COMMENTARY
ON
ARISTOTLE'S
GENERATION AND CORRUPTION
by
Thomas Aquinas

tr. by Pierre Conway & R.F. Larcher

CONTENTS

ON GENERATION AND CORRUPTION

PROLOGUE

OF

SAINT THOMAS

Subject matter of this book.

1. As the Philosopher says in On the Soul III, the sciences are divided off in the same manner as things are -- for all habits are distinguished by their objects, from which they are specified. Now the things considered by Natural Science are motion and mobile being. Thus the Philosopher says in Physics II that whatever things move, they themselves being moved, these belong to physical speculation. Consequently, it is according to the differences between motions and mobiles that the parts of natural science must be distinguished and ordered.

Now the first motion is local motion, which is more perfect than the other kinds, and common to all natural bodies, as is proved in Physics VII. Therefore, after the study of motions and mobiles in common in the book of the Physics, it was first necessary to treat of bodies as they are moved with local motion. This was in the book On the Heavens, which is the second book of natural science. What remains, therefore, is to consider the other subsequent motions which are not common to all bodies but are found only in lower bodies.

Among these motions, generation and corruption obtain the primacy. For alteration is directed to generation as to its end, and the end is by nature more perfect than what leads to it. Growth, likewise, is subsequent to generation, for growth does not take place without a certain particular generation, namely, that by which food is converted into the thing fed. Thus the Philosopher says in On the Soul II that food nourishes in so far as it is potentially flesh, but it produces increase inasmuch as potentially it is quantified flesh. Therefore, since these motions are in a certain way consequent upon generation, they must be studied along with generation and corruption.

2. Now it should be noted that whatever is found in a number of things should first be considered in common before coming to the specific cases. Otherwise the same thing will be frequently repeated, in that what is common will be repeated in each individual case, as the Philosopher proves in On the Parts of Animals I. Consequently, generation and corruption should be considered in common before coming to the parts [i.e., species] thereof.

Likewise, it should be noted that if in any genus there be found some first thing which is the cause of the other things in that genus, the study of the common genus and of that which is first in that genus will belong to the same study. For that first thing is the cause of the entire genus, and anyone who studies some genus must consider the causes of the entire genus. That is why the Philosopher in the Metaphysics at once studies being in general and first being, which is separated from matter. Now in the genus of generable and corruptible things there are found certain first principles, namely, the elements, which are the cause of generation and corruption and alteration in all other bodies. Hence Aristotle in this book, which is the third part of natural science, discusses not only generation and corruption in general and other consequent motions, but also generation and corruption of the elements.

With these prefatory remarks to show Aristotle's intention in this book, we now arrive at its exposition.

BOOK ONE

Lecture 1

Aristotle's Preface.

Various previous opinions on the difference between generation and alteration.

3. In this book, therefore, the Philosopher first prefaces an introduction, in which he states his intention; secondly, he carries it out (L. 3). In the introduction he does three things.

First [1], he states what his main intention is. And this is in continuation with the end of the book On the Heavens, where he had said: "We have now finished our examination of the heavy and the light..." He now adds: "Our next task is to study coming-to-be and passing-away. Of all the things that come-to-be and pass-away by nature" i.e., of things that are naturally generated and corrupted, "we are to distinguish the causes of these processes considered in general," assigning, namely, one set of causes for generation and another set for corruption, or else distinguishing the common causes by assigning them to the particular species of naturally generated and corrupted things, "and state their definitions," i.e., either the definitions of generation and corruption or also of the things that are naturally generated and corrupted -- for one must know the definitions of each, since Natural Science not only considers motions but mobile things themselves. He says, "of things that come-to-be and pass-away by nature," because the study of the generation and corruption of artificial things does not pertain to Natural Science.

Secondly [2], he promises to reach conclusions on the other subsequent motions, namely, on alteration and growth, as to the nature of both.

Thirdly [3] he promises to settle the matter of the comparison of the aforesaid to each other, namely, whether one should consider (or accept) the nature and notion of alteration and generation as being the same, or "separate," i.e., distinct, so as to differ in notion and nature, as they are "determinate," i.e., distinct, as to name.

4. Then [4] he pursues his proposition.

First, he determines concerning generation and corruption in common and also concerning the consequent motions;

Secondly, he determines concerning the generation and corruption of the elements. This in Book II.

The first part is divided in two:

In the first he determines concerning generation and corruption in common and concerning the other consequent motions;

In the second he determines concerning certain things required for these, (L. 18).

As to the first he does two things:

First, he inquires whether generation differs from alteration. This was the third of the things brought forward; nevertheless it must be discussed first, because, since it is the difference that determines a species, the appropriate notion of generation and corruption could not be known, if this remained unknown;

Secondly, he determines concerning generation and consequent motions (L. 3).

As to the first he does three things:

First, he cites various opinions of the ancients regarding the difference between generation and corruption;

Secondly, he gives a reason for these variances, there at 7;

Thirdly, he elucidates this reason at 10.

He says therefore first that some of the early philosophers said that what is called "simple," i.e., absolute, generation is the same as alteration, while others said that the two differ.

5. Then [5] he assigns the reason for the aforesaid diversity. Concerning this he does three things. First, he explains why some identified simple generation and alteration. For there were some who posited there to be one material principle of all things -- e.g., water, or air, or fire, or vapor. At the same time they held that the matter of a thing is its entire substance. From this it follows that the substance of a thing always persists. Hence generation does not in reality differ from alteration. In the words of Aristotle: all who say that everything, i.e., the universe, is one with respect to material substance, and who generate all things, i.e., cause all things, from one material principle -- all such must say that generation is the same as alteration and that it is the same thing for something to be made "principally," i.e., absolutely, and to be altered.

6. Secondly [6], he tells why others postulated that generation differs from alteration. For there were certain philosophers who posited several material principles, from the association and disassociation of which all things were said to come to be and to be destroyed. In this doctrine, association was called "generation," and disassociation "corruption." But alteration, they declared, came about in terms of any change affecting the parts. Thus Aristotle says: all who posited more material principles than one, as did Empedocles, Anaxagoras, Leucippus and Democritus -- to all such it seemed that generation was one thing and alteration another.

7. Thirdly [7], he makes an exception for Anaxagoras, who, Aristotle says, forgot his own words, as does a person who says things contrary to his own position. For although Anaxagoras, as the others, posited many elements, yet he singly declared that to be generated and corrupted is the same as to be altered. The reason for this difference is that, as is said in Physics I, Anaxagoras taught that things come to be by being abstracted from the compound. However, he placed not only elements but also accidents in the mixture. Consequently, he assigned the same manner of production to bodies, which come about through generation and corruption, as to accidents, which pertain to alteration -- so that, just as flesh comes to be by being abstracted [from that mixture] so too whiteness. According to this, therefore, generation is no different than alteration.

8. Then [8] he explains the above-mentioned reasoning.

First, by showing how some thinkers came to posit more than one principle; for in the case of those who posited but one, there was just one absolute way for things to come about;

Secondly, he explains why those who posited one principle denied a difference between generation and alteration, a difference which the others admitted (L.2).

Regarding the first he shows wherein those who posited many principles differed.

First, he shows how Empedocles differed from all the others. And he says that the reason why we previously stated that the aforesaid philosophers posited several matters is that Empedocles posited the four elements as material principles, namely, earth, water, air and fire. These four, together with their movers, namely, friendship which combined, and strife which separated, he says to be in number 6. Consequently, he posited finite principles. But Anaxagoras and Democritus and Leucippus posited infinite principles.

9. Secondly [9] he shows how Anaxagoras differed from Democritus and Leucippus. For Anaxagoras posited "homoeomerous" bodies, i.e., bodies with similar parts, to be the material principles -- for example, infinite parts of flesh and of bone and of marrow and of other such, each part of which is "synonymous" with the whole, i.e., agreeing with the whole in name and notion. This theory has been explained in greater detail by Aristotle in Physics I.

But Democritus and Leucippus held that all sensible bodies are composed of certain indivisible bodies supposed to be infinite in multitude and "form," i.e., shape, for they said some were circular, some square, some pyramidic, and so on. But contrary to what Anaxagoras posited, they posited all these to be indifferent in nature and species. Yet, while these principles are indifferent in nature and species, nevertheless sensible bodies differ from one another depending on the different things out of which they are composed. However, this is not according to a difference in the species of nature, but in position and order -- namely, as these are variously disposed in different bodies according to prior and posterior, before and behind, above and below, right and left.

10. Thirdly [10], he shows how Anaxagoras differed from Empedocles, and he says that they seem to contradict one another. For Empedocles declared that fire, earth, air and water are the four elements, and that they are more simple than flesh and bone and such "homoeomerous" bodies, i.e., bodies of similar parts. The reason was that he posited that things come into being from the elements being assembled; hence those bodies that were assembled to form other bodies he called "elements."

Anaxagoras, on the other hand, posited bone and flesh and similar bodies to be the more simple, and the elements, namely, earth, water, air and fire, to be composite. His reason was that he held things to come to be through being separated from a mixture. Hence, since he saw that all other bodies are generated from air, water, earth and fire, he believed that there was in these four bodies a maximum mixture, so that all other bodies could be extracted from them. Thus he [Aristotle] adds that he called these four bodies "panspermia," i.e., the universal seeds of all other bodies, in the sense that these four were a mixture of the seeds of all other bodies.

Lecture 2

The basic reason for these differing opinions on generation and alteration.

11. In the preceding lecture Aristotle stated that the reason some ancient philosophers posited generation as differing from alteration, and others did not, was that some postulated one material principle and others more than one. He clarified above the root of this reason, showing how some posited many principles -- for in the case of those proposing one principle, the exposition is more unqualified. Now he intends to elucidate this reason in itself. Concerning this he does two things:

First, he manifests the reason;
Secondly, he objects to it, at 14.

About the first he does two things:

First, he elucidates the aforesaid reason as to those who posit one principle;
Secondly, as to those who posit several principles, at 13.

12. He says therefore first [11] that all the philosophers who assert that all things are produced from one material principle are forced to say that generation and corruption are the same as alteration. For they posited their one material principle to be some actual being, such as fire or air or water; they also posited it to be the substance of all things generated from it. And just as the matter always persists in things made from matter, so they said, that this subject remains one and the same. Now we say that a thing is altered when, with the substance of the thing in act remaining, some variation occurs with respect to the form. Hence it follows that there can be no change called simple generation and corruption, but only alteration.

We, on the other hand, declare that there is of all generable and corruptible things one first subject, which, however, is not a being in act but in potency. Therefore, when this first subject acquires a form through which it becomes a being in act, this is called simple generation. But it is said to be altered when, after being made a being in act, it acquires any additional form.

13. Then [12], he elucidates the aforesaid reason as to those who posited several principles. And he says that those, mentioned above, who assign many kinds of material principles, must say that generation differs from alteration. For according to those philosophers generation comes about when those material principles combine into one; when they are separated, corruption occurs. Hence Empedocles asserts that the "nature," i.e., the form, of a body composed of elements is none of the elements (for it is not of the nature of fire or of water or of the other elements), but it is solely a "mixture," i.e., it consists solely in a certain "mixed" nature, and the opposite privation consists in the separation of what was mixed. And since something is said to be generated when it acquires its appropriate nature, they posited that generation resulted from aggregation, and corruption from separation. But alteration, they said, takes place only through transmutation, as will be explained later. Therefore, since this explanation fits their supposition, and they do indeed speak thus, it is plain that they so speak of the difference between generation and alteration, as has been said.

14. Then [13] he disproves what has been stated, with respect to those who posit several principles, for those who posit but one principle reach the conclusion with necessity once its root is supposed. Concerning this he does

two things: First, he proposes what he intends, and says that those who posit many principles must admit that generation is different from alteration, as has been said. Nevertheless, this is impossible to maintain in consistency with what they say, as will easily be seen from what follows.

Secondly [14], he elucidates his proposition with two arguments. In regard to the first, he presents an analogy and says that, just as, while the substance "rests," i.e., remains, we see a change occur in it as to size, called "growth" and "decrease," so too with alteration, which is a motion according to quality. For just as quantity is based on substance, so too is quality. But according to what is posited by those philosophers who assume many principles, it is impossible for alteration to occur in this manner. For they say that the "passions," i.e., the passible qualities, with respect to which we state this, namely, alteration to occur, are the proper differences of the elements, namely, hot and cold, white and black, dry and moist, soft and hard, and so on. For example, Empedocles stated that the "sun," i.e., fire, since he posited the sun to be of the nature of fire, is seen as white and hot; "rain," i.e., water, is seen always as dark, cold and cloudy, as is evident from the darkening of the air when it rains. He explained the other passions in a similar way, attributing them to the elements.

They said that it was not possible for water to be produced from fire, or earth from water, or for any one of the elements to be converted into another in any way whatsoever. For they did not posit such elements as composed of matter and form, so that out of the corruption of one, another could be generated. Rather they posited them as first matters that would not be resolved into some first subject. But whatever is to be converted into something else must be resolved into some first subject. Now it is impossible for the proper accidents of a thing to be anywhere but in their proper subject. Hence, if "hot" is the proper accident of fire, and "cold" of water, "hot" can be found only in fire and "cold" only in water, and so on for the others. If, therefore, fire cannot come to be from water, nor one element from another, then black cannot come to be from white or hard from soft. And the same goes for all other such qualities. Consequently, since alteration occurs only when one or another of these qualities varies in one and the same subject, there is no such thing as alteration. Therefore they have no grounds to posit a difference between generation and alteration.

15. He presents the second argument [15] and says that it is necessary in any motion to suppose one nature for the contraries which are the termini of the motion, namely, whether something is being transmuted with respect to place, or growth and decrease. Likewise, this must be so in alteration, namely, that if there is alteration, there be one subject and one matter for all the things having such a mutual change, and that if those have one subject when alteration is looked for, it follows that there be alteration. But since the aforesaid thinkers do not posit one subject for all the qualities involved in alteration, but several, they cannot posit alteration. Consequently, they groundlessly say alteration to be different from generation.

This argument differs from the first in that it states the universal cause of the middle term used in the first one.

16. Then [16] he disputes against Empedocles in particular, with two arguments. In the first of these he declares that Empedocles seems to be at odds not only with what our senses reveal, namely, the fact that we see that air comes to be from water and fire from air, but he seems to contradict himself also. For, on

the one hand, he says that no element is generated from another, but all other "elemented" bodies are composed of them; and, on the other hand, he says that before this present world was generated, all the nature of things was assembled by Friendship into one, minus Strife, and that each of the elements and also each of the other bodies came to be out of that one through the influence of Strife, separating things. From this it is plain that through certain differences and passions of the various elements it was brought about by Strife out of that one that one thing be water and another fire.

And he gives an example of the "differences and passions" -- thus he [Empedocles] says that the "sun," i.e., fire, is white and hot and light, but earth is heavy and hard. From this, it is evident that such differences are newly acquired by the elements. Now whatever is newly acquired can be removed. Therefore, since these differences are removable inasmuch as they are newly engendered, it is plain that, once removed, it is necessary that water be made from earth, and earth from water, and, in general, each element from some other -- and this not only "then," i.e., in the beginning of the world, but also now, coming about through the change of the passions.

That such a transmutation of passions can occur he proves in two ways. First, from the very nature of these passions. For, from what Empedocles says, it follows that they can be newly acquired, for example, when Strife separates, and then be separated from the elements when Friendship unites. He proves it in another way from the cause of those passions, because even now [their causes, namely] Friendship and Strife, are contrary to one another. And therefore "then," i.e., in the beginning of the world, the elements were generated from the one, with the differences being acquired, for it cannot be said that fire, earth and water, as actual existents, could constitute the one whole.

17. In the second argument [17] he says that it is not certain whether Empedocles should have posited one principle or many, even though he did indeed posit many, namely, fire and earth and other things that co-exist with them. He says it is uncertain because, in so far as there is supposed some one thing out of which, as from matter, fire and earth and water come to be through some transmutation caused by the separating action of Strife, it seems that there is one element. But in so far as that one results from the composition of the elements coming together into one through Friendship, and they, namely, the elements, come to be from that one through a certain dissolving caused by Strife, it seems rather that those four are elements and are prior by nature. And although this was more the idea of Empedocles, positing things as produced through Friendship and Strife, Aristotle nevertheless proves in the preceding argument the elements to be produced not by separation alone, but also by a certain change with the arrival of the differences of the elements. From this follows the contrary to what Empedocles intended; namely, that the one is more of a principle [than they].

Lecture 3

What must be treated. Opinions of Democritus and Leucippus.

18. After giving the opinions of the ancient philosophers concerning the difference between generation and alteration, the Philosopher here begins to determine about generation and alteration and the other motions. Concerning this he does two things:

First, he states his intention;
Secondly, he begins to carry it out, at 20.

As to the first he does two things:

First, he states his intention;
Secondly, he gives the reason for his intention, at 19.

He says therefore first [18] that because the early philosophers doubted about the difference between generation and alteration, it is necessary for us to speak in a general way about simple generation and corruption, i.e., according to which something is said to be generated and corrupted absolutely [simpliciter], and to determine whether absolute generation exists or not. For according to those who declare that generation differs from alteration, absolute generation does not exist, but not for those who deny a difference between them. Moreover, if absolute generation does exist, we must explain how. And the same questions must be answered for the other motions that are in a certain way ordained to simple generation, such as alteration and growth, as was said above.

19. Then [19] he assigns as the reason for his intention the fact that other philosophers have not adequately treated this matter. And he says that Plato investigated only the question of how generation and corruption occur in things, but in doing so he limited himself to generation of the elements and did not treat of how flesh and bones or any of the other mixed [i.e., composite] bodies are generated. Moreover, he neglected to discuss how alteration and growth exist in things. And in general, none of the other philosophers definitively stated anything except those things which appear on the surface -- except Democritus, who seems to have been concerned to inquire diligently into every thing. But the basic difference is in the inquiry -- none did so adequately. For none of them, neither he [Democritus], nor any other, said anything about growth, as to what it was, that any uneducated person could not have said, namely, that growth takes place by something akin to the original being added to it. But how something is increased by the addition of that which is similar, they did not say. Neither did they say anything of mixtures, nor of any of the similar things, so to speak -- for example, of acting and being acted upon, namely, as to how, in terms of natural operation, this acts and that is acted upon.

20. Then at [20] he begins to execute his plan.

First, he determines about generation and alteration, since they should be studied together;
Secondly, about growth (L. 11).

About the first he does two things:

First, he gives other's opinions about generation and alteration;
Secondly, he decides about them according to his own opinion (L. 6).

As to the first he does two things:

First, he states the opinion of Democritus, who had a concern for everything;

Secondly, he examines the truth of his statements, at 22.

About the first he does two things:

First, he states Democritus' opinion;
Secondly, he presents Democritus' argument, at 21.

He says therefore first [20] that Democritus and Leucippus, who constituted the principles of things out of indivisible bodies of infinite shapes, used them as causes of generation and alteration. For they said that through the aggregation and separation of such figured bodies generation and corruption were caused; while it was through a change in the order and position of the aforesaid bodies that alteration was caused.

21. Then [21] he gives the reason for the aforesaid position. And the better to under this, it should be noted that, as the Philosopher says in Metaph. IV, some of the early philosophers made truth to be in the way things appear, namely, as a thing appeared to someone, so was its truth -- even to the point of holding contradictories to be simultaneously true, if both sides seem so to different persons.

So what the Philosopher says is that, because Democritus and Leucippus assumed that the true consists in appearance, and to different men contrary and infinite things appear, as the variety of opinions among men indicates, they therefore were led to posit infinite shapes in the first principles of things, in order to have an explanation for these infinite opinions. Consequently, any variation affecting something contributing to the composition of some whole, results in the same appearing one way to one and in a contrary way to another, -- just as, from different vantage points, the color of a dove's neck seems to vary. Such a change of position or order is due to something slight that intervenes. Indeed, to state the matter generally, as one of these indivisible bodies changes [its position and order], the appearance of a thing changes. He gives an example of this in words, whose first indivisible principles are letters: by using the same letters and merely varying their order and position, different verbal compositions are produced, e.g., a comedy, concerned with pleasant things, and a tragedy, concerned with wars. This, then, is the reason why Democritus held that alteration is caused by a variation of order and position.

22. Then [22] he investigates the truth of this opinion.

First, he shows the difficulties inherent in such an investigation;
Secondly, he begins to inquire into the truth, at 23.

He says therefore first [22] that by this time the opinions of the first natural philosophers who identified generation and alteration, were almost entirely abolished, and nearly everyone seemed to agree that generation is different from alteration (generation and corruption deriving from association and disassociation, while alteration arose when, by a change of certain things, diverse passions were caused). One must, then, consider these matters in order to arrive at the truth. But they involve many problems, and ones challenging reason. For, if generation is nothing more than association, many impossibilities follow, as will be plain below. On the other hand, there are found other arguments, which appear cogent and not easy to answer, for holding that generation is not different from association, concluding that, if generation is not

admitted to be association, then either there is no generation at all, or if there is, it is identical with alteration. Now even though it is difficult to solve this problem, we ought to attempt it.

23. Then [23] he proceeds to solve the difficulty.

First, he prefaces two questions that are necessary in solving the aforesaid difficulty;
Secondly, he tackles them, at 24.

He says therefore first [23] that the starting point in solving all the aforesaid must be first of all an inquiry into whether natural beings are so generated and altered and augmented and moved by contrary motions, as to require certain primary indivisible magnitudes; or whether there is no indivisible magnitude. The answer to this is most important. Secondly, one must inquire whether, if there be indivisible magnitudes, they are bodies, as Democritus and Leucippus would have it, or are "planes," i.e., surfaces, as Plato set down in the Timaeus.

24. Then at [24] he pursues the aforesaid questions.

First, he pursues the second, which he covers more briefly;
Secondly, he tackles the first (L. 4).

As to the first he does two things:

First, he shows that as far as natural science is concerned Democritus' position is more fitting than Plato's;
Secondly, he tells why, at 25.

He says therefore first [24] that, as was said in On the Heavens III, to resolve bodies into surfaces is unfitting even in itself. Consequently, it is more reasonable, if there should be certain indivisible magnitudes out of which natural bodies are composed, that these magnitudes be bodies rather than surfaces -- although even this involves great irrationality, namely, that there be certain indivisible bodies, out of which natural bodies would be composed, as was shown in part in the book On the Heavens and as will be shown in part below. Nevertheless it is more reasonable to posit indivisible bodies rather than surfaces, because those who posit indivisible bodies as the principles of natural bodies do assign a cause of generation and alteration, which alteration, as has been said, transmutes some one and the same thing by a certain "turning" of the indivisible bodies and by some manner of contact according to different positions and orders, and also according to a difference of shapes, as Democritus posited in assigning the cause of alteration. Hence Democritus posited that color and other such natural qualities are not something with a fixed existence in nature, but that a thing appears to be colored through a certain "turning," i.e., through a certain variation of the indivisible bodies according to order and position. For it is plain that certain things appear to us whose appearance is produced by some sort of reflection according to a certain order and position -- for example, the form that appears in a mirror, or the colors of a rainbow, and so on. Democritus supposed that all the forms and qualities of natural things to be of that nature. According to this and in the light of his principles, he explained every variety of alteration in terms of differences in position and order.

But the Platonists, who resolved bodies into planes, were unable to assign a cause for any change in form, for when planes are united one to the other, nothing but solids can reasonably result. Seeing that points, lines and pure

planes are mathematical things, they cannot of themselves cause any natural quality. Consequently, just as from points only a line results and from lines a surface, so from surfaces the only thing that can be caused is a body. But not even the Platonists try to explain, by a mingling of surfaces, the cause of any natural quality.

25. Then [25] he shows why Plato failed more than Democritus in this matter. And he says that the reason why Plato could not see "confessed" things, i.e., things plain to all, was lack of experience; for, being intent on speculation, he did not turn his attention to sensible things, which are the basis of experience. Consequently, those philosophers who paid more attention to sensible and natural things were better able to discover principles to which they could adapt many facts of sense observation. But the Platonists who were untaught with respect to "existents," i.e., natural and sensible things, and considered solely the few sensible things that came their way, from many "discourses" or arguments, i.e., from many things they considered by reason on a universal plane, "facilely enunciate," i.e., offer a judgment on sensible things without a diligent examination.

The matter at hand affords us an opportunity to consider the difference between seeking the truth "physically," i.e., naturally, by examining natural things, as Democritus did, and seeking it "logically," i.e., by reason, attending to common reasons, as the Platonists did. For, in order to prove that some magnitudes are indivisible, the Platonists, proceeding "logically," say that otherwise it would follow that the "autotrigonum," i.e., the "per se triangle," that is, the idea of triangle, will be manifold, i.e., divided into many triangles, which is unallowable. For Plato postulated that, of all sensible things, there were certain separated "ideas," for example, of man and horse and so on. These ideas he called "per se man" and "per se horse," since, logically speaking, man, as a species, is something over and above material and individual principles, and thus, the "idea" contains nothing but what pertains to the notion of the species. And for the same reason he posited this in figures. Thus he posited the "idea" of sensible triangles, here called the "autotrigonum," to be indivisible -- otherwise it would follow that it would be divided into many, which is contrary to the notion of idea, which requires that it be one existing outside the many. Thus it is not unacceptable for there to be many indivisible triangular surfaces conforming to the idea; and the same is true of other surfaces.

But Democritus is seen to argue for indivisible magnitudes, using proper and natural reasons, as will be plain in what follows.

Lecture 4

Democritus' argument that natural bodies are composed out of indivisible bodies

26. After showing that, with regard to the matter at hand, the opinion of Democritus is stronger than that of Plato, and that his argument is more appropriate, to show this, the Philosopher presents Democritus' argument.

First, he cites it;
Secondly, he answers it (L. 5).

About the first he does two things:

First, he presents the argument of Democritus, which leads to the impossibility that a body can be wholly divided, i.e., divided as much as it can be divided;
Secondly, he shows that this is impossible, at 29.

Concerning the first he does two things:

First, he presents the argument that leads to this impossibility;
Secondly, he shows the necessity existing in this argument, at 28.

27. With respect to the first [26] it should be observed that one must hold either that a body is composed of indivisibles, or that it is "wholly," i.e., totally, divisible, according to every sign [point]. And therefore Democritus, in order to show that a sensible body is composed of indivisible bodies, tries to show that it is impossible for a sensible body, such as wood or stone, to be "wholly" divisible, i.e., according to every given sign [i.e., point] in the body. Consequently, he says that if you posit that such a body (for example, a sensible body), or any magnitude whatsoever (for example, a surface or a line), is "wholly" divisible, i.e., with respect to every given sign, and this is considered possible, the question remains: "What is it that "escapes division," i.e., that remains after the division? For it is necessary that, when any divisible thing has been divided, there remain certain divisible parts, upon which division takes place.

Democritus says that such a question arises because if the body is "wholly," i.e., in its entirety, divisible, and this is possible, then there will be nothing to prevent it from being at one time divided as far as it can, even though the division does not take place all at once but successively -- just as, if a man can arrive at some particular place, there is nothing to prevent his having arrived there, even though he should not do so all at once, but successively. If this is granted, no impossibility should follow, because, when something possible is assumed, nothing impossible follows, according to the Philosopher in Prior Analytics I.

28. Then [27] he shows the necessity existing in the above argument. For if it should be granted that a body is divisible through the middle, and has been so divided, nothing impossible follows. And this is what he says: Hence, since, something possible having been laid down, nothing impossible follows, it will be something similar to this if something is supposed as divisible and actually divided in the middle. And universally, if a body is such as to be apt to be "wholly" divided, i.e., according to every sign [point], then "if it is divided," i.e., if it is assumed to have been so divided, "no impossibility will result," i.e., from this nothing impossible should arise -- any more than if something is divisible into a thousand times a thousand parts and we assume that it has been so divided, no impossibility follows, even if no one has actually divided it.

Consequently, it seems that whether a body is divisible into a few parts or into a great many parts or totally, no impossibility seems to follow upon the assumption that it has been divided as far as it is divisible. Therefore, since, according to those who maintain that a natural body is not composed of indivisible bodies, it is totally divisible, let it be considered as totally divided. But this is impossible; therefore the first, namely, the assumption that it is totally divisible, is also impossible. Therefore, it is composed of indivisibles.

29. Then [28] he shows that it is impossible for a body to have been totally divided, on the ground that one cannot posit anything as remaining after the division.

First, therefore, he shows that one cannot give anything as remaining from the division as a principal part;

Secondly, that one cannot give anything as remaining that might have fallen out of the division, at 30.

He says therefore first [28] that if a body is assumed to have been totally divided, it remains to ask what is "left," i.e., what remains after the division -- as in every division we are wont to see the things into which the divided object was resolved.

First he shows that a magnitude will not remain. For such a thing is impossible -- since it would follow that some divisible part not yet divided was remaining or that a magnitude was something not divisible. But it was said that body was wholly divisible. Consequently, what remains after division cannot be divisible in any way whatsoever, and it is being supposed by the adversary that the magnitude is wholly divisible.

Secondly, he concludes that, if what is left after division is neither a body nor a magnitude, and yet a total division was made, it remains that the division will either be out of points, in such a way that the body will be finally resolved into points, and consequently, the things from which a body is composed will lack dimensions, or else it follows that what remains after division is utterly nothing.

Thirdly, he shows that the second alternative is impossible. For, since each thing is generated out of that into which it is resolved, then, if it is resolved into nothing, it will follow that it may be generated from nothing. But what is composed out of nothing, is nothing. It will follow, therefore, that the body in question is nothing, and for the same reason, the whole universe. Whatever there will be in nature will be there according to appearance only and not according to existence.

Fourthly, he proves the first alternative set down above, namely, that there is not resolution into points. For then it would likewise follow that a body is composed of points and it would further follow that the body would not be quantified. For, before the body was divided, and the points were in contact, in the way that the extremities of two lines are together, so as to form a single continuous magnitude, and the points were all together and not yet set off from each other, they did not make a greater whole. For a point is nothing other than a certain division of the parts of a line. By the fact of a thing's being divided into two or more, the whole is not made either greater or less than it was previously. A small body, just as a large one, may be divided into two or more. Thus it is plain that points, which are nothing but divisions, do not make anything greater. Hence it remains that if the points are assembled, they

do not make anything greater. Consequently, it is seen to be impossible for a body to be divided through and through, because it is impossible to assign anything that remains as the residue of division, as a principal part of the divided body.

30. Then [29] he shows that it is impossible to show some residue of division on the hypothesis of something "falling out."

First, he shows that such a thing cannot be a body;
Secondly, that it cannot be something incorporeal, at 31.

He says therefore first [29] that if, the whole bodily magnitude of the divided body having been divided, something comparable to a piece of sawdust should be produced, which falls out by reason of the division apart from the principal parts into which the wood is divided, and one should say that out of the wholly divided bodily magnitude some body comes out as though a residue, there follows the same argument as above -- namely, how can those hold that body to be still divisible who hold no body to be indivisible and one is holding a natural body to be wholly divided?

31. Then [30] he shows that such a residue cannot be any incorporeal thing, for three reasons. With regard to the first he says that if what slipped away from the totally divided magnitude is not a body but some "species," i.e., a form "segregatable," i.e., separable from the subject or also, as Anaxagoras says, some passion, since he taught that passions and habits can be separated and combined, and this passion which leaves a magnitude is after the manner of a point or contact, those who posit this fall first of all into this impossibility, namely, that a magnitude is composed of non-magnitudes. This is seen to be untenable, for each thing is constituted out of the things of its genus -- colors are not composed from figures, nor conversely.

32. He presents the second reason[31], in regard to which it should be noted that certain ones maintained that a line is composed out of points. This can be in two ways: in one way, out of moved points, in the sense of those who suppose that a point in motion forms a line, and a line in motion forms a plane, and a plane in motion a body; in another way, out of points not moved, so that a magnitude is composed out of points as out of parts.

However, in whichever of these two ways a magnitude is supposed to be composed of points, one will have to designate "where" the points are, i.e., what position they occupy in the magnitude, as can be done for each part of which a magnitude is composed. But [in this case] this cannot be designated, for a point is seen to be nothing other in a magnitude than a certain contact of a continuous line, or the division of the parts of a line that has been divided. But contact is always one [contact] of some certain two which, namely, are parts of a magnitude, possessing definite positions in a magnitude -- as though that which is a part of the magnitude, having a definite position among its parts, is something over and above the contact and the division, and consequently something over and above the point. It is not therefore seen as possible that a magnitude be divided into points or contacts or divisions. If, therefore, someone should posit any body, or any quantity, to be wholly divisible, there will occur this unacceptable consequence which has been stated.

33. He presents the third reason [32] and says that if after having divided a piece of wood or any other body, I put it together again out of the same parts, an equal and single body will be produced, since the things into which something is divided, and out of which it is composed are the same. Hence the case

seems to be the same if I divide the wood according to "any sign [point] whatever" (which he above referred to as "wholly") so that, out of those things into which it is divided, it may be again composed. Let the wood then have been "wholly divided in potency," i.e., into all that into which it can be divided. What then will remain beyond the division? For every division must terminate at something. If we should say that the residue of the division is some passion, it would follow that the body would have been divided into passions -- and consequently, will be generated out of them, which is impossible. For neither substance nor quantity is generated out of passions. Or how are passions able to be separated"?

He further concludes his principal proposition [33] saying that, if it is impossible that a magnitude be composed out of contacts or points, as the aforesaid arguments conclude, one must posit that there are certain indivisible bodies, and certain indivisible magnitudes -- for, if a body should be wholly divisible, it would follow that it would be composed out of contacts or out of points, as is evident from what has been said.

Further still, after presenting the arguments of Democritus, Aristotle adds that, likewise for those who posit this, namely, the existence of indivisible bodies, no less an impossibility follows; and this was examined elsewhere, namely, in <u>On the Heavens</u> III.

Lecture 5

Resolution of Democritus' argument

34. Having presented Democritus' argument, he [the Philosopher] now proceeds to answer it. First he states his intention [34], saying that one must attempt to solve the aforesaid problem. Consequently, the better to solve it, the question must be review from the very beginning, for when one gets a brief look at what the force of the question consists in, the easier it will be seen where to apply the solution.

Secondly, at [35] he carries out his proposal.

First, he presents the truth;
Secondly, he presents Democritus' objections against the truth, at 37;
Thirdly, he answers them, at 38.

35. He says therefore first [35] that it is not inadmissible to maintain both of these statements, namely, that every sensible body is divisible with respect to any and every sign [point] (denominated above as being "wholly" divisible), or that it is not divisible. For one of these is true in potency, namely, that a sensible body is divisible with respect to any and every sign; the other is true in "entelechy," i.e., in act, namely, that a sensible body is not divisible according to every sign in act.

36. Then at [36] he presents Democritus' two arguments against this truth. Concerning the first of these, he [Aristotle] says that according to Democritus' objection it seems impossible for a sensible body to be all at once "wholly" divisible in potency, as was said above. For Democritus believed that whatever could be all at one time in potency, could be all at one time in act, and he argued that, just as it is possible for a body to be all at one time wholly divided in potency, this could also take place in act -- not in the sense that it would be at one and the same time potentially divisible and actually divided, but in the sense that it would be divided in act according to every point. But this he showed to be impossible, because as is evident from what was said above, it would follow that nothing bodily would be left as a residue of division, and that the body would be dissolved into something incorporeal, and as a consequence a body would be generated from something incorporeal, i.e., from points or from absolute nothing. But this is impossible. Therefore it is not possible for a sensible body to be all at one time wholly divided. Neither, then, could it have been potentially so divisible.

But because our senses reveal that a sensible body is divided into parts that can be separated one from the other or even into divisible parts, and that a larger magnitude is always divided into smaller magnitudes, and that a connected whole is divided into separate and isolated parts, it is evident that that is the way things are. It is therefore not possible for there to be division to infinity "according to part," in such a way, namely, that part after part be separated from the whole sensible body; neither is it possible for a sensible body to be divided all at one time according to every sign. (Neither of these is possible since in both cases the same impossible situation occurs.) But one sees that the division of a sensible body can proceed up to a certain limit. Hence it follows that there must be certain indivisible magnitudes and certain indivisible bodies, according to Democritus.

37. The second argument [of Democritus] is presented [37], in which he says that, for another reason also, it seems to be necessary that there be indivisible bodies, namely, if generation comes about through assembling, and corruption through separation. And Democritus was forced to posit this, because he laid down that the forms and natures of things are determined on the basis of position and order; for we see that a whole whose form consists in position and order, as for example a house, is generated only by assembling, and destroyed only by separating. Consequently, since it is not possible to proceed to infinity with regard to principles of generation and corruption, he laid down that there were certain first principles from which bodies are assembled and into which they are separated. And he said the indivisible bodies were such things.

Aristotle, summing up, concludes that the aforesaid exposition is that which seems to compel us to hold for indivisible magnitudes.

38. Then [38] he answers the aforesaid arguments.

First, the first one;
Secondly, the second one, at 40.

With respect to the first [38] it should be noted that the whole force of Democritus' first argument lies in this, that if a sensible body is all at one time wholly divisible in potency, it is all at one time wholly divided in act. But this consequent does not hold in all things. For there are some things in which to be in potency enters into their very notion. Hence in such things it is not possible to posit that to be all at one time in act which is all at one time in potency, since it would remove the very notion and nature of that thing.

This is manifest first of all in successive things. For, in the beginning of a day, it is possible all at one time for the hours to be, but it is impossible to posit all the hours of that day to exist all at one time in act, because that would destroy the very nature of time, in whose notion there is that it be the number of motion according to prior and subsequent. If all its parts existed at once, it would not be according to prior and subsequent.

Secondly, it appears in permanent things. For in the substance of air is matter, which is in potency to all forms, yet it cannot be posited that whatever can be generated from air has been generated therefrom. That would destroy the very nature of matter, which is always in potency to all forms. Consequently, it is against the notion of magnitude, for example, of a line, that it be at any time wholly divided in act. Therefore, from the fact that it is all at one time wholly divisible in potency, it does not follow that it can be posited as all at one time divided in act.

That such a thing is against the notion of a line is plain. For the division of a line in act is nothing more than a point in act. If, therefore, a line were all at one time wholly divided in act, it would be necessary for a point to be everywhere in act in the line and, consequently, the points would have to be contiguous or consecutive in the line. But this cannot be: because, since points are indivisible, given many contiguous points, one would not extend beyond another, for one would touch another in its entirety. Thus all the points taken together would amount only to one point. Therefore, it cannot be said that the points are everywhere in act in the line. Consequently, it is against the notion of a line that it be all at one time wholly divided in act. And

therefore it does not follow that, if something be all at one time wholly divisible in potency, one can posit it to be wholly divided in act.

39. Therefore the Philosopher says that Democritus is concealing a paralogism, i.e., that he commits a hidden falacy, and that one must show where its defect lies hidden. Now, since one point cannot be contiguous to another, it is impossible for a line to be wholly divided in act. Consequently, the property of being everywhere divisible, although it belongs in some sense to magnitudes, i.e., in potency, yet in another sense it does not belong to them, i.e., in act. For when it [a line] is assumed to be everywhere divided, one implies also that it is everywhere a point, for a point in act is nothing else than a division of the line in act. But if a point is everywhere in act in a line, then the magnitude must be divided into points, since nothing else is found anywhere in the magnitude. Or else, according to another version, it must be divided into nothing, because nothing will remain but division, if everywhere there is a point, which is a division. Consequently, it follows that a magnitude will be constituted, either out of points, or out of contacts between parts of the line, or out of divisions of the line (which is the same thing) -- for the assumption, according to the above, is that what exists everywhere in the line, if it be all at one time wholly divided, is either a point, or a contact, or a division.

But this cannot be, because it would follow that one single point would be "everywhere," i.e., in each part of the line, and that all the points of the line would occupy no more space than each one. Indeed, there would be no more than one point nor more divisions than one. For the points assumed to be present could not be consecutive in the sense of one being after another; neither could they be in contact as to their extremities only while being in other respects separated, because, being indivisible, they are in contact according to their wholes. Therefore all the points so conjoined are just one point. Hence, it is impossible for a point to be everywhere in a line. For if a line were divisible through its middle and point touched point, that line could also be divided according to a contiguous point, the line being wholly divisible. But this is impossible, because point is not contiguous to point nor "had," i.e., consecutive, nor is any sign so to another point. This point in act is nothing other than an actual division of the line, or the "composition" or contact of the parts of the line.

Hence it must be conceded that in sensible bodies combination and separation are found, but not separation into indivisible bodies or combination out of indivisible bodies (for otherwise many impossibilities would follow, as was said in On the Heavens III). Neither can a line be actually divided everywhere (which would happen, if point were contiguous to point, which is impossible as is evident from what has been said). But the separation of bodies is into certain small and lesser things, and combination is out of certain small and lesser things, but not out of least things which have to be indivisibles.

40. Then [39] he answers the second argument of Democritus by destroying its foundation.

First, he destroys the notion that simple generation and corruption are instances of assembling and separation, as Democritus believed;

Secondly, he shows to what extent the dictum of Democritus can be verified, at 41.

He says therefore first [39] that one should not say, as some have said, that simple and perfect generation occurs through assembling, and corruption through separating, and that any change which takes place in a permanent continuum, i.e., which is not assembled or disintegrated, is alteration. For they thought that this occurred in natural things as it does in a house and in all such things, whose form consists in position and order, because these things come to be only by assembling the parts, and are disintegrated only by separating the parts. Whatever other change occurs in such things, provided it is not a dissolving of the continuous, is alteration.

It is from this belief that the entire fallacy proceeds. For there is generation and corruption in natural things, whose form does not consist in position and order, not indeed through assembling and separating, but because there is a change "from this whole," i.e., from this whole not resolved into its parts, "into that whole," which is not an assembly of parts. But the early philosophers thought that every such change, that occurs while the whole remains intact, is alteration. However, this is not true. For at one time there can be simple generation and at another alteration. They differ in this: In a subject there is present something according to "notion," i.e., according to form, and something according to matter (for a natural body that exists in act is a composite of matter and form). When, therefore, there is a change according to matter and form, in such a way, namely, that the matter acquires a different substantial form, there will be simple generation and corruption; but when there is a change according to passions and accidents, it will be alteration.

41. Then [40] he shows in what sense Democritus' dictum is verified. For it is plain that some things, by the very fact that they are assembled or separated, are rendered more easy or more difficult to destroy or modify. For if water be divided into very small parts, it is less able to resist the action of a contrary agent, and in this way, from the corrupted water, air will be more quickly generated. But if much water is assembled, it will offer greater resistance to an agent and thus will be more slowly corrupted so as to allow air to be generated from it. But this will be clearer in what follows.

Finally, as a summary, he says that so much can be taken as established, namely, that generation cannot be assembling, of the sort that some maintain, namely, that out of indivisible bodies.

Lecture 6

Does simple generation exist? Problem and solution.

42. After determining about generation and alteration according to the opinions of others, the Philosopher here begins to inquire about them according to his own opinion.

First, he asks whether there is any simple generation, according to which something is said to be generated absolutely;
Secondly, the difference between alteration and simple generation (L. 10).

With respect to the first he does two things.

First he states his intention [42] and says that after having determined the foregoing, the first point in the inquiry into the truth is to see whether something is generated and corrupted absolutely, or whether "properly," i.e., absolutely or principally, nothing is generated or corrupted, but that always something is generated from something and into something -- which seems to pertain to generation and corruption in a qualified sense. And he gives as an example the case when, from something "laboring," i.e., ill, something healthy comes to be. In this case absolute being is not produced, because it already existed, but "something," namely, to be healthy, is, since previously "healthy" was not, but "laboring," i.e., ill. And the same holds when something is made ill from healthy, or the small from the large, or conversely, and so on for all changes stated in this manner -- for such generation in a qualified sense is found in every class of mobile being, as is plain in Physics VIII.

43. Secondly, [43], he carries out his proposal:

First, he states a doubt;
Secondly, he resolves it, at 48;
Thirdly, he objects to the solution, at 49.

Regarding the first he does two things:

First, he states the doubt;
Secondly, he rejects one answer, at 46.

As to the first he does three things:

First he proposes a certain consequence [43] saying that, if absolute generation should occur, it would follow that something would be generated from absolute non-being.

44. Secondly [44] he shows that the consequent is impossible. For that from which something is generated can be called it; for example, if from wood a cabinet is generated, it can be said that the cabinet is wood. If, therefore, from absolute non-being being is generated, it will be true to say that non-being exists, i.e., that it is being -- which is to have contradictories true at the same time. Consequently the antecedent is seen to be impossible, namely, that something be generated absolutely from non-being. Now this inadmissibility follows if something should be said to be produced from non-being absolutely, as from a permanent subject; it does not follow, however, if it is posited that something is produced from non-being absolutely according to order alone, i.e., that after non-being is produced being. But Aristotle is objecting here in a disputative manner.

45. Thirdly [45], he shows the necessity of the first consequence. For just as some particular generation is related to some particular non-being, so absolute generation is related to absolute non-being. But a "certain" generation, i.e., a generation according to which something is said to be generated in a qualified sense is from a certain non-being, for example, from non-white, when something becomes white, or from non-good, when something becomes good. Therefore, absolute generation, according to which something is said to be generated absolutely, is from absolute non-being.

46. Then [46] he excludes a certain solution that could be given by distinguishing "absolute being." Hence he first presents the distinction and says that "absolute being" may be understood in two ways: in one way as meaning that which is the first among the predicaments of being, namely, substance; in another way as meaning universal being, which includes all the predicaments. According to these distinctions, "absolute non-being" may be said either of what is not substance, or of what is in no way being.

47. Secondly [47], he shows that according to both senses something inadmissible follows. For if "absolute being" is taken to mean the first being, which is substance, then "absolute non-being" will be non-substance. If, therefore, absolute generation requires that there be absolute being from absolute non-being, it will follow that there will be substance from non-substance. But when it is assumed that neither substance exists nor a "this" (which implies an individual substance), then it is plain that none of the other predicaments will remain, i.e., neither quality, nor quantity, nor "where" -- because otherwise it would follow that "passions," i.e., accidents, would exist separated from substances, which is impossible.

But if it should be said that that from which something is generated absolutely is universal non-being, in the sense that "absolute being" is taken to mean common being, it will follow that the expression, "non-being," means the negation of all beings. Hence it will follow that what would be generated absolutely would be generated from absolutely nothing. But this is against the notion of natural generation, and against the doctrines of all the natural philosophers, who discussed natural generation.

48. Then at [48] he resolves this doubt. And he says that this matter has been "more fully" discussed, i.e., discussed at greater length, also in other books, namely, in Physics I, with the difficulties presented and the determinations made. Therefore now it is enough to state more briefly that something is absolutely generated in a way from non-being, and in a way from being -- for that which pre-exists to the generation must be being in potency but non-being in act. Consequently, what is said on both sides is true, namely, that absolute generation is from being, and from non-being.

49. Then [49] he objects against this solution. Concerning this he does three things:

First, he presents the objection;
Secondly, he uses this as an occasion for asking another question and answering it (L. 7);
Thirdly, he answers the doubt under discussion (L. 8).

In regard to the first he does three things:

First, he states his intention [49] and says that because the foregoing determination begets a wondrous question, it will be necessary once more to in-

vestigate how absolute generation takes place, i.e., whether from being in pptency, or in some other way.

50. Secondly [50], he raises a certain question: Is simple generation only of substance and of "this," i.e., the individual in the genus of substance, and not of quantity or quality or "where" or the other predicaments, which are not beings absolutely? And the same question can be put with regard to corruption. And it is to be supposed as a certainty that simple generation and corruption are of substance alone.

51. Thirdly [51], he continues with the problem. And he says that if the only thing generated absolutely is the "what," i.e., something existing in the genus of substance, and if that from which something is generated is being in potency, as was said above, and not in act, it follows that that from which substance is generated, as well as that into which it is changed when corrupted, is substance in potency and not in act. Therefore it remains to inquire whether it is any of the other predicaments in act, such as quantity or quality or "where" or any of the other predicaments, while at the same time being potentially"this being," i.e., substance, which is being absolutely, although not existing "absolutely," i.e., in act, as "this," i.e., as substance or being.

Whichever part of this difficulty is conceded, something inadmissible follows. For if it is none of the others in act, but is all of the genera of the predicaments in potency, it follows first of all that <u>non-being is separated</u>, i.e., that matter, which is being in potency, is existing under privation, which is non-being, but without any form. Secondly, there follows what the first philosophers most feared, namely, that something be generated from no pre-existing thing: for what is not being in act, is nothing.

But if it is supposed that that from which substance is generated is not a "this something," i.e., an individual in the genus of substance, nor substance in act, but is one of the other predicaments in act, there follows the inadmissible consequence we adduced before, namely, that "passions," i.e., accidents, exist isolated from substances -- which is plainly impossible.

Consequently, it seems that absolute generation cannot occur in this way, namely, that a substance be generated from what is non-being in act and being in potency, as the foregoing solution suggested.

Lecture 7

The cause on the part of matter why generation never fails.

52. After presenting an objection against the aforesaid solution, the Philosopher here introduces another question, the answer to which resolves the previous objection. About this he does two things:

First, he introduces the question and resolves it;
Secondly, he uses this solution to resolve the main question (L. 8).

With respect to the first he does three things:

First, he presents the question;
Secondly, he tackles the question, at 54;
Thirdly, he resolves it, at 57.

Regarding the first he does two things:

First he introduces the question [52] and says that "these," namely, the previous objection should be handled to the extent that the proposition requires, and that, in order to get a better understanding, we should inquire into the reason why generation always exists, i.e., both absolute generation and generation "with respect to a part," i.e., generation in a qualified sense. Now those who posit that the world and motion are perpetual must also posit perpetual generation. What the force of Aristotle's arguments is with regard to the perpetuity of motion and the eternity of the world we have explained in Physics VIII and in On the Heavens I.

53. Secondly [53], he explains the question he has introduced and says that one cause that may be assigned of the eternity of generation is that which is called "whence the principle [beginning] of motion comes," i.e., the moving or efficient cause; another cause may be assigned, which is matter. And this is the one to be assigned now, namely, the material -- for the moving cause has been discussed in the "tract on motion," i.e., in Physics VIII, where it was said that there exists a certain immobile mover for all time, namely, the mover of the heavens, and a mover which is always moved, namely, the heavens.

To determine concerning one of these, namely, the first mover, pertains to another part of philosophy, the part which is first among all the parts; hence in Metaphysics XII the Philosopher determined concerning the cause of the perpetuity of motion and of generation. But regarding the other mover, namely, the mover which causes perpetual generation because it is itself continually being moved, it will later be assigned, at the end of the present book, how this is the cause "of each of the aforesaid," i.e., of the perpetuity of generation absolutely speaking and in the qualified sense.

But now we must assign the cause why in perpetuity, generation and corruption do not desert nature, and which is the cause "classed under the head of matter," namely, the material cause. And lest this seem to be foreign to the proposition, he [Aristotle] adds that perhaps it will at the same time be shown both what must be said about this question and what must be said of absolute generation and corruption.

54. Then [54] he pursues the question brought up.

First, he presents an objection that would deny perpetuity of generation;
Secondly, he rejects some answers to this objection, at 55.

He says therefore first [54] that there seems to be sufficient reason to inquire as to the cause why generation is "folded around," i.e., eternally revolves in nature, if that which is corrupted absolutely falls into non-being. For just as what is generated absolutely comes to be from non-being absolutely, so what is corrupted absolutely would seem to fall into non-being absolutely, in the sense that this non-being would be absolutely nothing. For that into which it falls cannot be a "something," i.e., a substance, for since absolute corruption is of substance, what is corrupted absolutely must fall into non-substance. Consequently, neither can the non-being at which corruption ends be quality, or quantity, or "where," or any of the other predicaments, since accidents cannot exist without substance.

If, therefore, generation and corruption go on forever, it seems that some being will always be falling into non-being. Consequently, there is always being subtracted some one or other of the things having natures. Now, it is plain that whatever is finite will be consumed if something is continually removed from it. Hence, if the whole universe, from which each and every being is generated, is finite, and if generation is ab aeterno, then all being should have been exhausted long ago, so that nothing should be left now but emptiness, i.e., the void.

55. Then [55] he excludes two answers. The first was that of the ancient natural philosophers who, in order to account for the perpetuity of generation, attributed infinity to the principles. For all who posited one principle, such as fire or air or water or something in-between, endowed that principle with infinity. Democritus however assumed infinite empty space, as well as an infinitude of indivisible bodies. Likewise, Anaxagoras posited an infinitude of similar parts as principles.

All these tenets are rejected by the Philosopher, who says that it cannot be that the reason why generation does not cease is because that is infinite from which something is generated, whether there be one principle or many principles. For such a thing is impossible, since, as was proved in Physics III and in On the Heavens I, there is in nature no infinite in act.

56. A second answer is now presented and refuted [56]. For someone could say that, although there is not present in nature any infinite in act, there is nevertheless an infinite in potency, as is evident in the division of a continuum. Consequently, someone could say that, just as, even though it is not infinite in act, something can be taken ad infinitum by division from a continuum without its being consumed, so too, from natural body, out of which all things are generated, even though it is not infinite, something can be taken which, by corruption, falls away to non-being, yet without its ever being totally consumed.

But this is excluded. For if, from a finite continuum, as is said in Phys. III, the same quantity is always removed, it will, no matter how large, be finally consumed -- for example, if one should continue to remove a palm's breadth from the diameter of the heaven. But a continuum is divided ad infinitum if subtraction is always made according to the same proportion -- for example, if a continuum be divided in half, and the half into half, and so on infinitely. The same holds for any other ratio. Such a division having been made, it is plain that what is taken after the half will always be less than what was taken before -- for the half of the half is always less than the half of the whole. Hence Aristotle concludes that, if this is the way that generation and corrup-

tion are to endure forever, i.e., in the way that a continuum is forever divided, then whatever is generated later will always have to be smaller in quantity, so that, by virtue of what is subtracted from natural body being always less, the original quantity will not be totally consumed. But we do not see this happen, namely, what is generated being always less. Consequently, the way generation and corruption endure ad infinitum cannot be similar to the division of a magnitude ad infinitum.

57. Then [57] having rejected the false solutions, he concludes to the true one, namely, that the reason why the transmutation of generation and corruption must be unfailing, or "unresting," i.e., unceasing, is that the corruption of this is the generation of something else, and vice versa. For generation per se is indeed from a being in potency, i.e., from matter, which is as the subject of natural things -- it is accidental to the matter out of which something is generated that it be the subject of another form, with respect to which it is being in act, and at the same time of the privation of the form to be induced, with respect to which it is non-being in act. On this account Aristotle in Physics I says that generation is per accidens from a being in act, but per se from a being in potency.

Similarly, a thing is per se corrupted into a being in potency, which indeed is now subject to another form, according to which it is a being in act, and to the privation of the previous form, with respect to which it is now non-being in act. Consequently it does not follow that what is corrupted departs completely from the whole nature of things, for although that which is corrupted becomes non-being, yet something else remains, namely, that which has been generated. Accordingly matter cannot remain without being subjected to some form. That is why, upon the corruption of one thing, another is generated, and upon the generation of one thing another is corrupted. Consequently, there is in generation and corruption a certain cycle which gives it the aptitude to last forever.

Finally he concludes with the summary that the aforesaid cause should be considered sufficient as to why there should be absolute generation and corruption with respect to each and every thing in perpetuity. This is true on the supposition that the world and motion are eternal -- which, however, the Catholic faith does not suppose, as has been said elsewhere.

Lecture 8

Why, in mutual generation and corruption, there is sometimes absolute generation and qualified corruption, and conversely.

58. Having resolved the question which he had introduced concerning the continuity of generation, he [the Philosopher] here proceeds to resolve the question principally intended. About this he does two things:

First, he raises the question;
Secondly, he solves it, at 59.

He says therefore first [58] that we must investigate once more why some things are said to be generated and corrupted absolutely and others not, in keeping with what was said in the determination of the preceding question, namely, that the generation of this is the corruption of that, and the corruption of this is the generation of something else. For this seems to require some explanation, for, from the fact that things are mutually generated and corrupted, there would seem to be the same reason explaining the absolute generation and corruption of one and the other. For we say in things that are not generated one from the other that something is corrupted absolutely, and not merely "this," i.e., in the qualified sense and not absolutely. For example, we say that one who is learning is indeed becoming a knower, and this is to become in a qualified sense; nevertheless he does not become absolutely, because he was existing absolutely before he was a knower. Consequently, attention must be paid to both: namely, as to why, in the case of things being generated one from another, some are said to be cases of absolute generation and others of generation in a qualified sense; and as to why this distinction also prevails in things that are not generated one from another.

59. Then [59] he answers this question.

First, in the cases where things are generated one from another;
Secondly, in the cases where things are not so generated (L. 9).

About the first he does two things:

First he answers the question;
Secondly, he summarizes, at 66.

Regarding the first he proposes three ways according to which, in things that are generated one from another, it happens that there is generation and corruption of one absolutely and of the other in a qualified sense.

With respect to the first way [59] he says that, as has been determined many times, some things that are described affirmatively signify a "this something," i.e., a certain being, while some signify non-being. And this accounts for the present question, namely, why some things are said to be generated and corrupted absolutely and others in a qualified sense. For in this matter the difference depends on that into which a thing is changed through generation and corruption. For example, if we should follow the opinion of Parmenides and say that fire is being and earth non-being, then a change heading toward fire (for example, if from earth fire is generated) will be called generation absolutely (because it is headed toward being) but not corruption in the strict sense, but rather corruption "of this," i.e., of earth, which is a non-being. Conversely, the generation of earth will be "a certain" generation, but not absolute generation, because it is the generation of non-being; but it will be absolute cor-

ruption, because it is the corruption of being, namely, of fire. Thus, indeed, did Parmenides posit two principles of things, namely, being and non-being, calling fire "being" and earth "non-being." Perhaps a reason was that among the other elements fire possesses more form and earth less.

This example, however, is not according to the opinion of Aristotle, who considered both to be being -- therefore, he adds that whether one supposes such examples or others makes no difference as far as the proposition is concerned. For we are concerned, when we introduce examples, with the manner and not the subject, i.e., not worrying whether it is actually the case in these terms, or in any others. On this account, in the books on Logic also, he uses examples according to the opinions of other philosophers, but they are not to be introduced as though they were the words of Aristotle. Therefore from what has gone before, this much should be gathered, that absolute corruption is that which tends toward non-being absolutely, and absolute generation that which tends toward being absolutely. Therefore, let what has been said about absolute or qualified generation and corruption be considered as determined, whether in fire and earth, or in any other terms, provided they be so related that one is being and the other non-being, as if we should "living" and "dead," or anything else of the sort.

He concludes therefore that there is one way in which absolute generation and corruption differ from non-absolute.

60. But it seems that this is not a suitable difference. For the road to absolute non-being, which he says is absolute corruption, cannot be understood as leading to what is absolutely nothing -- since every natural corruption comes about by something being resolved into some certain matter. Similarly, absolute non-being cannot be understood as pure privation without form -- since matter is never divested of every form, so as to be under privation only. Therefore, the non-being into which simple corruption tends must be understood as a privation joined to some form. Now privation is conjoined to every natural form in things that can be generated and corrupted. Consequently, in those things which are mutually generated and corrupted, one thing will not be said to be more generated or corrupted absolutely than another.

Therefore, it should be said that absolute non-being is here understood to mean matter with the privation joined to some form. Form, however, is of two kinds: one is perfect and completes the species of a natural thing, as in the case of the form of fire or water or man or plant; the other is an incomplete form which neither perfects any natural species nor is the end of the intention of nature, but is something on the road to generation and corruption. For it is plain in the generation of composites, for example, of an animal, that between the principle of generation, which is the seed, and the ultimate form of the complete animal, there are many intermediate generations (as Avicenna says in his Sufficiency) which have to be terminated to certain forms, none of which makes the being complete in species, but rather an incomplete being which is the road to a certain species.

Likewise, on the side of corruption there are many intermediate forms that are incomplete: for the body of an animal is not, as soon as the soul is separated, immediately resolved into the elements; rather this takes place by means of many intermediate corruptions in which many imperfect forms succeed one another in the matter, such as the form of a dead body, then the form of a putrefied body, and so on. When, therefore, through corruption a privation is reached

that is joined to such a form in matter, there is absolute corruption in the strict sense; when, from the privation to which is attached an imperfect form which was the road to generation, there is arrival at the complete form, there is absolute generation.

61. Then [60] he mentions the second way and says that in another way there will be a certain generation which is not absolute, "no matter what the matter," that is, even if that into which there is corruption has a certain nature, provided it have some defect. For a thing whose [specific] differences signify more a "this something," is more a substance; while a thing whose [specific] differences signify more a privation is more a non-being: for example, "hot" is a certain "predicament," i.e., something affirmative, without a privation, and it is a "species," i.e., a form, while coldness is a privation. Now it is by these differences that earth and fire differ, for earth is naturally cold, and fire naturally hot. Therefore, fire is more substance, and earth approaches more to non-being.

62. First one must consider why coldness is here called a privation, since cold and hot are contrarily opposed, and both of two contraries are a certain nature; otherwise, they would not be in the same genus, for privation and non-being are not in any genus.

To this it must be said that, as was shown in Metaphysics X, the opposition of privation and having is the basis for the opposition of contraries. Consequently, one contrary is always by way of defect and a certain privation with respect to the other. Therefore coldness is called a privation, not because it is a pure privation, such as to be blind or naked, but because it is a quality that is defective with respect to heat. Hence, in this the present way differs from the first -- for the first way was based on the difference between being and non-being absolutely, while the present way is based on the difference between perfect and imperfect being.

Secondly, it is necessary to consider how it may be said here that earth and fire differ with these differences, namely, in terms of cold and hot. For this must be understood of substantial differences -- otherwise they would not pertain to generation and corruption, but rather to alteration. Now the principles of substantial differences, which are constitutive of species, must be substantial forms, which are specific. According to this, therefore, it follows that heat and cold are the substantial forms of fire and earth. This is wholly impossible.

This is so, first of all, because it is not possible that the same thing be in one thing an accident and in another a substantial form, unless one speak equivocally. But hot and cold are accidents in other bodies, to which they are referred univocally the same as to the elements, from the admixture of which such qualities are found in them [i.e., in the other, composite, bodies]. Therefore it is not possible that hot and cold in the elements be substantial forms.

Secondly, this is so because no substantial form is per se perceptible to sense, but to the intellect alone, whose object is the "what something is," as is said in De Anima III. The forms that are per se perceptible to sense are qualities of the third type, called for this reason, "passible," since they cause passions in the senses, as is said in the Predicaments. Since, therefore, the heat of fire and the cold of earth or water are perceptible to sense, they cannot be substantial forms.

One should say, therefore, that, as is had in Metaphysics VIII, substantial differences, when unknown, are manifested by accidental differences -- consequently we frequently use accidental differences in place of substantial. And it is in this way that the Philosopher here says hot and cold to be the differences of fire and earth. For hot and cold, since they are proper passions of these bodies, are the proper effects of the substantial forms of the same. Consequently, just as other intelligible causes are made known through sensible effects, so by the perfection of the hot and the imperfection of the cold we judge that the substantial form of fire is more perfect than the substantial form of earth. For all substantial forms differ according to more and less perfect -- hence in Metaphysics VIII there is stated that the species of things are as numbers, whose species vary according to addition and subtraction.

Likewise, one could doubt his statement that in the case of the thing whose difference signifies to a greater degree a "this something," such a thing is substance to a greater degree -- since he says in the Predicaments that substance is not susceptible of "more" and "less." This should be answered by saying that he does not mean to signify increase and remission of substance in the predicament of substance, but a greater or lesser perfection in the species of substance according to the aforesaid difference of forms.

63. He gives the third way [61], in regard to which he does three things:

First, he presents the manner according to which some explain the difference between generation and corruption absolutely and in the qualified sense;
Secondly, he shows that they are mistaken, at 64;
Thirdly, he compares this third way with the second, at 66.

He says therefore first [61] that it seems to many that absolute and qualified generation differ rather in terms of being more or less perceptible to sense, than according to perfection and imperfection of differences, as was explained in the second way. For they say that when something is changed into matter that is easy to sense, then something is generated absolutely -- for example, when something is changed into earth or into water; but when something is changed into what is not manifest to sense, e.g., into air, they call this absolute corruption. And he introduces their reason, which was that they determined something to be being and non-being on the basis of whether it is sensed or not sensed, considering only what is sensed to be being. This is because, for them, there is no difference between sense and intellect, as certain ones laid down, and as is stated in De Anima III. Consequently they use sense observation as though it had the force of intellectual science, which has in some sense a capacity for all things. Hence the knowable is being, and the unknown, non-being.

64. Then [62] he shows the falsity of this opinion. And he says that such men, just as they considered animals to live and exist, because they actually sense or can sense, so they also supposed things to exist because they are sensed or can be sensed -- as though sense were the perfection of the sensible thing, just as it is the perfection of the one sensing. And in this they in a certain way pursued and destroyed the truth of things. For since something is said to be true from the fact that it is, then, if the being of things consisted only in being sensed, there would be no truth in things but only in the one sensing them. However, it is not true that no truth is in things. Hence in removing the truth of things, they assert something not true.

65. Then [63] he compares this way with the second and says that absolute generation and corruption differ as considered "according to opinion," which pertains to this third way, and "according to the truth," which the second way touches. For spirit, i.e., wind, and air are less "according to sense," that is, judging the being of a thing from its being sensed. And therefore, whatever things are corrupted absolutely, are said to be, according to the third way, corrupted into things that are not sensed, and to be generated absolutely when they are changed into something that can be touched and felt, as when they are changed into earth. But in reality the contrary happens. For air is more a "this something" and a species than earth, and more perfectly a being. Therefore, according to truth there is more of an absolute generation if from earth air is produced than conversely.

66. Then [64] he summarizes what has been said, and says the cause has been stated why one type of generation is absolute, although it be the corruption of something, and why one type of corruption is absolute, although it be the generation of something. For these differ by reason of the "matter," i.e., by reason of that into which something is changed through generation or corruption: either because it is "substance," i.e., being, or non-being, as was explained in the first way; or because this is "more" and that "not," because, namely, one is more perfect being than the other, which pertains to the second way; or because the matter from which and into which something is changed is more sensible or less sensible, which pertains to the third way. By "matter" he here means, not pure matter, but the thing from which something is generated or into which it is corrupted.

Lecture 9

The cause of the difference between absolute and qualified generation in things not reciprocally generated.

67. After explaining why, in the case of things that are reciprocally generated, some are generated absolutely and others in a qualified sense, he [the Philosopher] here shows the reason for the difference between absolute generation and generation in a qualified sense in things that are not reciprocally generated.

First, he determines the question principally intended;
Secondly, he determines certain questions connected with this, at 70.

With regard to the first he does three things:

First, he raises the question;
Secondly, he answers it, at 68;
Thirdly, he summarizes, at 69.

He says therefore first [65] that some things are said to be generated absolutely, some only in a qualified sense, not according to reciprocal generation, as was said above, in such a way, namely, that one of the things reciprocally generated is generated absolutely, the other in a qualified way. For this is what was determined above, namely, why, since every generation is the corruption of another, and every corruption the generation of another, generation and corruption are not attributed in a similar way in those things which are reciprocally generated, but one of them is said to be generated or corrupted absolutely, the other in a qualified way. But that is not the subsequent question, which concerns why it is, in cases in which things are not reciprocally changed, one thing is said to be generated absolutely and the other in a qualified sense: for example, why is the learner who is becoming a knower not said to be absolutely generated, but only in a qualified sense, i.e., as knowing, whereas a man or an animal, when born, is said to be generated absolutely, while it is plain that the learner and the newly-born are not instances of reciprocal generation?

68. Then [66] he answers the question now raised and says that those things, some of which are said to be generated absolutely and some in a qualified sense, belong to distinct predicaments, in such a way that one signifies "this something," i.e., substance, another a quantity, another a quality, and so on. Things that do not signify substance, therefore, but quantity or quality or one of the others, are not said to be generated absolutely but in a qualified sense, whereas things that signify substance are said to be generated absolutely.

The reason for this is that generation is a road from non-being to being. Consequently, that is generated absolutely which acquires a being to which another being is not presupposed. For that which is, is not made. Hence what already exists cannot be generated absolutely but only in a qualified sense. Therefore those things whose being presuppose another being are not said to be generated absolutely, but in a qualified sense. Now the being of accidents presupposes another being, namely, the being of the subject, but the being of the substance does not presuppose another being, because the subject of substantial form is not a being in act, but a being in potency. Consequently, by receiving substantial form a thing is said to be generated absolutely, but in receiving an accidental form it is said to be generated in a qualified sense.

However in "all," namely, in both substances and accidents, absolute and qualified generation are diversified according to a different order, either of being to non-being, or of perfect being to imperfect being or of the sensible to the non-sensible. Hence in the case of substance, in a certain sense there is said to be absolute generation if fire is generated, but not if earth is generated; and in the case of a quality, there is said to be absolute generation if a knower is generated, but not if a non-knower is generated.

69. Then [67] he summarizes what has been said, stating that there has been a universal discussion of accidents and substances, as to the fact that some things are generated absolutely and others in a qualified sense. It has also been stated that the cause of the continuity in generation, so far as the matter is concerned, is the subject which is changed into contraries. For that is the reason why in substances the generation of one is always the corruption of some other, and vice versa, for matter is never found under the privation of one form without having another form. However, in some accidents that does happen, for a transparent body exists under a privation of light without being subject to a contrary form.

70. Then [68] he determines three consequent questions. The first of these asks why something is always generated from things corrupted, which is implied in his statement that the generation of one is the corruption of another.

He answers this question by saying that because corruption tends into non-being, and generation is from non-being, therefore generation must be from things corrupted. This he also proves from the opinions of others: because just as men say that something has been corrupted when it arrives at being imperceptible, which state they regard as non-being, according to the third way posited above, so too they say that something has been generated when it arrives from what is imperceptible and non-being at the state of being perceptible. It is plain, therefore, that, according to this way, that which is the terminus of corruption, is the beginning of generation. Consequently, whether there is, or is not, some subject from which generation arises, the generation of something must always be from non-being which is the terminus of corruption -- for it is of the very nature of generation that it proceed from non-being; but the fact that such non-being be joined to something else which exists, is accidental to generation. Wherefore, it is plain that something is simultaneously generated from non-being and corrupted into non-being, no matter how non-being may be said. Consequently that into which corruption is terminated is the very same as that out of which generation proceeds. It is for this reason that generation proceeds from what is corrupted. It is in keeping with this, therefore, that the succession of generation and corruption never fails, as was said above; because generation is a certain corruption of non-being, and corruption a certain generation of non-being. Thus one is always conjoined to the other, since one terminates in that which the other begins.

71. The second question [69] consists in the fact that someone can ask whether the non-being from which generation proceeds and into which absolute corruption is terminated, and which is in some sense being, is one of two contraries. For example, are earth and "heavy" non-being, as Parmenides said, and fire and "light" being? And he solves this by stating that it is not so, but rather earth is being, since, namely, earth comes to be by virtue of matter's receiving a certain form, which makes it to be in act. Non-being, therefore, is the matter of earth and of fire. However, matter is not non-being <u>per se</u>, as Plato

believed, but it is non-being per accidens, by reason of the privation to which it is conjoined.

72. The third question [70] asks whether, namely, the non-being which is matter is common to the things that are reciprocally generated one from another. And he says that if the matter of both, i.e., of fire and of earth, were diverse, they would not be generated one from the other, as happens for those who posited both fire and earth as first matters. For things that are mutually generated one from the other must have a common subject capable of acquiring the form of both. Consequently no change could take place between things mutually contrary, as was said above, since contrarieties exist first and per se in the above mentioned elements, namely, fire and earth, water and air. Hence if nothing were changed from fire into water or from air into earth, or vice versa, neither would anything be changed from hot to cold, or vice versa, as was said above.

He adds, however, that the matter of things that are reciprocally changed is in one sense the same, and in another sense other. For they are the same as to subject. And this is what he says, namely, that the subject is the same, whatever its status as being (since, indeed, it is not being in act, but in potency). However, it is not the same according to existence or notion. For it takes on another notion and another existence according as it exists under various forms, and also according as it is ordained to diverse forms, just as body is other as to notion according as it is subject to sickness, and as it is subject to health, although it is the same as to subject.

In summary, then, he concludes, saying, "So much for these topics."

Lecture 10

The difference between generation and alteration

73. After showing why there is a certain absolute generation and a certain qualified generation, the Philosopher here inquires into the difference between generation and alteration.

First, he states his intention [71] and says that we must discuss generation and alteration and indicate how they differ, for we have stated above that these are different types of change;
Secondly, he carries out his intention, at 74.

First he shows the difference between generation and alteration with respect to that according to which both are changes;
Secondly, with respect to the subject of each, at 79.

Regarding the first he does two things:

First, he shows the difference between generation and alteration;
Secondly, he removes a difficulty, at 77.

About the first he does two things:

First, he shows in what things alteration occurs;
Secondly, in what things generation occurs, at 75.

74. With respect to the first [72] he supposes two things. The first is that the subject is one thing and the passion which is apt to be said of a subject is another, just as in the case of substance and accident. The second is that change occurs in both of these; for sometimes the change is in the very substance of the subject and sometimes in the accidents.

With these suppositions in mind he says that it is alteration when the same perceptible subject remains, i.e., when, with no change having taken place in the substance, a change occurs in its passions, i.e., in its qualities. And it makes no difference whether the change involves contrary extremes or intermediates -- for example, whether it is from white to black or from red to pale. He gives two examples: the first is when the body of an animal, while remaining the same, is first healthy and then sick; the second is when bronze or some other metal, while remaining the same, is now round and now angular, or possessing angles.

And it should be noted that the first of these examples pertains to the first species of quality and the second example to the fourth species. Yet the Philosopher proved in Physics VII that there is no motion of alteration in the first and fourth species of quality but only in the third, which is called "passion or passible quality" -- for which reason he perhaps advisedly said that alteration is a change in the "passions."

But it should be said that alteration is primarily and per se in the qualities of the third species, through which alteration subsequently occurs also in the other species. For example, by reason of some change within the sphere of hot and cold a man is changed from healthy to sick, or vice versa; and through a change within the sphere of soft and hard a body is brought to some shape.

75. Then [73] he shows when generation occurs. About this he does two things:

First, he states when there is generation;
Secondly, when there is generation par excellence, at 76.

He says therefore first [73] that when a change affects not only the passions but the entire substance of a thing, in so far, namely, as the matter acquires another substantial form so that nothing perceptible remains as though the being in act were the same subject as to number -- for example, when from the whole seed, there is generated what is wholly blood, or when from what is wholly air there is generated what is wholly water, without any gatherings or separatings playing a part as Democritus posited -- such a change is the generation of one thing and the corruption of another.

76. Then [74] he explains when there is generation in the highest degree. And he says that according to the third way laid down above and which is taken according to the opinion of many, above all is something said to be generated when the change proceeds from something not easily perceptible to something clearly perceptible, either to touch, which, among the senses, is more gross and material (hence among the people it is according to this sense above all that something is judged as perceptible -- in so far as it may be felt), or to the other senses -- as, when water is generated from air, there seems to be, according to this outlook, generation which is absolute, or when it is corrupted into air there seems to be absolute corruption. For air is only slightly perceptible, both because it is so rarified and because it has no excelling active quality, but only a passive one, namely, moistness; while in fire, which is more rarified than air, an active quality, heat, does excel. But water is both denser than air and there excels in it an active quality, coldness; earth, finally, is the densest of all the elements.

77. Then [75] he removes a difficulty. For since he had said that the subject remains when a change has taken place with respect to its passions, someone could believe that in the case of everything with respect to which something is changed while something other remains, that which is changed is a passion of that which remains.

But he excludes this when he says that in those bodies that are reciprocally changed one from the other, sometimes there remains some one and the same passion in the generated and in the corrupted thing, as when from air is produced water -- for both are "diaphanous," i.e., transparent, or cold (although air is not cold by nature but accidentally); yet this does not mean that the other thing, in which the change takes place, namely, the air or the water, is a passion of that which remains, namely, the diaphanous or the cold. If what we now say were not so, it would follow that when water comes to be from air, it would be alteration; for we always see that when that which is changed is a passion of what remains, we have alteration, but when that which is changed is not a passion of what remains, it is generation.

He shows this by means of an example. We say that "musical man" has been corrupted when man loses the habit of music, at which time "unmusical man," i.e., man having the privation of music is generated. The reason for this is that music is not a passion of "musical man," since it is of its notion; likewise, unmusical is of the notion of "unmusical man." Hence musical man does not remain; but the same numerical man does remain. Therefore, if music and "lack of music" were not passions of "this," i.e., of man, but were part of his notion, then the change of "musical" and "unmusical" would constitute the generation of one thing and the corruption of another. But because this is not so, therefore music and "lack of music" are passions of man. But there is a generation and corruption of musical and unmusical man; and because man remains, as is evident, it follows that music is a passion of that which remains [namely, man]. Therefore alteration occurs with respect to "such," i.e., the passions of things that

are permanent. If, therefore, water and air were passions of the transparent, as of something permanent, it would follow that the change of water from air would be alteration.

78. But there is a problem as to whether the same numerical passion which is at one extreme of a set of contraries could exist in the generated and in the corrupted, as was said above. For if it does not remain the same, then the transition into each other of things that are similar will not be easier, since on both sides it will be necessary to remove everything. Similarly, it seems to follow that like is destroyed by like, for the generator destroys that which previously was present. But if one supposes the same numerical passion to remain, it follows that even though that which was prior, namely, the subject, has been removed, that which was subsequent, namely, the passion, remains. Moreover, the same numerical accident would be in two subjects.

It should be answered, therefore, that the same numerical passion does not remain, but that what existed previously is corrupted per accidens with the corruption of the subject, when the form which was the principle of that accident departed, and that a similar accident comes, following on the newly-arriving form. And because, with respect to this accident, there was no conflict between agent and patient, the change was easier. Nor is it unacceptable for like to destroy like per accidens, i.e., by reason of corrupting the subject or matter -- this is the same way in which a larger flame consumes a smaller.

79. Then [76] he shows, from the side of the subject, how generation differs from alteration and from other changes.

First, he shows how all of them are related to the subject which is a being in act;
Secondly, how related to the subject which is a being in potency, at 81.

He says therefore first [76] that, as was said, alteration is according to the passions of something that remains. And this same thing occurs in other changes, which take place with respect to accidents which occur to a subject existing in act. When, therefore, a change is from contrary to contrary according to quantity -- for example, from large to small, or vice versa -- we have "growth" or "decrease" of the same permanent subject, since quantity occurs to a subject existing in act. But when the change is with respect to contrariety of place -- for example, up or down -- it is "latio," i.e., local motion, of the same remaining body, since "where" accrues to a body existing in act. When the change is with respect to a contrariety in passions (i.e., primarily in passible qualities, and in other qualities as a consequence), we have "alteration" of the same permanent being, because quality too accrues to a subject existing in act. But when nothing remains existing in act, of which that which is changed might be a passion or some accident, it is universally "generation and corruption," since the substantial form, with respect to which generation and corruption occur, does not accrue to a subject existing in act.

80. Hence it is evident that the opinion is false which Avicebron handed down in the book Font of Life, namely, that in matter there is an order of forms, in the sense that first matter acquires a form making it a substance, and then another that makes it a body, and then another which makes it living body, and so on. For since it is one and the same thing to constitute a substance and to make a "this something," which pertains to particular substance, it would follow that the first form, which constitutes the substance, would also make it a "this something, which is a subject existing in act. Consequently, the subsequent

forms would accrue to a permanent subject, and with respect to them there would be alteration rather than generation, according to the doctrine which Aristotle here transmits.

Therefore one should say, as was said above, that substantial forms differ according to more and less perfect. But the more perfect can do all that the less perfect can do, and more; hence the more perfect form that makes a thing "living" can also make it "body," as does the more imperfect form of non-living body. Consequently, no substantial form accrues to a subject existing in act, nor does it presuppose some other common form really distinct from it, which would be the object of Natural Philosophy, but only one distinct according to reason, and which pertains to the consideration of Logic.

81. Then [77] he compares all the above-mentioned changes to the subject which is only being in potency. And he says that it is above all "hyle," or first matter, which is the proper subject of generation and corruption, because, as has been said, it immediately underlies the substantial forms, which come and go by generation and corruption. But in a certain sense, i.e., consequently and mediately, it also underlies all the other changes, because all the subjects of the other changes are susceptible of certain contrarieties which are reduced to the first contrariety, which is that of form and privation, whose subject is first matter, as is said in Physics I. And therefore all the other subjects partake in some sense of first matter in so far as they are composed of matter and form.

In summary [78] he concludes that so much, then, has been determined concerning absolute generation, as to whether it exists or not, and what are the precise conditions of its occurrence, and in a like manner concerning alteration.

Lecture 11

Growth differs from generation and alteration both as to subject and to manner

82. After concluding concerning generation and alteration, the Philosopher here determines concerning growth and diminution.

First he states his intention [79] and says that after generation and corruption, something must be said about growth, about which there are two things to consider:

First, in what it differs from generation and alteration;
Secondly, in what manner augmentation and diminution take place in things augmented and diminished.

Secondly, he carries out his intention:

First, he shows how growth differs from generation and alteration;
Secondly, he inquires how augmentation takes place (L. 12).

About the first he does two things:

First, he assumes one difference;
Secondly, he inquires about another difference, at 84.

83. He says therefore first [80] that the first point of inquiry about growth is that one must ask whether it differs from generation and alteration only with respect to "that about which," i.e., the genus in which these changes occur. For this difference is plain, namely, that the change which is "from this into this," i.e., from substance that is being in potency into substance which is being in act, is generation; while the change that respects magnitude is growth (through which something is changed from small into large) and diminution (through which something is changed from large into small); while the change that respects "passions," i.e., passible qualities, is alteration.

And because he had said that generation is a change from substance in potency into substance in act, then, that the same may be understood of the other two changes mentioned above, he adds that the change of both the aforesaid, namely, of magnitude and passions, proceeds from potency to act -- for motion is the act of a thing existing in potency, as is said in Physics III.

84. Then [81] he assigns another difference, i.e., one based on the manner of change.

First, he mentions the difference;
Secondly, he explains it, at 85.

He says therefore first [81] that in the above-mentioned changes, the manner of change also differs. (And it does not matter whether the statement is read interrogatively or rhetorically.) For the mode of the aforesaid changes differs in that what is altered does not necessarily undergo a change of place and neither does a thing that is generated. But anything that is augmented or diminished must undergo a change in place. The reason for this difference is that place is co-extensive with the thing in place, and this is according to magnitude [size] and not according to quality or substance. Consequently, it is necessary that, when the magnitude [size] of a thing in place is changed, there be a change according to place, but not when something is changed in substance or quality.

Now just as the commensurateness of that which is in place to the place which contains it is in terms of its size, so the connaturality of the thing is in terms of the substantial form, and consequently, of some quality -- for example, of heaviness or lightness. Consequently, although generation and alteration can occur without any change of place, yet in certain cases generation and alteration are the cause of a thing's being moved naturally with respect to place, as, when for example, when fire or earth comes to be, something light or heavy comes to be.

But the difference between growth and the other changes, with respect to local motion, is not entirely per accidens, for it has been shows in Physics VIII that local motion is the first and chiefest of motions, as well as the cause of the other motions.

84. Then [82] he shows what he had said, namely, that whatever is augmented or diminished is changed with respect to place.

First, he manifests this in rectilinear local motion;
Secondly, in spherical local motion, in 86.

He says therefore first [82] that a thing which is increased or decreased changes place differently from that which is "carried," i.e., moved with a rectilinear motion. For in the case of that which is carried, namely, in rectilinear motion, the thing "universally," i.e., in its wholeness, changes place. But something changes its place "like that which is drawn out," for example, like metal by beating or also something liquid as poured into a receptacle, or any other body of this sort. In these cases, while the object remains in the same place, its parts are changed with respect to place either by extension or in some other way.

86. Then [83] he manifests what he had said by the difference with respect to spherical local motion. And he says that the parts of a thing which grows do indeed change their place, but not in the same way as the parts of a sphere. For the parts of a sphere are changed while the whole remains in the same place, namely, as to subject (although the whole too changes its place conceptually, as is said in Physics VI, but the parts change their place even as to subject, as when the part of the heaven which is now in the east, comes to be in the west. However, such a change of the parts of a sphere takes place in a place that is "similar," i.e., neither larger nor smaller. But the parts of a body that is growing are always extending into a larger place, while the parts of a body that is diminishing are always being contracted so as to occupy a smaller place.

In summary he concludes [84] that it is clear from the aforesaid that these changes -- the changes of that which is generated and altered and grows -- differ not only with respect to "that about which," i.e., the genus in which the changes take place, but "thus," i.e., in the manner of the changing.

Lecture 12

The subject of growth is not something incorporeal or lacking size

87. After showing how growth differs from generation and alteration, the Philosopher here begins to inquire into the manner in which growth takes place.

First, with respect to the subject which grows;
Secondly, with respect to that by which something grows (L. 14).

About the first he does two things:

First, he raises a question;
Secondly, he investigates the truth of the question, at 88

About the first he does two things:

First [85], he sets forth what is evident about growth and asks around what the change of growth and diminution occurs. And he answers that the motion of growth and diminution is seen to be concerned with magnitude [size].

Secondly [86], he shows what still remains to be investigated and says that we must further decide how growth and diminution take place. And as to the subject of growth, he first raises this question: Are we to suppose that by growth there is produced both magnitude and body out of that which is in potency to magnitude and corporeity, in such a way, namely, that it [this source] is incorporeal in act and without magnitude? Then he subdivides the first part of the question. For there are two ways in which there may be said to be some matter existing in act without corporeity and magnitude. Hence it is reasonable to ask, if such matter is the subject of growth, how growth is produced from it. Does the matter that exists without corporeity and magnitude have a separate existence by itself, or is it in some body but not a part of it (for if it were a part, it would be subjected to its corporeity and magnitude)?

88. Then [87] he answers the question he raised:

First, with an argument based on the matter or subject;
Secondly, with an argument based on growth (L. 13).

About the first he does two things:

First he answers the aforesaid question with a reason based on matter, as he views it;
Secondly, based on matter as viewed by the Platonists (L. 13).

Concerning the first he does three things:

First, he rejects the first member of the second division, namely, that matter without quantity should exist as an isolated entity;
Secondly, he rejects the second member of the second division, namely, that matter existing without magnitude be present in some body, at 89.
Thirdly, he concludes to his proposition, at 90.

He says therefore first [87] that both members of the second division are impossible. First he shows this as to the impossibility of matter existing without magnitude, having a separated existence. If it were separated, one of two things would have to follow. One is that it would possess no place, as in the case of a point, which has no place, since every place has some dimension. Or else, if the matter existing without quantity should occupy a place, it would

have to be an empty place (for we call "void" a place not filled with a perceptible body); or it would have to be a certain imperceptible body (for some hold that the void is nothing but an imperceptible body). It is indeed necessary to call the void a body on account of the dimensions of space, yet an imperceptible one, on account of the emptiness. Of these two, one is impossible, namely, that there be a void or an imperceptible body.

Likewise, it is impossible for separately existing matter to possess no place. For matter is that from which sensible bodies are generated. But that from which sensible bodies are generated must exist in some place. For we always observe that whatever is generated from it is "somewhere," i.e., in some definite place: that which is generated out of something is in the same place where that out of which it is generated was. Therefore that from which something is generated, namely, matter, must be somewhere, either per se or per accidens: per se, indeed, according to the opinion of the early philosophers who posited the matter of natural bodies to be some body in act, such as fire or air or water; per accidens, however, according to the opinion of Plato and his own, who assumed that matter is being in potency.

89. Then [88] he rejects the second member by showing that matter separated from magnitude is not present in anything. First he states his intention and says that, if matter existing without magnitude should be in a body separated from the substance of the body in such a way as not to pertain to the body either per se or per accidens, then many impossibilities follow. And he gives an example of this manner of assumption: for example, we might posit that when air is generated from water, this does not take place by means of a change of the water, in such a way that the matter of the water loses the form of water and receives the form of air, but as though the matter of air were in the water as in a container.

Secondly [89], he presents arguments that lead to impossibility. The first is that, if there is in the water not only its own matter but also the matter of air, then for the same reason other matter could be there, and so on ad infinitum, especially since it is possible from one to generate an infinitude successively. Consequently, there would be nothing to prevent an infinitude of matters in water. But given any matter whatsoever, something can be generated in act. Therefore, it would follow that an infinitude of things could be generated in act out of one and the same water, on the basis, namely, that whatever is able to be generated in potency, can be all at one time generated in act.

The second argument is at [90]. And he says that we do not observe anything being so generated out of anything (for example, air out of water) as that which comes out of something permanent, in the way, for example, that wine flows out of a cask that remains unchanged. For we see things being generated from what has been corrupted, as was said above. But one must take that which is evident to sense as the principle [starting-point] in natural science.

90. Then [91] he concludes to the truth and says that it is better to say that matter is present in all things, in such a way as not to be separated from them, as though being no part of them, and that the matter of all things is numerically one and the same and differs only in conception, as was said above. According to this, it will not be separated from magnitude but will be subject to magnitude in act in each and every thing.

Lecture 13

Matter, even as conceived by Platonists, cannot lack size and be the subject of growth.

91. Above [in the previous lecture] the Philosopher showed that it is not possible for the subject of growth to be something having no quantity in act but only in potency as in the case of matter. And since some philosophers posited the matter of bodies to be something mathematical, the Philosopher therefore here shows that no such thing which lacks magnitude can be the subject of growth.

Now, in the genus of mathematical things, a point lacks quantity absolutely, a line does so according to the dimensions of width and depth, a surface according to depth. Body, however, has magnitude in every dimension: hence it is a perfect magnitude, as is said in On the Heavens I. He shows therefore that none of the things lacking magnitude in any whatsoever way can be assumed to be the matter which is the subject of growth, in three ways.

First of all, for the reasons given above. Whence he says [92] that neither should points, which entirely lack size, be posited as the matter of body which is, namely, the subject of growth, nor should lines, which lack size in some respect. And this for the "same reasons," i.e., the reasons presented above -- for points and lines either have to exist separately by themselves or be in some body. Consequently the same things as before would follow.

92. Secondly [93], he disproves this by the very position of the Platonists, who asserted that mathematical things were the substance of natural bodies. And since points and lines are the termini of dimensions, as form is the terminus of matter, they posited that whatever was bounded by things of this sort would be the matter of bodies, while the termini themselves are more in the order of form. And this is what he says, namely, that "that," namely, dimension or magnitude, of which "these," namely, points and lines, are the extremes, was matter according to the Platonists.

93. Thirdly [94], he shows in common that none of these can be the matter of bodies: namely, because according to them, mathematical things exist separated from natural forms and sensible passions -- as they are according to the intellect, so they are according to reality. But matter cannot be separated from natural forms and sensible passions. Therefore it is impossible that any of those mathematical things be the matter of natural bodies.

First of all, therefore, he presents the middle term of his argument, when he says that "it," namely, matter, cannot be without "passion," i.e., passible quality, or without form, or "morphe" (which is the same thing), without which, however, according to the Platonists, mathematical things do exist.

94. Secondly, he proves what he had supposed.

First, that matter cannot be without form;
Secondly, that it cannot be without passion, at 95.

He says therefore first [95] that as was determined in other books, for example, in Physics I, one thing is generated absolutely out of some other things. For each thing comes to be from a subject which is matter. Morever, that which is generated has to be generated by some agent in act which is either "homogeneos"

i.e., of one form or species (and he gives the example that fire is generated by fire as by an agent of one species, and as man is generated by man). Or else it is required at least that something be generated by something existing in act, or by the action of something existing in act, even though the agent be not akin to the thing generated in genus or species, as when something hard is generated by something not hard -- for example, when milk is solidified by fire.

Now, it comes about that something produced is not akin to the agent in respect of form, in one way, because the thing produced does not primarily and per se correspond to the agent, but per accidens, or subsequently. One has per accidens generation, for example, when the musician causes health, not in so far as he is a musician but in so far as he is a doctor -- for the likeness of health does not belong to musician as musician, but in so far as he is a doctor, who, through the form of health which he has in his mind, produces health in a body. One has "subsequent" generation, for example, when the quality produced is consequent upon one of the primary qualities, as when health is caused by some hot medication, through the heat it produces in the body, although the form of health is not in the medication itself.

In a second way this [absence of likeness] occurs because the agent acts through instruments. For an instrument does not act in virtue of its own form but in so far as it is moved by the principal agent, which acts through its own form. Hence the effect is akin in form not, indeed, to the instrument, but to the principal agent -- as a house which is produced in matter is assimilated to the house in the mind of the builder and not to the axe or hatchet, and as a man who is generated is assimilated in species to the father generating and not to the seed.

One has a third way, when the matter of the patient is not proportionate to receiving the form of the agent, because of its excellence, but receives something less, as is evident in the case of animals generated without seed by the power of the sun. Hence it is also that the effect is not assimilated in species to the remote, but to the proximate, agent, as man is assimilated to man but not to the sun, although "man is begotten by man and by the sun as well," as is said in Physics II.

Now, just as each thing is generated by an agent in some way similar as to form, so something is corrupted by an agent that is contrary. And because a thing is generated from what has been corrupted, as was said above, the matter from which something is generated and into which something is corrupted, must always have some form through which it is similar or contrary to that which generates or corrupts.

95. Then [96] he shows that matter is not without some passion. For matter belongs only to corporeal substance, incorporeal substances being immaterial. Hence it follows that all matter belongs to "such" a body, i.e., an individual body; for there cannot be a common body which is not determined to some species and to some individual. But every such body must have some passion, either following on its specific form, as in the case of a proper passion, or occurring in any other way, as in the case of individual accidents. Therefore, the same matter that is the subject of magnitude must also be the subject of passion, in such a way, indeed, that the matter which is the subject of magnitude is conceptually distinct from the passion (as the notion of "man" differs from that of "white"), while they are not distinct "locally," i.e., as to subject -- unless one were to maintain that passions are separable from substances, which is impossible.

And because the Philosopher appeared to have somewhat digressed from his proposition, he collects it from all the foregoing and says that it is plain from everything investigated that growth is not a change produced out of something which is in potency to magnitude, in such a way as to have no magnitude in act. For it would follow that the common subject, namely, first matter, would be separated per se, existing without any form. And this is something which has been proved impossible both now, and also previously in other books, as, for example, in Physics I.

96. Then [97] he shows his proposition with an argument based on growth. And he says that such a change, one, namely, that would be produced out of that which was solely in potency to magnitude would not properly pertain to growth, but more to generation. For it is of the very nature of growth that addition be made to pre-existing magnitude: for a thing is said to grow, because it acquires greater magnitude, which would not be the case if it did not first have magnitude. On the other hand, it is the nature of diminution that a lessening of a pre-existing magnitude occur. Hence it is plain that what grows must have some magnitude. Consequently, when growth takes place, it cannot be in such a way that matter having previously no magnitude in act now arrives at having magnitude in act -- for that would be not growth of a body, but generation, to whose notion it pertains that something be produced in act which previously was in potency.

Lecture 14

Problems on the nature of that by which something grows.

97. After discussing growth from the viewpoint of that which grows, the Philosopher here inquires into that by which something grows.

First he states his intention [98] and says that, since it is of the notion of growth that it be an addition of magnitude, what would seem to be more appropriately taken up in the present inquiry, as being more difficult and affording some beginning for the question, would be to inquire into the nature of that by which something grows or diminishes, so as to find appropriate causes for growth and diminution.

Secondly [99], he pursues his inquiry:

First, he states the main question;
Secondly, in the course of this investigation he proposes another question, at 102;
Thirdly, he resolves the main question (L. 15).

About the first he does three things:

First, he proposes two suppositions;
Secondly, he raises the doubt, at 99;
Thirdly, he excludes an objection, at 100.

98. The first supposition which he proposes, therefore, [99] is this: When something grows, every part of it grows; likewise, in diminution, every part of that which is diminished is seen to have become smaller. The reason for this is apparent from what is said in Physics V. For that whose part is being moved is said to be moved with respect to a part and not absolutely, as for example, a man whose hand has been wounded is said to be wounded with respect to a part. But in order that a thing be moved per se and absolutely, it is required that each and every part be moved. This must also be observed in growth and in all other motions, as our senses testify.

The second supposition is that whatever grows, grows by reason of something added to it; similarly, something is diminished by reason of something's leaving it. The reason for this is that things must be reduced into act by something already in act. Hence, that which is in potency to a greater quantity is brought into the act of that quantity by something that has that quantity in act. And this is what is added to the thing that grows.

99. Then [100] he presents the difficulty which follows from these two suppositions. For if every part of a growing thing has to grow and all growth is produced by the addition of something, then something has to be added to each and every part of the growing thing. Therefore whatever is added, by which a thing is said to grow, has to be either incorporeal or corporeal. If it should be said to be incorporeal, then it follows that the "common" [base] of all generable and corruptible things, namely, first matter, exists separated from all corporeal quantity. But, as was shown above, it is impossible for matter to be separated from magnitude. Consequently, that by which something grows cannot be incorporeal. Moreover, if it were incorporeal, it would not be quantified in act and consequently it would not make the thing to which it was added larger according to quantity.

On the other hand, if that by whose addition something grows should be said to be corporeal, it would follow that two bodies are occupying the same place at the same time, namely, the body which is increased and the body added which does the increasing. For it cannot be held that the body increased and the body which increases are set separately side by side, because addition must be made to each and every part of the increased body, as follows from the suppositions stated above. But this also is impossible, namely, that two bodies occupy the same place at the same time. Consequently, an impossibility follows from both alternatives.

100. Then [101] he rejects a certain solution. For someone could say that growth occurs without anything being added, just as, when air is generated from water, there appears to be a certain growth, since a greater quantity is produced. But that is not the way growth and decrease take place. For such a change [as that mentioned in the example] is not growth. It is rather the generation of that into which the change is made, namely, air, and the corruption of that which is changed, namely, water, which is contrary to air, by the contrariety, namely, of coldness and warmth. It cannot therefore be called growth either of air or of water.

But if it is not growth of either, it will perhaps be growth of that which is common to both (if there be such a thing) as, for example, of body, which seems to be common to air and water, so that it could be said that the water has not grown nor the air, since the water has been corrupted and the air generated, but that it is body that grows, if anything has grown there. But this is impossible. For in order that something be said to grow, those things must be accounted for which pertain to what grows and diminishes. These are three.

The first of these, which was also posited above, is that each part of the magnitude which grows must become larger -- for example, if flesh is increased, each part must become larger. Secondly, as was also posited above, the thing must grow by something's being added. The third requirement is something which he now posits for the first time and it is that the thing increased be preserved and remain in its being. For, since generation and corruption are changes with respect to substance, when a thing is generated or corrupted absolutely, its substance does not remain. But other changes are not with respect to substance, but with respect to things that occur to the substance -- for example, changes regarding quantity or quality. Therefore, when something is altered, or grows or is diminished, that which grows or is altered remains the same in number as to substance, but "here," namely, in alteration, the passion does not remain the same, and "here," namely, in growth and decrease, the magnitude does not remain the same, but becomes larger or smaller. If, therefore, the aforesaid change, by which out of water air is produced, were growth, two things contrary to the aforesaid suppositions would follow.

First of all something would grow without anything's being added and be diminished without anything's leaving. The other is that that which grows does not remain, since neither does the water remain nor does body, which appears to be common, remain the same in number. Hence he designedly said above, "If there be such a common thing" -- since, namely, nothing which is being in act, remaining the same in number as to substance, is common to that which is corrupted and generated. But it is necessary for the aforesaid suppositions to be accounted for in everything which grows -- it being supposed, in the manner of a principle, that growth is a change of the sort that has been stated above.

101. But nothing seems to prevent something from growing without anything's being added. For in Physics IV the Philosopher proves that just as a thing becomes whiter not by some other white's being added to it, but by the previous whiteness' being intensified, namely, through the subject's being reduced to a

state of more perfect whiteness, so also something can become larger without the addition of some body possessing magnitude, through the matter, which previously was subject to small dimensions, being afterward made subject to large dimensions. For the same thing is the subject of large and small and of white and black. And this is clearly apparent in rarefaction, for rarefaction takes place not only when there is a change of species, as when air is generated from water, which Aristotle speaks about here, but also when the same species remains, as when air is rarified or condensed.

However, it should be replied that such a change cannot be properly called "growth," but is alteration. For it takes place in terms of a change of passible qualities, namely, of rarity and density, with a variation of quantity being consequent upon this -- just as when, as the result of a motion with respect to place, there is a change in motion according to right or left; this is nevertheless not referred to as a motion according to position -- since the change of position is consequent upon the changing of place.

102. Then [102], before solving the aforesaid difficulty, he raises another question.

First, he proposes the question;
Secondly, he solves it, at 103.

He says therefore first [102] that, since a thing grows by the addition of something, the question still remains as to what it is that is increased: whether only that to which something is added, but not what is added, or whether both are increased. For example, if something, namely, food, is added to the leg of an animal, does the leg grow and become larger while the food which is brought in and added does not grow but causes growth? Why have not both grown? For both become larger, both what is added and that to which it is added, just as, when water is mixed with wine, both are seen to be increased, because both become larger in the same way.

103. Then at [103] he answers this question in the light of what has been set down above, namely, that the thing which grows must remain the same in substance. Therefore the one is said to be increased and not the other, because the substance of "that," namely, the leg, to which addition is made, remains, while the substance of what is added, namely, the food, does not remain -- for the food is converted into the substance of what is nourished and increased. But because in the objection mention of a mixture was made, he shows that the same is true in a mixture. For that whose substance remains is said to be dominant in the mixture -- as we say something to be wine, when only a little water is added to much wine. And this appears from the proper operation, which is an evident sign of the species -- for the whole mixture performs the operation of wine, namely, by warming and giving strength, and does not do the work of water. A like situation occurs in alteration: for if the flesh remains in its substance and "what something is," i.e., its essence or species, and some passion, of the number of <u>per se</u> accidents, occurs to it, which was previously not present, that which remains is said to be altered. Similarly, that which grows must remain.

But that by which something is altered, namely, that which alters, sometimes undergoes no change, either in quality or substance, as occurs in things that act and do not undergo, such as heavenly bodies; but sometimes that which alters itself undergoes and is changed, as occurs in the lower bodies, which mutually act and undergo, as will be manifest later. However, in the motion of growth, the alterating power, and that which is the starting-point of motion, is on the part of that which grows -- which, however, alters in a way that also involves its own alteration. For in things that grow, exists a principle of the motion of growth, namely to alter and convert the food which is added. If this were not so, the food entering the body would thus be generated greater and would take into its nature the body into which it was entering -- as, for example, when spirit, i.e., air, enters a bladder and makes it larger, or when "spirit," i.e., a soul enters a body and conforms it to itself. But that is not what happens. Rather the food enters the body and, after being acted upon by the body of the animal, is converted into the body of the animal; and the originative source of this change is not in that which is added, but in that to which the addition is made.

Lecture 15

Solution of the difficulty proposed in the previous lecture

104. After raising a question concerning that by which something is increased, and solving this question, which he had interposed, the Philosopher here undertakes to solve the main question.

First, he solves the question;
Secondly, the difficulty having been removed, he shows how growth takes place (L. 16).

About the first he does two things:

First, he shows what is required in the solution;
Secondly, he presents the solution, at 105.

A true solution must preserve whatever belongs to the notion of a thing in question and exclude all impossibilities. Consequently, he first shows how he intends to save everything that pertains to the notion of growth [104]. And he says that, since we have paid sufficient attention to the foregoing, it is time now to "try," i.e., to apply effort, to find a solution to our question such as will preserve the three things stated above of the notion of growth. The first of these is that the thing increased remain; the second is that growth take place by means of something coming, and diminution by means of something departing; the third is that each "sensed sign," i.e., each perceptible part, of that which grows, become larger in the case of growth, and smaller in the case of diminution.

Secondly, he shows how he intends to avoid three impossibilities: first, that we not posit the body which grows to be void; secondly, that we not posit two "magnitudes," i.e., two bodies, to be in the same place; thirdly, that we not posit growth as taking place by the addition of something incorporeal. For it seems that after one has laid down the aforesaid suppositions, some one of the impossibilities will necessarily follow. For if every part grows of that which grows, and nothing grows save by something coming to it, it is necessary that, to every part of that which grows, something come. If, then, that which comes is not incorporeal, two bodies must be in the same place -- unless the body which grows is assumed to be void.

105. Then at [105] he solves the difficulty.

First, he states certain things needed for solving the question;
Secondly, he gives the solution, at 106.

In regard to the first he proposes two things. As to the first of these, he says that a cause that will both preserve the three things aforesaid and avoid impossibilities must be taken. But we must do this after first determining certain things. One of these is that "anomoemera," i.e., members having dissimilar parts, for example, the hand or foot, or similar things, grow by means of the growth of their respective similar parts, which he calls "homoeomera," such as bone and flesh and other such. He gives the reason for this, which is that each member of the dissimilar parts is composed of those things which have similar parts as, for example, a hand is composed of flesh and bone and sinew. Therefore, the whole must be increased by the increase of the parts.

Secondly, he posits that flesh and bone, and each of such parts that he says to grow first, are twofold, as occurs in all things that have a species in matter: for flesh and bone can be considered either as the matter or flesh or the species of flesh.

Now some look at this statement as meaning that there is one signate flesh which is according to matter and another which is according to species. For they say that flesh and bone and whatever is such, are said to be according to species in so far as they are generated from the prime seminal moisture in which the power of the species was, but flesh and bone are said to be according to matter in so far as they are generated from the nutritive moisture. This latter comes to the first seminal moisture as a certain matter thereof, in that the first moisture is extended through the other members, the second moisture having been mixed with it, in order to complete the quantity of the living thing and of all its parts. This was the view of Alexander (as Averroes says in his explanation of this passage), and several later followed him.

But such a view does not agree with the words Aristotle uses here. For he says that "flesh, bone, and every such part has a twofold nature as do other things whose form [species] is immersed in matter." Now it is plain that not only things that are generated from seed and are nourished, in which the aforesaid meaning could be to some extent sustained, but also inanimate things, such as stones, gold and silver, have their form immersed in matter. Therefore, Aristotle intends that "species" and "matter" be taken in flesh and bone, just as in stone and gold, in which there is no seminal and nutritive moisture. Therefore, it should be said that, according to Aristotle's intention, one and the same flesh is stated according to species in so far as there is considered in it that which pertains to the species of flesh, and according to matter in so far as we consider in it that which is of matter. And the same goes for all other things composed of matter and form.

106. Then at [106] he presents the solution:

First, he presents it;
Secondly, he manifests it with an example, at 107;
Thirdly, he concludes by summarizing the solution, at 109.

He says therefore first [106] that the statement made above, namely, that each part grows of that which grows, and that each thing grows by the advent of something, is true if "part" is considered from the aspect of the species. For to each part considered according to species something is added as to something permanent. Consequently each part considered under the aspect of species is increased. But an addition is not made to each part considered according to matter; nor does each part, considered according to matter, grow. For it was said that what grows must remain. But each part considered according to matter does not remain, but only as considered according to species.

107. Then [107] he manifests the proposed solution by examples.

First, he gives the examples;
Secondly, he shows in which parts the aforesaid solution is more evident, at 108.

He says therefore first [107] that what has been said about flesh according to species and according to matter should be understood as though someone were to measure water with the same measure, but in such a way, however, that the water was always other and other -- for example, if from a vessel full of water, water were to flow out drop by drop and were to be constantly poured in drop by drop. It will always be the same so far as the measure of the water is concerned, but not, however, as to the matter of the water. Now species is compared to matter as the measure to what is measured, because the form is the end of matter, as is said in Physics II. Therefore, we must understand that the species of flesh remains the same, as a certain measure, but the matter in which such a species is received does not remain the same. The case of a river is similar -- it always remains the same so far as the species of river is concerned, but the

material water is always other and other. Fire is also similar -- whose species and figure always remains the same, although the pieces of wood in which the fire burns materially, are consumed and other and other pieces are added. The same also appears in the populace of a city which always remains the same as to that which is of its species, although, of the men who constitute the populace, some die and others take their place. In like manner, that which pertains to the species of flesh always remains, although the matter in which that species is based is little by little consumed by the action of heat and other matter newly arrives through food.

Thus, therefore, when a body grows, so indeed does the matter of the flesh, since more is generated by food than is lost by the action of heat, and so, as the matter is multiplied, the augmentative power, which pertains to the species, proportionally spreads out the whole matter into greater quantity. Yet the matter of flesh is not increased in such a way that to each part of the matter something is added -- for not every part of the matter remains but some falls away, having been consumed by heat, and some comes, having been restored by food. Therefore, there is no need for things to be increased by something incorporeal, nor for two bodies to be in the same place, nor for the body that grows to be void. For if what is renewed through food does not exceed what has been consumed by heat, the natural power, which pertains to the species, restores what comes in the place of that which was lost. But if what is generated from the food exceeds, the natural power extends it into a larger quantity according to some dimension, and thus it occupies a greater place. But because the species remains constant, we must say that something comes proportionally to each part of the form or species and that each part is increased proportionally. But it does not follow from this that there are two bodies in the same place, because place is not assigned to form or species except by reason of the matter in which it is based and which is properly the subject of dimensive quantity.

But if one should understand by "flesh according to species" that which is generated from the seminal moisture, and by "flesh according to matter" that which is generated from the nutritive moisture, as Alexander posited, then this statement of Aristotle, namely, that flesh according to matter flows out and comes in, but not flesh according to species, appears to be more in the nature of something probable, than as having any necessary foundation. For, since it is necessary for both moistures to be combined into one mass in order to perfect the quantity of the whole body and all its parts, one cannot prove with necessity that heat so consumes the one in such a way as to leave the other always remaining. But it is not easy to think that Aristotle in such a matter would state something without a necessary reason, as Averroes says in his exposition of this passage.

108. Then [108] he points out the parts in which this solution is more evident. And he says that what has been stated is more evident in "anomoeomera," i.e., members that possess unlike parts, such as the hand, which we observe to grow proportionally -- for the entire hand and each finger and also each joint grow proportionally. The reason is that the distinction between species and matter is more plain in these members than in flesh and bone and other similar members. For the closer the members are to the whole the more fully they receive the perfection of the form which is principally the act of the whole. Consequently, the operations of the soul are more evident in members whose parts are unlike than in those that are alike. And therefore, although after death (in which the soul is separated from the body) not only does the animal not remain but no part of the animal remains, except equivocally, as is said in On the Soul II; yet flesh and bone would seem to remain more after death than hand or arm, in which the operations of the soul are more evident.

109. Then [109] he concludes by giving a summary of the solution, namely, that in a certain sense each part of flesh is increased, i.e., if flesh is considered according to species; but in another sense each part is not increased, i.e., if flesh is considered according to matter.

Lecture 16

How growth takes place. Its difference from generation.

110. Having solved the questions which concerned the nature of growth, the Philosopher here determines the manner of growth.

First, he determines how growth takes place;
Secondly, how diminution takes place (end of L. 17).

About the first he does two things:

First, he shows how that which comes is related to that which is increased by its coming;
Secondly, he compares growth to the other operations of the vegetative soul, at 111.

He says therefore first [110] that after settling the question of the parts of that which grows, namely, whether each part grows or not, it is now plain that the whole becomes larger as a result of something coming to it -- for example, food. Now although that which comes is in the beginning contrary to what it comes to, yet later it is converted into the same species. For example, if something originally moist comes to what is dry, it is changed and made dry. Consequently it is in a sense true to say that like is increased by like; but it is also in a sense true to say that something is increased by what is unlike. For that by which something is increased is in the beginning unlike but at the end like, as has been said.

111. Then [111] he compares growth with the other operations of the soul, whose operations are three, as is stated in On the Soul II, namely, generation, nutrition and growth.

First, therefore, he compares growth to generation;
Secondly, to nutrition (L. 17).

About the first he does two things:

First, he shows how growth and generation are alike;
Secondly, how they differ, at 112.

Therefore [111] he asks, concerning the first, "of what sort," i.e., of what form, must that be by which something is increased. And he concludes that it is plain from the foregoing that that by which something is increased is in potency to what is increased; for example, if flesh is what is increased, that by which it is increased must be flesh in potency, because, as was said above, that by which it is increased must be unlike in the beginning, but like at the end. And since nothing is in potency to one thing without being something else in act, then that by which flesh is increased and which is in potency to flesh, must be in act something other than flesh, e.g., bread. But what is something in act does not become something other but by the corruption of the former and the generation of the latter. Therefore growth must take place following the corruption of that which previously existed in act, e.g., bread, and the generation of that which grows, e.g., flesh. Thus it is plain that, in some manner, generation concurs in growth.

112. Then [112] he shows how growth and generation differ. And he says that, since growth involves a certain generation of flesh, but growth is different from generation, it follows that there is not generation of a thing "according to itself," i.e., separately, when something is thus generated (for that

would make it generation and not growth). Rather flesh must be generated into the flesh which grows. Consequently that which becomes flesh in the growing thing, undergoes, in so far, namely, as it is made like that which is increased, and by means of this, namely, of what has undergone and been changed, that to which it is added, or the whole compound, is increased. A similar situation occurs when water is poured into pre-existing wine in such a way that the wine, by its power, is able to convert the added water into its own nature; in such a case there is said to be an increase of wine, but not generation. But when some liquid is converted into wine according to itself, for example, the juice of grapes, there is then generation of wine.

He gives another example, that of fire which burns combustible material added to it. For that is what happens in a growing thing, which is flesh in act, and whose augmentative power makes that which comes, and which is flesh in potency, to be flesh in act -- in such a way, however, that it is with the pre-existing flesh. For if, out of something potentially flesh, flesh were produced separately, there would be generation of flesh, not growth. This is what happens when, by the power of the seed, the menstrual blood is changed into flesh. This also happens in the case of fire: sometimes pieces of wood are ignited upon being added to an already-existing fire -- and this is an increase of fire; but sometimes the pieces of wood are ignited apart, not added to other burning pieces -- then there is generation.

Lecture 17

Comparison of growth to food. How diminution occurs.

113. After comparing growth with generation, the Philosopher here compares growth with food.

First, he shows how that which grows is related to that which nourishes; Secondly, how growth is related to nourishment, at 117.

With regard to the first he does three things:

First he shows what is the nature of that which is increased, namely, that it is something quantified. And he says [113] that there is not generated or produced a universal quantum, any more than a universal animal or a universal man or "any of the singulars," i.e., any of the singular species -- for example, neither a universal lion, nor a universal ox. But just as the universal is generated in these, namely, in some individual -- for example, when this animal or this man is generated -- so too here, i.e., in growth, a quantum is generated, not in the universal, but in something determinate, as when there is produced a certain quantity of flesh or bone or hand, and similar things.

114. Secondly, at [114] he shows what that is which causes increase -- for increase comes about by the accession of something, as was said above. But if by growth there were produced quantity in a universal way, the acceding thing would have had to have been quantified in potency and in no way in act. But because there is not generated quantity in a universal way, but this quantified thing -- for example, flesh -- the acceding thing has to be something quantified in act, but not, however, quantified flesh, except potentially.

115. Thirdly [115], he concludes to the difference between that which increases and that which nourishes. First he sets down the difference and says that in so far as the acceding thing is in potency to both -- for example, to being a "quantity of flesh," so that it is not only capable of receiving the species of flesh, but also of being extended to a greater quantity -- in this respect it increases. For in order for growth to take place, there must be produced both quantity (so as, namely, to produce a greater quantity), and flesh (since the acceding thing must become "like" at the end, as was said above.) But in so far as the acceding thing is in potency only to become flesh, in this respect it nourishes. Thus do food and growth differ according to notion: for food nourishes in so far as it is converted into flesh, but in so far as it takes on a greater quantity, i.e., produces it in the thing nourished, it increases.

116. Secondly [116] he states a certain corollary flowing from what has been said, namely, that a thing is nourished "so long as it is preserved," i.e., so long as it is kept alive. For it is always necessary to restore by nourishment that which is continuously lost -- that is, that which diminishes has to be nourished. But an animal is not always growing, but only so long as the food converted into flesh can be extended into a greater quantity.

117. Then [117] he shows the difference between growth and nourishment. And he says that nourishment is the same thing as growth, but they differ in being -- as if to say: they are the same as to subject but differ in notion. For in so far as the acceding thing is in potency to both, i.e., to quantity and to flesh, in this respect there is growth of flesh; but in so far as it is in potency only to flesh, it is nourishment or food, as was explained above.

118. Then [118] he shows how diminution occurs. And the better to understand what is said here, we should reflect that the power of the species is otherwise in living things which are properly nourished and grow, and in things without life which are neither nourished nor grow. For living bodies move themselves not only with respect to local motion but also with respect to the motion of alteration, as when an animal is naturally healed, and with respect to the motions of growth and generation, especially in the sense in which nourishment is a certain generation, as was said above, in so far, namely, as, although flesh is not generated in itself, it is generated into the already existing flesh. Now whatever moves itself is, as was proved in Physics VIII, divided into two: one of which is the mover, and the other is moved. Consequently, it is necessary that in a living thing there be something moved, namely, whatever is converted into the nature of the species; and something moving, namely, the power of the species, which does the converting. This explains why the virtue of the species in living things does not appropriate to itself some certain signate matter, since one part flows out and another arrives, as was said above. Yet the virtue of the species cannot be without any matter, but indeterminately in this or that, since, as was proved in Metaphysics VII, the virtue of the thing that generates is a form existing in this flesh and in these bones.

Now, in non-living things no such condition is found except perhaps in so far as there is in them some likeness of growth and nourishment, as, for example, in fire and in wine because of the efficacy of their active power. Consequently, the virtue of the species in flesh or in anything similar, in so far as it does not designate for itself any signate matter, but is now preserved in this, now in that, is as a certain immaterial species.

This, therefore, is what the Philosopher here shows, namely, that "this," i.e., the virtue of the species of flesh, is a species without matter, as though it were a certain immaterial potency in the respect that it does not determine for itself signate matter. Yet it is always in some matter.

What has been said applies also to every other organ, such as bone or sinew and anything similar. Consequently, if there should accede some matter which is in potency not only to this species which is in a sense immaterial, but also to greater quantity, then there will be "greater immaterialities," i.e., the virtues of the species that exist in flesh and bone and so on are extended to a greater quantity.

But this cannot always occur: for the virtue of the species becomes weakened (since it is present in a matter subject to contrariety), by continually acting and being acted upon, and by the accession of extraneous matter which does not receive the virtue of the species as perfectly as before. Consequently, when the virtue of the species cannot do this any longer, i.e., convert, of the food which is in potency, not only not as much as is required for the species and a greater quantity, but not even so much as is required for an equal quantity, then diminution of quantity occurs, although the virtue of the species is still preserved in the smaller quantity. But at last even the species ceases, just as, if more and more water should be mixed with wine, it will become watered wine, and then finally the wine will be corrupted, and there will be wholly water.

HERE ENDS THE EXPOSITION OF ST. THOMAS.