole of which is established at once, and is always the same, end indeed in the government of time, but are excited by it to appropriate energies, through which they are enabled to receive the end adapted to their nature, from certain periods which restore them to their ancient condition.

* Plato's definition of time is, that it is an eternal image flowing according to number of eternity abiding in one.

But.

generation, will entirely find them to be intellect, and god. Nor is it at all wonderful, that it should be called by the same names, since those who theologise frequently do this,

But how is time said to be a *moveable* image of eternity? Shall we say, because the whole of it is in motion? Or is this indeed impossible? For nothing is moved according to the whole of itself, not even such things as are essentially changed; for the subject of these remains. Much more, therefore, must that which is moved according to other motions, abide according to essence, and this if it be increased, and changed, and locally moved: for if it did not abide according to something, it would at the same time cause the motion to be evanescent; since all motion is in something. Nothing, therefore, is as we have said moved according to the whole of itself, and especially such perpetual natures as it is fit should be established in their proper principles, and abide in themselves, if they are to be continually preserved. But in a particular manner the image of eternity ought, in a certain respect, to possess perpetuity according to sameness and stability; so that it is impossible that time should be moved according to the whole of itself, since neither is this possible to any thing else. Something of it, therefore, must necessarily remain, since every thing which is moved, is moved in consequence of possessing something belonging to it which abides. The monad of time, therefore, abides suspended from the demiurgus; but being full of measuring power, and wishing to measure the essential motions of the soul, together with physical and corporeal motion, and also being, energies and passions, it proceeds according to number. Hence time abiding by its impartible and inward energy, and being participated by its external energy, and by the natures which are measured, proceeds according to number; i. e. it proceeds according to a certain intellectual number, or rather, according to the first number, which as Parmenides would say being analogous to *the one being*, or the first of beings, presides over intellectuals, in the same manner as the first being presides over intelligibles. Time, therefore, proceeds according to that number; and hence it distributes an accommodated measure to every mundane form.

You may also say still more appropriately, that time which is truly so called, proceeds according to number, numbering the participants of itself, and being itself that intellectual number, which Socrates obscurely indicates, when he says that *swiftness* itself and *slowness* itself are in true number, by which the things numbered by time differ, being moved swifter or slower. Hence Timæus does not speak with propriety about this true number, because Socrates had previously in the Republic perfectly unfolded it; but he speaks about that which proceeds from it: for that being true number, time, says he, proceeds according to number. Let then true time proceed according to intelligible number, but it proceeds so far as it measures its participants, just as the time of which Timæus now speaks proceeds as that which is numerable, possessing yet an image of essential time, through which it numbers all things with greater or lesser numbers of their life, so that an ox lives for this, and man for that period of time, and the sun and moon, and the

this, and perhaps also, the gods themselves. If, however, any one investigates this time which is known to us, and with which we are familiar, and which is consub-
sistent

the other stars accomplish their revolutions according to different measures. Time, therefore, is the measure of motion, not as that by which we measure, but as that which produces and bounds the being of life, and of every other motion of things in time, and as measuring them according to and assimilating them to paradigms: for as it refers itself to the similitude of eternity which comprehends paradigmatic causes, in like manner it sends back to a more venerable imitation of eternal principles, things perfected by it, which are circularly convolved. Hence, theurgists* say, that time is a god, and deliver to us a method by which we may excite this deity to render himself apparent. They also celebrate him as older and younger, and as a circulating and eternal god; not only as the image of eternity, but as eternally comprehending it prior to sensibles. They add farther, that he intellectually perceives the whole number of all the natures that are moved in the world, according to which he leads round and restores to their ancient condition in swifter and slower periods every thing that is moved. Besides all this, they celebrate him as interminable through power, in consequence of infinite circulation. And lastly they add, that he is of a spiral form, as measuring according to one power things which are moved in a right line, and those which are moved in a circle, just as the spiral uniformly comprehends the right line and the circle." And farther on, he adds:

"But time is partly eternal, and partly, by its external gift, moveable. Hence theurgists call it eternal, and Plato very properly denominates it not *only* so: for one thing is *alone* moveable, both essentially and according to the participants of it, being *alone* the cause of motion, as soul, and hence it *alone* moves itself and other things; but another thing is *alone* immoveable, preserving itself without transition, and being the cause to other things of a perpetual subsistence after the same manner, and to moveable natures through soul. It is necessary, therefore, that the medium between these two extremes should be that which, both according to its own nature, and the gifts which it imparts to others, is immoveable and at the same time moveable, essentially immoveable indeed, but moved in its participants. But a thing of this kind is time. Hence time is truly, so far as it is considered in itself, immoveable, but so far as it is in its participants, it is moveable, and subsists together with them, unfolding itself into them. It is, therefore, eternal, and a monad, and a center essentially, and according to its own abiding energy; but it is at the same time continuous and number, and a circle, according to its proceeding and being participated. Hence it is a certain proceeding intellect, established indeed in eternity, and on this account, is said to be eternal: for it would not otherwise contribute to the assimilation of mundane natures to move perfect paradigms unless it were previously suspended from them. But it proceeds and abundantly flows into the things which are

* i. e. The Chaldean theologians. See my collection of the Chaldean Oracles.

guarded.

sistent with motion, I think he cannot say that it is either immoveable, or that the whole of it subsists at once, or that it is intellect, as neither is it possible to conceive an immoveable motion, nor a motion which subsists wholly at once.

Let us, however, now discuss the remaining problem concerning time, and dissolve the doubts mentioned by Aristotle in the beginning, about the subsistence of time: for it is evident, that these not being dissolved, no one can be firmly persuaded, whether time, in short, has any existence. And the solution of the doubts especially deserves attention, because Aristotle himself in his discussions about place, dissolves in the end the doubts mentioned in the beginning, but leaves these doubts unsolved. No one like-

guarded by it. Whence, I think, the chief of theurgists celebrate time as a god, as Julian, in the seventh of the Zones, and venerate it by these names, through which it is unfolded in its participants; causing some things to be older, and others to be younger, and leading all things in a circle. Time, therefore, possessing a certain intellectual nature, circularly leads according to number, both its other participants and souls: for time is eternal not in essence only, but also in its inward energy; but so far as it is participated by externals, it is alone moveable, co-extending and harmonizing with them the gift which it imparts. But every soul is transitively moved, both according to its inward and external energies, by the latter of which it moves bodies. And it appears to me that those who thus denominated time *χρονος*, had this conception of its nature, and were, therefore, willing to call it as it were *χορευοντιος νους*, an intellect dancing, or moving in measure; but dividing the words perhaps, for the sake of concealment, they called it *χρονος*. Perhaps too, they gave it this appellation because it abides, and is at the same time moved in measure; by one part of itself abiding, and by the other proceeding with measured motion. By the conjunction, therefore, of both these, they signify the wonderful and demiurgic nature of this god. And it appears that as the demiurgus being intellectual began from intellect to adorn the universe, so time being itself supermundane, began from soul to impart perfection: for that time is not only mundane, but by a much greater priority supermundane is evident; since as eternity is to animal itself*, so is time to this world, which is animated and illuminated by intellect, and wholly an image of animal itself, in the same manner as time of eternity."

It appears therefore from these admirable extracts, that Proclus considers in them *separate* in conjunction with *participated* time; and that he has no less beautifully unfolded their essence and energies as thus subsisting together, than Simplicius has the nature of *participated* time. It appears also that time according to Proclus, is a *proceeding*, and not an abiding *intellect*.

* *Animal itself* is the extremity of the intelligible triad, and the paradigm of the sensible world.

wise

wise of his interpreters has, I think, delivered the solutions of them, nor even the most laborious of his interpreters, Alexander Aphrodisiensis. But for the purpose of facilitating the recollection of the doubts, we shall add the words of Aristotle, which are as follow * : “ That time, therefore, in short, is not, or that it scarcely and obscurely is, may be suspected from the following considerations. One part of it was, and is not ; another part is future, and is not yet ; but from these parts, infinite time, and which is always assumed, is composed. That, however, which is composed from things that are not, does not appear to be ever capable of participating of essence. To which may be added, it is necessary with respect to every thing partible, if it should have a subsistence, that either some or all of its parts should be when it is. But of time, some of the parts are past, others are future, and no part *is*, in consequence of time being divisible. But *the now*, or an instant, is not a part of time : for a part measures ; and it is necessary that the whole should be composed from the parts ; but time does not appear to be composed from instants. Besides, with respect to this *now* which appears to bound and separate the past and the future, whether it always remains one and the same, or is another and another, it is not easy to see : for if it is always another and another, but there is no part of time which is at once another and another, and of which one part does not comprehend, and another is comprehended, just as the less is comprehended by the greater time ; but that which now is not, but was before, must necessarily once have perished ; if this be the case, instants cannot subsist together with each other, but the prior instant must always have necessarily perished. It is not possible, therefore, that it can have perished in itself, because it then is. Neither is it possible that a prior now can perish in another now : for let it be impossible for instants to adhere to each other, in the same manner as it is impossible for a point to adhere to a point. If, therefore, it does not perish in that which is successive, but in another, it will at one and the same time be in the intermediate instants which are infinite. But this is impossible. Neither is it possible for the same instant always to remain ; for there is one boundary of any finite divisible thing ; neither if it should be continuous to one thing, nor if to many. But *the now* is a boundary ; and a finite time may be assumed. Again, if a simultaneous subsistence

* See Chap. 14, Book iv.

according to time, and to be neither prior nor posterior, is nothing else than to be in the same, and in an instant ; in this case if those things which are prior and posterior are in the same now, the transactions of a thousand years past will subsist together with those which are accomplished to day, and one thing will not be prior or posterior to another."

These doubts, therefore, the philosopher Damascius endeavours to solve, and thinks fit to assume the present time, not according to the impartible now ; for such a now is the boundary of time, and not time. But that which is bounded not subsisting, neither will the boundary exist. Neither does it appear that there can be any motion or mutation in such a now. For how can any thing partible subsist in that which is without parts ? These things, however, are mentioned in the doubts of Aristotle. But that which is never collected into one, but has its being in becoming to be, is time ; as day and night, month and year. For no one of these has a collected subsistence, as neither has a race ; though a race is present to others according to a part. Nor has a dance a collected subsistence ; for this also is according to a part ; but at the same time some one is said to have danced in the present dance. Thus also the whole of time subsists in *becoming to be*, but *is not*. For we call forms that are common * perpetual, as always becoming to be ; and as flowing indeed according to number, but the same according to form or species. The present time, therefore, preserves its continuity which is triply divided, according to this, as with reference to us. Hence there is a different present time to different things ; since time in itself is one continued thing. We must say, therefore, in addition to what Damascius has well observed, that the division of time is in capacity, and that the impartible *now* is in capacity ; but that our conception divides them. This *now* also subsists as a boundary, and impartible, and comprehends as if it stood still according to certain parts of time, which are not defined according to one form, such as days and months and years. These forms indeed comprehend a certain great portion of existence, yet they have their being in becoming to be. And though any one should wish to stop one of these forms collectively, he will no longer receive this the

* That is, forms which are immediately participated by sensibles, are consubistent with them, and are therefore called *co-ordinated monads*.

same

same in generation, but he will receive a separate and exempt form, not flowing according to participation; just as a river here subsists. For the *form* of every river has a stable subsistence, from which the flowing river exists, receiving form in a flux. And if you stop the river, it will no longer be a river. Thus, therefore, the present, the past, and the future, are comprehended according to form indeed in the one form of time; but are evolved in generation; that which always proceeds into being, being denominated the present, that which is corrupted the past, and that which is not yet, the future. But the whole of time is unceasingly flowing, in the same manner as motion. And though any one assuming the present time, as bounded on each side by the *now* in energy, should stop it collectively, he would destroy the form of time, which has its being in becoming to be, in the same manner as motion. I think therefore that the doubt arises from the soul endeavouring to know all things according to the stable forms which she contains. Hence also she gives stability to motion, in consequence of attempting to know it according to *form*, and not according to its *connascent flux*. And as she separates intelligible union, not being able to comprehend its *altiness*, but separately surveys *justice*, separately *temperance*, and separately *science* *, though each there is all; and as she collects that the soul is immortal, adopting three terms, *soul*, *self-motive*, *immortal*, though the soul so far as soul, contains in herself the self-motive, and the immortal;— as, therefore, she is thus affected towards intelligibles, and beings which are characterized by the united, in consequence of separating in herself their union, and conceiving them to be such as is her knowledge about them, thus also I think, by the stability of forms in herself, she endeavours to stop the river of generation. Describing also the three definite parts of time, she stops them according to the present time, comprehending a certain collected distinction. For as she is essentially a medium between things in generation and beings, she endeavours to know each of these according to her own nature; collecting beings indeed, according to that in them which is of a worse condition, but is connascent to herself; and things in generation, according to that which is better in generation, but is more known to herself. Thus, therefore, she knows day, and

* These are the divine forms, which are celebrated by Plato in the Phædrus, as subsisting in the *super-celestial place*.

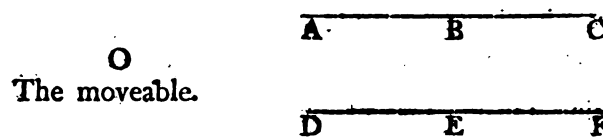
month, and year, contracting each into one form, and circumscribing the sections of the whole of flowing time. If then my conception is not entirely vain in asserting these things, I should think fit from this to dissolve the doubts concerning time. For of these, the first says, since neither the past is, nor the future, but from these infinite time, and which may always be assumed is composed, it may seem to be impossible that a thing which is composed from non-beings, should participate of essence. And it is evident, that he who thus doubts, does not pay attention to the flux of generation, nor separate things which have their being in becoming to be from things the whole of which subsists at once; in the former of which, it may on the contrary be said, that since one thing belonging to them has been, and another is not yet, either some or all the parts exist. For, in short, *to be*, does not belong to these, but *to be becoming to be*. And this is the mode of their subsistence, the whole form incessantly flowing. But since time standing still according to *the now* appears to subsist and to be, and by this it seems to be possible to solve the doubt, that *the now* is the measure of that which is partible, this conception shows that *the now* is not a part of time, from two arguments. Every part measures a whole, and consequently a part of time measures the whole. If, therefore, *the now* being impartible does not measure time which is continued, *the now* is evidently not a part of time. Again, it demonstrates this also as follows: a part of time composes the whole of time: for it is a part from which the whole is composed. But *the now* does not compose time: for it is not composed from *nows*, as is shown in the discussions concerning motion. *The now* therefore is not a part of time. And let it be admitted, that these things are well said: for neither is time according to *the now*, nor is *the now* definitely in energy; so that he who admits *the now* to be the boundary of time, entirely admits also that which is bounded. But the doubts after this endeavour to show, that *the now* is not the really-subsisting boundary of time, and that it is not possible for time to have any subsistence; since it is necessary if it is present, either that the same time should remain, or that another and another should be generated. Each of these, however, is shown to be impossible. But these things are asserted, as if *the now* were admitted to be in energy, and were assumed as a part of time; neither of which is true.

In

In the next place the doubt supposes if *the now* is corrupted, that it is either corrupted in the same, or in another now ; since that which is corrupted, is corrupted in time, just as that which is generated, is generated in time. And it is evident that this assertion requires a time of time, though Aristotle himself denies that there is a motion of motion. In short, if we should endeavour to assume measures of measures, we shall proceed to infinity, and admit numbers prior to numbers. If these things, however, are absurd, the characteristic property of a thing being sufficient to its communicating to others that are in want of it, and the thing itself not requiring to participate that which it is,—if this be the case, that assertion also is absurd. But if any one being compelled as it appears to me, should say it is requisite that a thing should participate that which it is, he at the same time grants that it communicates to itself ; so that it is not necessary that time should be corrupted in time ; nor *the now* in *the now*. Nor can many *nows* subsist together at once. For in the flux of time, the subsistence of *the now* is beheld according to a certain kind of conjectural permanency. But if time has its being in becoming to be, and is itself moved, will it not require time to measure and arrange the parts of time, so that they may not be confounded with each other ? We reply, that time is so moved as to be an attendant on motion, being the measure of motion. For it is much divided together with that which is measured, abiding in the characteristic property of measure, and being unindigent of that which measures. From these solutions also, the doubts of Strato about the non-existence of time may be solved, together with the dispersed doubts of Aristotle, and those which assume *the now* in energy. But why did not Aristotle solve these doubts, which he had previously mentioned ? May we not say, because his discussion would have required the impartible *now*, and the non-subsistence of *the now* in energy, which in the sixth book he demonstrates, when he speaks about motion ? In which book also he teaches us many things about the habitude of time and motion to each other, and many beautiful theorems.

Page 345. *For if magnitude were composed from indivisibles, &c.*

Aristotle shows that magnitude, motion, and time reciprocate with each other, so far as pertains to their being composed from divisibles or indivisibles, and to their being divided into these. Hence either all or no one of these can be composed from indivisibles, and be divided into indivisibles. For that a magnitude upon which any thing is moved cannot consist from indivisibles, without motion also coalescing from them, he demonstrates from this, that the parts of motion and magnitude, mutually correspond to each other, and are alternately equalized, which he proves by assuming the magnitudes ABC, and DEF as parts of the motion.



He then proves that motion, or to be moved, does not consist from indivisibles, premising however, that it is impossible for any thing to be moved, and at the same time to have been moved to any place. Afterwards he assumes the prior part of the motion, which is made upon the magnitude ABC, which part is called D, and corresponds to A, an indivisible part of the magnitude. Then, says he, let the moveable O be moved with the motion D upon A. Either, therefore, when it is moved, it has not yet been moved, and passes through a part, or it is at the same time moved, and has been moved, i. e. it is in motion and has completed its motion. This latter, however, cannot be admitted, because impossible. It will, therefore, be moved prior to having completed its motion ; and thus the motion D will not be indivisible.

Page 346. *And if any thing should be moved through the whole length, ABC, &c.*

That which Aristotle had demonstrated in a part of the motion, he now demonstrates in the whole motion, consisting of the parts D,E,F. For perhaps some one might say, that the moveable O has been moved, and is not moved, through the several parts of the magnitude ABC; but that it is first moved with the whole motion and through the whole magnitude, and afterwards has been moved. Aristotle confutes this, because it would follow that motion does not consist of motions, but of the boundaries of motions, which is as impossible, as that time should consist of *nows*, or a line of points. But that this would be the consequence is evident, because if the moveable O has been moved through the parts A,B,C, and is moved through none of them, since motion is not unless something is moved, the parts of the motion D E F, which are supposed equal to the parts of the magnitude, will by no means be motions; and consequently motion will consist of non-motions.

Another inconvenience will be, that something will have proceeded to a certain place by not proceeding. For it will follow that the moveable O will have proceeded through the parts A,B,C, though it never could be said to have moved through them.

A third inconvenience is, that something will be at the same time moved and be at rest. For if O is not moved through the parts A,B,C, it will be at rest; since every body which is adapted to be moved, is either moved, or at rest. O, however, will be moved, because it passes through the whole magnitude.

A fourth inconvenience is, that motion being present, a thing will not be moved, or motion will consist of non-motions. For motion will be present, because an indivisible is moved, and a thing is moved through the whole magnitude. But if it is not moved in the parts, neither is it moved in the whole magnitude; and consequently motion being present it will not be moved.

Page 347. *For let A be swifter than B, &c.*

Let A be a swifter moveable; B a slower moveable; C D, the space or length through which A and B are moved; F G the time in which A and B are moved; C H and C E the

the parts of that length C D, through which we have said the motion is made ; and F K a part of the time F G. For the sake of perspicuity arithmetical numbers are added to the diagram, which with respect to the length signify miles (for instance), and with respect to the time, hours, in the following manner :

C	E	H	D
1	2	3	4

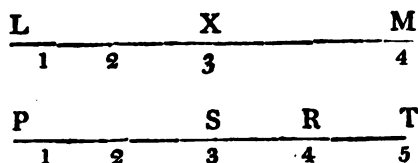
F		K	G
1	2	3	4

Aristotle, therefore, supposes that the moveable A arrives from C to D, i. e. passes through a length of four miles in the time F G, that is in four hours. Hence, because the moveable B is more slow, it cannot in the same time of four hours arrive from C to D, otherwise it would be equally swift and not slower. It will not therefore arrive at D in the fourth hour, but that hour will be on this side D. Suppose, for instance, in the second mile which is inscribed E. Hence it appears that more space is passed through in the same time F G, i. e. in four hours, by the swifter moveable A than by the slower B ; since A arrives at D the fourth mile, but B at E the second mile.

In the next place Aristotle proves the third property by which that which is swifter is distinguished from that which is slower, because he uses the proof of this third property in the proof of the second. He thus proves, therefore, the third property, that is, that a swifter moveable passes through more space in a less time. He assumes two things which we have mentioned before, that in the time F G, viz. in four hours, A is moved from C to D, i. e. four miles ; and that B is moved from C to E, i. e. two miles. Afterwards he assumes a middle space between E and D which he calls H, and which we suppose to be the third mile : and he says, that A will arrive at H the third mile, in a less time than F G, since in the time F G it arrived as far as to D. He calls the lesser time F K, which we suppose to be three hours, so that as A accomplishes four miles in four hours, so also it accomplishes three miles in three hours. These things being admitted, that which he wishes to prove is manifest. For the moveable B which is slower arrived in four hours as far as to E ; but A which is swifter, proceeded farther in three

three hours, that is, as far as to H. And thus the swifter moveable passes through a greater length in a less time; because it accomplishes three miles in three hours, when the slower moveable only accomplishes two miles in four hours.

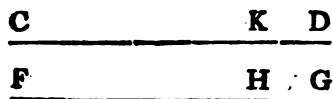
The proof of the second property, viz. that a swifter moveable will in a less time accomplish an equal space, will be evident from the following diagram:



In which LM is supposed to be a length of four miles; LX its part three miles; PT a time of five hours; and PS three hours, the subject numbers signifying hours.

Page 343. *But since every motion is in time, &c.*

Aristotle having premised that motion is not produced in an instant, but in time; also that in every time motion may be given; and that whatever is moved may be moved more swiftly and more slowly,—reasons as follows: Every thing in which a certain part being given, a less part may be given, is continued and infinitely divisible. But magnitude and time are things of this kind: they are, therefore, continued and divisible to infinity. He also confirms this in the second place, because if one and the same moveable being equally moved in a certain whole time passes through a whole space, the half of it in half the time, and a less space in a less time, it follows that time and magnitude are allotted the same divisions. But what Aristotle says will be evident from the following diagram. Let A be the swifter, and B the slower moveable.



Page 352. *For let there be a finite magnitude A B, and an infinite time C.*

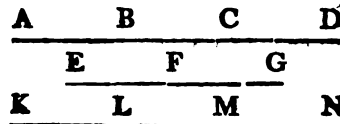
Aristotle infers that neither can an infinite magnitude be passed through in a finite time, nor a finite magnitude in an infinite time, but that on both sides, either the finite or the infinite is required. For let there be, says he, a finite magnitude, for instance, of ten cubits, and let the time which is consumed in it be infinite. But from a time of this kind, some part may be taken away, viz. an hour, in which the moveable will pass through some part of the magnitude. This part of the magnitude will have a finite ratio to the whole magnitude; and consequently the hour will have a finite ratio to the time which is consumed in the whole magnitude. Hence the time will not be infinite as it was said to be. This will be evident from the following diagram:



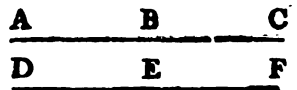
In which A B is a finite length; C an infinite time; and C D a finite part of the infinite time.

Page 352. *It is evident, therefore, from what has been said, &c.*

What Aristotle says will be manifest from the following diagram:



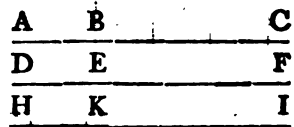
Page 360. *But motion is divisible in a twofold respect, &c.*



Page

Page 362. *Besides, if there is another motion of the whole, &c.*

Aristotle's meaning in this place will be evident from the following diagram :



Page 370. *Hence, neither of that which is changed, &c.*

Let that which is changed be

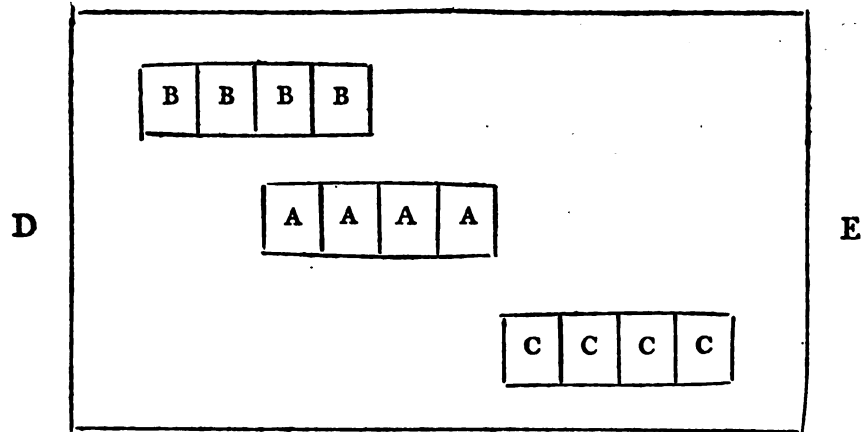


And let the time be



Page 392. *But the fourth argument is concerning equal bulks, &c.*

Aristotle here proposes the fourth argument of Zeno, viz. if motion is given, the half-part of time will be equal to the whole; but this is false and impossible; and consequently that is impossible from which this follows. That this absurdity will follow, Zeno thus shows: he assumes four bulks or masses in a stadium at rest, which bulks he calls A. He also assumes four bulks, which are moved from the beginning of the stadium towards the end, i. e. towards E; and likewise four other bulks, which are moved in a contrary direction, i. e. towards D.



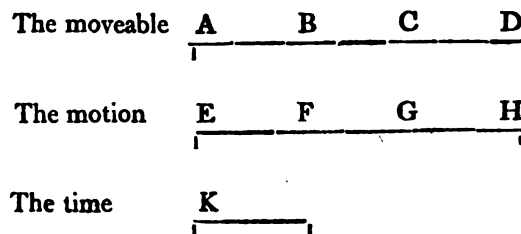
He supposes all these bulks to be equal, A, B, and C. He likewise supposes that B and C are moved with the same celerity; and that as well the bulks B as the bulks C, are moved so as to pass by those bulks A, which are at rest. He also supposes that the bulks C are moved from the last A as far as to the first A; but that the bulks B, are moved from the second A, as far as to the last A. He further supposes, that the motion of the bulks C commences prior to the motion of the bulks B; so that the bulks B then begin to be moved, when the first C arrives at the middle of the bulks A. These things being admitted, Zeno shows that the motion of the bulks B, is made in half the time, and the motion of the bulks C in double the time: for instance, that the bulks B are moved in half an hour, but the bulks C in an hour. He also shows, that the bulks B and C are moved in an equal time; according to which it appears, that the half time of the bulks B, and the double time of the bulks C are equal, which is manifestly absurd.

Aristotle solves the argument of Zeno, by showing in what the fallacy consists, viz. because Zeno thought it was the same thing for a magnitude to pass by another magnitude which is standing still, as to pass by a magnitude which is moved in a contrary direction to it; in which he was deceived. For because the bulks B will pass by the bulks

bulks C in half an hour, he thence infers, that they will also in half an hour pass by the bulks A, because A and C are equal. This consequence, however, is not valid : because C and A are not assumed after the same manner ; but the bulks C are assumed as moved contrary to B ; and the bulks A are assumed as standing still. Hence though A and C are equal magnitudes, yet the bulks B will more swiftly pass by the bulks C which are moved, than the bulks A which are at rest.

Page 404. *Let the motion, therefore, of A be assumed, &c.*

After Aristotle had assumed moveables A, B, &c. and had accommodated two hypotheses to those moveables, he now assumes the motion of the several moveables, and denominates the motions by the letters E, F, &c. He also assumes the time of the motion E in which A is moved, and he calls the time of this motion K, as in the following diagram :

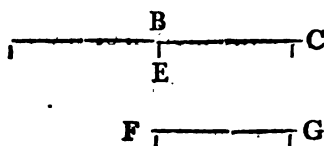


The terms being constituted, and certain hypotheses assumed, he now frames the demonstration leading to an impossibility : for in the time in which A is moved, all the rest are moved, B, C, &c. which are infinite, by the hypotheses. But A is moved in a finite time, that is K. Hence the rest which are infinite, will be moved in the same finite time K ; and consequently in the same finite time there will be infinite motions, E, F, &c.

Page

Page 493. *I say, for instance, if A which is locally moved, &c.*

Aristotle here supposes that there are two lines, which he calls two moveables. The first line is longer, and assumes its appellation from the middle point E, which is also called B. The other line is shorter, and assumes its appellation from the first point F. But the two moveables are A and D, which are moved with an equal celerity. He also supposes that a part B C of the first line is equal to the whole of the other line F G.



These things being admitted, we suppose A to be moved from the beginning of the first line, and that D is then in the point F. But when A arrives at E, that then D recedes from F; and thus afterwards A is moved towards C, and D towards F. These things being granted, it follows that D will arrive at G before A will arrive at C; which, nevertheless, appears to be absurd: for since the moveables are equally swift, and are moved with an equal celerity through equal spaces, it is requisite that they should arrive at the end at the same time. The consequence, however, is proved from this, that since those moveables are equally swift, which ought to pass through equal spaces, the moveable which first recedes, will first arrive at the end. But D first recedes: for it did not recede from F when A receded from E, but when A approached to E. Hence D will first arrive at the end. This is the doubt.

Aristotle, however, solves this doubt by subverting its hypothesis: for it was supposed that D receded from F, when A approached to B. It was, therefore, supposed that

that A approached to B, and consequently afterwards departed from it. This, however, is false, because it neither accedes to, nor recedes from B, nor is in it for any time, but only in a section of time, that is, a moment. Hence, Aristotle concludes that in continued motion, it cannot be said, that the moveable accedes to any middle point, and recedes from it.

Thomas Taylor.

THE END.

Handwritten text, possibly a signature or date, oriented vertically on the right side of the page.

SM

AUG 24 1957



