S E C T I O N II

COMMENTARY ON CHAPTERS 1-11

Chapter IV

An Examination of Aristotle's Definition of "Nature" (115)

I) Division of Treatise :

1) The search for the definition of "nature". (192b8-21)

a) Division of things that exist into those which exist by "nature" and those which exist by other causes. (192b8-11)

b) Examination of the characteristics peculiar to the things that exist by "nature". (b12-21)

2) The definition of "nature". (b23)

3) Explanation of the definition. (b24-32)

4) What is meant by "to have a nature" and "to be according to nature" (b33-39)

5) The indemonstrability of "nature". (193a2-9)

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115. II Physics, c 1, 192b8-193a9.

II) Doctrinal Exposition :

1) The search for the definition of "nature".

a) Division of things that exist :

Text :

"Of things that exist, some exist by nature, some from
"other causes.
"By nature the animals and their parts exist, and the
"plants and the simple bodies (earth, fire, air, water) -
"for we say that these and the like exist 'by nature'" (114)

The procedure here used by Aristotle definitely follows the pattern of the second Posterior Analytics (115), wherein is contained the method of investigating a definition through the medium of division. This method is highly recommended by Aristotle for two reasons. The first reason is because the elements that constitute the definition can only be reached by division, (116) the second, because "division is the only possible method of avoiding the

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114. II Physics, 192b9-11.

115. II Posterior Analytics, c xiii, 96b15-97b6.

116. "For if every definable thing consists of two elements and
"animal-tame forms a unity, and again out of this and the
"further differentia man (or whatever else is the unity
"under construction) is constituted, then the elements we
"assume have necessarily been reached by division." ibid,
96b33-35.

omission of any element of the essential nature." (117) The method as applied here in the second book of the Physics is directed to the discovery of the definition of one of the differences that are divisive of a genus, namely the definition of the difference "nature", which in conjunction with other differences; "other causes"; divides "things that exist."

"Of things that exist":

The genus that is divided is the class of sensible substances.

"Some exist by nature, some from other causes."

"Nature" and "other causes" are the differences that divide the genus "things that exist." They are the causes of the existence of existing things. The positive identification of one of these causes of existing things an "nature" is based on the indisputable fact of experience. Aristotle's acceptance of the sufficiency of this fact of experience to warrant the statement that "nature" is a cause of some things that exist, is explicitly stated by him when on a later occasion he condemns those who would attempt to demonstrate the "an sit" of "nature". (118)

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117. ibid, b35-36.

118. II Physics, 193a2-9.

"By nature the animals and their parts exist, and the plants and simple "bodies (earth, fire, air, water) - for we say that these and the like "exist by nature."

So certain is the fact of "nature" as a cause that there is little or no difficulty in recognising the things that owe their existence to it. Here we have a class of things, easily discernible, under the genus "things that exist". They are the things constituted by the difference "nature". This identification of the species; "animals and their parts, and the plants and simple bodies (earth, fire, air, water)"; is of prime importance in the developement of the definition of the difference constitutive of the class, for, as we shall see, Aristotle will seek in the species the formality by which he will define "nature".

The order which Aristotle uses here in arranging the things which are included in the class of things which owe their existence to "nature", is not merely arbitrary. Rather it is based on the degree to which they manifest that characteristic that is proper to the class to which they belong. All; animals, plants and simple bodies; manifest this property (as yet unannounced) but not in the same degree. Animals show forth the property more perfectly than plants, and plants more perfectly than simple bodies.

But what are these "other causes" which, like "nature", are causes of existing things ? In many places, for instance in the

Metaphysics (119), Posterior Analytics (120), Physics (121), when he has the occasion to speak of the causes of things, Aristotle always mentions art and chance along with "nature". This would lead one to identify both art and chance with the "other causes" mentioned here in opposition to "nature". But this identification would not be in strict conformity with the text itself, for in this place Aristotle definitely restricts "other causes" to art alone. In proof of this one has only to read the text itself where Aristotle, when he comes to examine the class of things not caused by "nature" but by "other causes", speaks only of the artificial. (122) Mansion notes this restriction for he remarks that when Aristotle enters upon his inductive study of beings existing by nature, distinguishing them from those which depend on other causes, he is actually aiming, in

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119. "Of things that come to be, some come to be by nature, some by "art, some spontaneously." Meta., c vii, 1032a12; see also "Meta., c iii, 1070a6.

120. "It is mostly in cases where the issue is indeterminate (though "only where the production does not originate in chance, and "the end is consequently good), that a result is due to an end, "and this is true alike in nature or in art. By chance, on the "other hand, nothing comes to be for an end." II Post. Anal., c xi, 95a6-9.

121. "Spontaneity and chance are causes of effects which, though "they might result from intelligence or nature, have in fact "been caused by something incidentally." II Physics, c vi, 196a6-8.

122. ibid, c i, 192b12-21.

this second category, at the products of art alone. (123)

This restriction of "other causes" to art alone, so that there are mentioned here only two causes of things, "nature" and art, is peculiar in the face of the number of causes spoken of by Aristotle in the places quoted above. Yet, despite its peculiarity, this restriction is fully justified, for the omission of chance and the casual serve the purpose which Aristotle had in mind, better than their inclusion. What he intended to do was to bring out clearly the content of the 'primum datum' of experience, 'nature' a cause of things existing. To do this effectively he sought to contrast the class of things existing by "nature" with a class of things whose cause was not "nature" By analysing the difference between the two he would be able to grasp the proper and distinctive characteristics of each and through them come to a knowledge of the differences themselves, i.e. the causes constitutive of the classes. But what class of things should he select as the term to be contrasted with the class of things caused by "nature" ? There were several possible selections. He could have chosen the class of the artificial, i.e. the composite of the genus "things that exist" and the difference 'art', or the class of the casual, i.e. the composite of the same genus and the difference 'chance', for both art and chance are causes of things existing. Or he could have

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123. Op. cit., Chpt.iv, p. 97: "En fait la comparaison est limitée "aux produits de l'art, ceux du hasard étant passés sous silen- "ce, sans qu'Aristote en donne la raison."

selected both classes. Actually, as the text reveals, he selected the class of the artificial. The reason for his choice shows its wisdom and its justification. Why did the artificial serve better his purpose than the casual or the combination of both ? There are two answers to this question.

In the first edition of his Introduction Mansion gives the following reason why the artificial was better suited to Aristotle's purpose. "As chance generally presents itself under the form of exception in the series of natural and artificial productions, it is opposed to both nature and art only in a secondary fashion; and so it can be ignored when one wishes to determine approximately the notion of nature." (124) According to this explanation the omission of the casual and the choice of the artificial as the factor in determining the content of the 'primum datum' of experience was due to the fact that at this point Aristotle wished to determine only approximately the definition of "nature". Since the artificial and the natural are opposed to eachother in a primary fashion (125), while the casual is opposed only in a secondary manner (126), his choice fell upon the

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124. Mansion, op. cit., p. 42: "Comme le hasard se présente généra-
"lement sous forme d'exception dans la série des productions
"naturelles et artificielles, il ne s'oppose que d'une façon
"secondaire à la nature et à l'art; ainsi on peut le négliger,
"quand on veut déterminer la notion de nature suivant une pre-
"mière approximation." (1ère Edition, 1913).

125. Art and nature are per se causes in their own orders, i.e. in the order of the natural and the artificial.

126. Chance is a "causa per accidens" in the order of the natural and artificial.

artificial, which, because of the type of opposition existing between it and nature, could be of greater service in the work of bringing to light the definition of nature, such as he desired to define it, i.e. approximately.

The other reason for the choice of the artificial is as follows. Since Aristotle intended to define "nature" by contrasting the natural thing or class with a class whose cause was not nature, it was necessary for him to seek out a class of things that was better known than the natural. (127) For were it not better known than the natural, how could it function as a medium of manifesting the other, since what is unknown is not made known through another unknown. Of the two classes which might possibly be used to manifest the formal principle of the natural, one is known in its formal principle, the other unknown. The casual, since its formal principle is chance, an indeterminate cause, is unknown. But everyone knows what art is, and art is the constitutive principle of the artificial. The choice, then, of the artificial as the medium for making clear, through contrast, what nature is, was forced upon Aristotle by reason of the fact that it was a known thing. Had he included the casual in this work of contrast, he would have complicated his problem. In place of one unknown quantity he would have had to deal with two, nature and chance.

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127. By better known is meant from the point of view of its formal constituent.

b) The examination of the attributes of the class "things caused by nature".

Text :

"All the things mentioned present a feature in which "they differ from things which are not constituted by "nature. Each of them has within itself a principle of "motion and staticonariness (in respect of place, or of "growth and decrease, or by way of alteration). On the "other hand, a bed and a coat and anything else of "that sort, qua receiving these designations i.e. in "so far as they are products of art-have no innate "impulse to change. But in so far as they happen to be "composed of stone or of earth or of a mixture of the "two, they do have such an impulse, and just to that "extent-" (128)

Having established as the terms of the contrast the artificial and the natural, Aristotle is now prepared to proceed forward in the process of formulating the definition of "nature". This consists in examining the attributes of both classes in order to arrive at the proper and distinctive characteristics of the differences from which are derived the various attributes of the two classes under examination.

"All the things mentioned present a feature in which they differ "from things which are not constituted by nature."

Observing and contrasting the two classes of things

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128. II Physics, c i, 192b12-21.

exist we discover the presence of a difference between them, an attribute that is found in one but not in the other.

"All the things mentioned" :

That is, the animals and their parts, plants and simple bodies. These three types of beings are examples of a class of beings whose existence is an obvious fact. Hence they are not intended to be interpreted as instances building up the class but are cited by Aristotle's rebuke to those who would attempt to prove that nature exists.

"present a feature in which they differ from things which are not constituted by nature."

The character of the feature is not mentioned here, only the fact that it is exclusively proper to "all the things mentioned". The degree to which this feature is the property of the class which owes its constitution to nature, is sufficiently indicated by the phrase - "in which they differ from things which are not constituted by nature" -. Through his examination Aristotle has actually hit upon a difference so proper to one class that it must be considered a property of the cause, nature. Its constant presence in the beings which exist by nature, and at the same time its noticeable absence among the things not caused by nature justifies the conclusion that we have here the distinctive and proper characteristic of nature.

To prove that this intrinsic principle of motion and of stationariness is the exclusive property of things caused by nature, Aristotle now sets out to prove that it is not found in the artificial thing.

"On the other hand, a bed and a coat and anything else of that sort, "qua receiving these designations-i.e. in so far as they are products "of art-"

The Stagirite is not content merely with mentioning certain things which admittedly belong to the class of the artificial, viz, a bed and a coat, but adds a qualifying phrase : "in so far as they are products of art-"; This distinction is important since, as we will see, the artificial thing has within itself a principle of movement. A chair, or a statue will fall from a high place once that which supports it in its elevated position, is removed. To precisely what the chair or the statue owes this impulse to move downward, will be determined later.

"have no innate impulse to change"

The change that occurs in the artificial thing finds its principle in something extrinsic to the artificial qua artificial. It is not in the artefactum, which is made, but in the

artist. (151) Art, the cause of the artificial, is subjected in the intellect and the intellect moves the artificial thing by direction and command. This movement of directing and commanding is external to the thing so directed and commanded. (152) Furthermore, the form produced by art is likewise an extrinsic principle of movement, for "since it is impressed by the direction of the intellect through art, it cannot, by force of such a principle, have the intrinsic formality of nature and principle of movement because no intellect, save the divine, is productive of nature through the medium of idea and art."(153)

From what has just been said of art and the form of the artificial thing, we can obtain an idea of art's strength and weakness. The fact that "no intellect, save the divine, is productive of nature through the medium of idea and art", exposes to us the weakness inherent

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151. "Differt autem ars a natura, quia ars est principium agendi in "alio, natura autem est principium motionis et motus in eo in "quo est." St Thomas, Comm in Meta., liber XII, lect 3, n. 2444.

152. J. a S. Thoma, Curs. Phil., T. II, p. 185b42-186a2 : "ars enim "est in intellectu, intellectus autem non movet naturaliter et "intrinsece, sed dirigendo et imperando, qui est motus extrin- "secus ipsi rei imperatae et directae."

153. J. a S. Thoma, ibid, p. 186a5-12: "quia cum sit impressa a di- "rectione intellectus per artem, non potest ex vi talis prin- "cipii habere intrinsecam rationem naturae et principii motus, "eo quod intellectus non est factivus naturae per ideam et ar- "tem, nisi intellectus divinus."

in art. Because it cannot produce nature, art must always take nature as it is. The sculptor's choice of stone or marble in place of iron is governed by the fact that, independent of his desires, iron is not malleable, while the other are. This non-malleableness of iron, as well as the malleable quality of stone and marble, is a characteristic that is natural, and one of which art must take cognizance. This is art's weakness, its dependence upon nature. On the other hand, the fact that the work of art qua art lacks an internal principle of change manifests its imperishableness. In itself (qua artistic) it is impervious to change. Whatever change occurs, occurs in virtue of the matter in which the artistic form is produced, for the matter has within itself a principle of change. Were things of nature possessed of this imperishableness of art, they too would be impervious to change from within.

"But in so far as they happen to be composed of stone or of earth or "of a mixture of the two, they do have such an impulse and just to "that extent."

Experience testifies to the fact that the artificial as well as the natural thing obeys the law of gravity. A bed or a knife have a tendency to fall downward. It appears, then, that the statement about the artificial not having an internal principle of movement is incorrect.

Recognizing that there is such a tendency in the

artificial, Aristotle seizes upon it as an added proof of his contention that the product of art qua product of art has no internal principle of change. He wastes little time over the fact of the presence of this impulse to change in the artificial, but goes immediately to the reason behind the fact. The work of art, since art itself is powerless to produce the matter upon which it must act, contains, in addition to the artificial form, the subject of this form. This latter is a product of nature. It is this natural subject which explains the impulse to change that is found in the artificial, and not the artificial form. The bed and the knife tend to fall to the ground, not because one is a bed, the other a knife, but because one is wood and the other is iron.

"and just to that extent" :

Having traced this impulse to change to its principle, the subject of the artistic form, Aristotle reiterates his original position. The artistic qua artistic has not within itself a principle of movement and of rest, since its principles, art and the artistic form, are both external principles. The innate tendency to move that is found in the artistic belongs to it in virtue of that which is of nature, the subject.

An Objection :

The absoluteness with which Aristotle declares that in the

artificial the impulse to change is due only to the fact that it is composed of things that have nature as their cause, e.g. the stone or earth, is not justified. While it is true that such artefacts as the bed and the knife trace their impulse to move in a downward fashion to the wood or iron which is their matter, there are also certain artefacts and arts which are internal principles of movement. For instance, a wheel moves more easily and more rapidly because it is circular. Were it square or rectangular in shape, the ease and rapidity of movement would not be possible. This circularity is a form imposed by art. Hence one must concede that such an artefactum as a wheel, has an internal principle of motion. With regard to art, it certainly is evident that such arts as that of dancing, that of playing the harp, are of themselves ordered to the movement of the dancer and the harpist. Therefore it is not true to say that the artificial qua artificial has not within itself a per se principle of movement.

This objection is of importance for it attempts to establish a notion that is destructive of Aristotle's concept of nature. For, if it be true that there are certain artefacts and arts which have or are internal principles of movement, it follows, then, that the feature "intrinsic principle of movement and of stationariness", hit upon by Aristotle as peculiarly proper to the things caused by nature, is not in fact the distinctive possession of that class. Consequently

it is not the distinguishing mark of nature itself. With this in mind, let us proceed to the difficulty.

First, The Question of Certain Artefacts.

The circularity of the wheel is a principle of the wheel's movement - - - I distinguish :

a per se principle of that movement - - I deny.

a per accidens principle of that movement -- I concede.

Explanation of the distinction.

The per se principle of the movement of the wheel, i.e. the principle in virtue of which the wheel moves, is the natural matter out of which it has been fashioned, be it wood, iron or anything like that. It is due to this matter that the wheel moves, for it is in the matter that there is an innate tendency which is the per se principle of movement. The circularity which is imposed on the matter of the wheel, does not contribute directly to the movement itself, for the movement owes itself directly to that innate tendency found in the matter. What the circularity does, is to remove the obstacles which impede the movement's ease and rapidity. John of S. Thomas explains its contribution in the following manner. "For the round figure removes certain impediments to the swiftness of the movement which are in the square figure; for the round has its parts more united and hence better disposed to cut through the air than the square, it does not, however, furnish the intrinsic principle of such a movement which is gravity, but (rather) a certain condition or mode required in the mobile parts in order that it might move more easily." (134) But because it does contribute to the wheel's movement in some manner,

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134. J. a. S. Thoma, ibid, a24-35: "Figura enim rotunda tollit aliqua "impedimenta, quae sunt in quadrata, ad velocitatem motus; ro- "tundum enim habet partes magis unitas et consequenter melius "dispositas ad scindendum aerem quam quadratum, non tamen dat "principium intrinsecum talis motus, quod est gravitas, sed con- "ditionem aliquam seu modum requisitum in partibus mobilibus ut "facilius moveatur."

circularity is a principle of that movement. Since its contribution is merely the removal of obstacles to the movement's swiftness and facility, it is only a per accidens principle of the movement. It is a principle per accidens ex parte effectus, because it affects the effect of the intrinsic principle, namely movement, by removing the impediments to the swiftness and facility of the movement. (155) Therefore the artificial qua artificial has not within itself a per se principle of movement.

Second, Art as a Principle of Movement.

That certain arts, such as that of dancing, that of playing the harp, are intrinsic principles of movement - - - I distinguish :

Are principles of the movement itself - - - I deny.

Are principles of the skillfulness of the movement - - - - - - - - I concede.

Explanation.

It is true that the art of dancing and of playing the harp does influence the movements of the dancer and the harpist. To deny this would be to deny the very evident supremacy of skillfulness over unskillfulness and it is art that confers this skillfulness. But this admission does not at all necessitate our seeing art as the principle of the movement enbailed in art's work. What it does force us to admit is the facility, the skill of which art is the principle. The fact that a dance or a musical recital can be either skillful or not, does show that the movements necessary for either of these performances are not dependent upon art. For if these movements were, and since art is the cause of skillfulness, there could never be any

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155. "Sciendum autem est, quod aliquid potest dici causa per accidens alterius dupliciter. ---- Alio modo ex parte effectus; "ut scilicet aliquid dicatur causa per accidens alicuius quod "accidit ei quod est effectus per se. Quod quidem potest esse "tripliciter. Uno modo, quia habet ordinem necessarium ad "effectum, sicut remotio impedimenti habet ordinem necessarium "ad effectum. Unde remotio prohibens dicitur movens per accidens;" St Thomas, V Metm., lect. 5, n. 769.

unskilliful performance. The truth of the matter is that the movements themselves proceed from a principle independent of art; they proceed from man's vital principle. Art merely refines these movements. It is merely a per accidens principle of the movement in the same way as circularity is the principle of the wheel's movement, i.e. ex parte effectus.

The full meaning of this 'internal principle' that is the peculiar feature of natural things.

It is at this point in the development of the definition of nature that St Thomas introduces in his commentary an objection which serves admirably both in bringing out the complete meaning of the 'internal principle' of movement and repose, and presenting us with a truth of great importance.

In opposition to the conclusion reached by Aristotle, that natural things have within themselves a principle of movement and repose, while artificial things depend for movement on a principle that is external, St Thomas offers the following objection.

> "But this does not seem true, namely that in any "change of natural things, the principle of the "change is in that which is changed. For in alter- "ation and in the generation of simple bodies, the "total principle of the change seems to be from an "external agent: for instance when water becomes "warm or when air becomes fire, the principle of the "change is from an exterior agent." (136)

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136. "Sed videtur hoc non esse verum quod secundum quamlibet muta- "tionem rerum naturalium, principium motus sit in se quod mo- "vetur. In alterationibus enim et in generationibus simplicium "corporum, totum principium motus videtur esse ab extrinseco "agente: puta cum aqua calefit, vel aer in ignem convertitur, "principium mutationis est ab exteriori agente." II Phys., lect. 1, n. 5.

The objection tends to destroy Aristotle's conclusion by pointing out that there are some cases of change in which the natural thing is similar to the artificial, i.e. the principle of its movement is extrinsic. Take the case of an alteration, which Aristotle insists proceeds from an internal principle. (157) When water becomes hot, it is not the water that is the principle of the heat, rather some external principle like fire. Again, in the case of the generation of the elements. The movement of generation is a passage from non-being to being, absolutely speaking, for it involves the passing away of one substance and the coming to be of a new substance. Surely no one can claim that the principle of this change is in the thing changed. These two movements, both of them proper to natural things, have as their principle something extrinsic to the thing changed. This definitely destroys the universality of Aristotle's assertion that all natural things have within themselves a principle of movement. More importantly, as a result of this, the distinction between the artificial and the natural is invalid.

To justify Aristotle's concept of the distinction between the natural and the artificial, St Thomas offers two solutions to the objection. The first he borrows from others whom he identifies merely

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157. II Physics, c i, 192b15.

as "certain ones". (158), the second is his own. The first starts with the assumption that "principle" as used by Aristotle has only an active sense. With this as a premise it attempts to see in the natural being that undergoes an alteration or a substantial change, the presence of an active principle of these movements :

> "Certain ones say that even in changes of this type "the active principle of the change is in that which "is changed, not indeed a perfect principle, but an "imperfect one which helps the action of the external "agent. For they say that there is in matter a certain "beginning of form, which they say is privation, which "is the third principle of nature; and from this in- "trinsic principle generations and alterations of "simple bodies are said to be natural." (159)

The text from St Thomas clearly indicates that the proponents of this solution started with the assumption that when Aristotle spoke of an "intrinsic principle" of movement, he had in mind an active principle. This forced them to endow privation with a character that is in opposition to its real self. By identifying this "beginning of form" with privation they distorted the proper significance of privation, making it appear as something positive,

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158. II Physicorum, lect. 1, n. 3.

159. "Dicunt ergo quidam quod etiam in huiusmodi mutationibus, "principium activum motus est in eo quod movetur; non quidem "perfectum, sed imperfectum, quod coadiuvat actionem exterioris "agentis. Dicunt enim quod in materia est quaedam inchoatio "formae, quam dicunt esse privationem, quae est tertium prin- "cipium naturae; et ab hoc principio intrinseco generationes "et alterationes corporum simplicium naturales dicuntur."ibid.

whereas in reality it is something negative. (140) Actually this "beginning of form" is nothing more than the appetite of matter to possess a form of which it is deprived. (141) It is true that the existence of this appetite of matter for form necessarily involves the presence of privation (142), yet privation remains a negation. Whatever positiveness is attributed to the appetite of matter for form, is imputed to it in virtue of matter's capacity to be informed. Privation contributes only the negation of form's presence in matter. Hence the attempt to find in the being which is altered or

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140. J. a S. Thoma, Curs. Phil., T. II, p. 97a14-23: "Supponendum "est privationem in communi loquendo importare carentiam ali- "cuius formae in subjecto apto seu capaci formae. Per quod "distinguitur a simplici negatione, quae dicit carentiam "formae absolute sine capacitate subjecti ad ipsam, sicut "lapis habet negationem visus, non privationem, animal autem "caecum dicitur habere privationem visus."

141. "Nihil igitur est aliud materiam appetere formam, quam eam "ordinari ad formam ut potentia ad actum." St Thomas, I Phy., lect. 15, n. 10.

142. The inseparable connection between matter's appetite and privation is overlooked by many modern scholastics. They are inclined to attribute, without distinction, a purely accidental role to privation as a principle in the order of "esse". Actually privation is essential to the constitution of 'ens mobile' both in the order of "esse" and "fieri". St Albert (Comm. in libros Physicorum, Lib. I,) points out that it is due to privation's presence in matter that the latter is a constitutive principle of mobile being: "privatio est quaedam ratio materiae per quam subiicitur motui.", and "gratia illius privationis quae immixta est materiae quod materia subiicitur motui et mutationi." (I Phys., lib. I, p. 64-65).

generated, an active principle through the medium of privation, is doomed to failure. What is called the "beginning of form" is nothing other than matter's appetite and nothing that pertains to matter is active.

St Thomas manifests the insufficiency of this attempt in another way. Without going into the discussion of the contradiction implied in attributing a positive character to privation, he merely shows that, even accepting the claim of those who put forth this solution, it still cannot be conceived as an active principle. The absolutely necessary condition for an active principle is that it be in act. (143) The "beginning of form", since it is nothing more than an aptitude to act, is not an act and hence cannot function as an active principle. (144) St Thomas' approach in criticising this solution gives him an admirable opportunity to make a most important observation relative to the character of the "principle" under discussion. Because of the importance of this developement we will quote the text first.

> "And moreover, even if it were a complete form, it "would not act on its own subject by altering it: "because form does not act but the composite; which

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143. "quia, cum nihil agat nisi secundum quod est in actu," II Phy., lect. 1, n. 5, par. 5.

144. "praedicta inchoatio formae, cum non sit actus, sed aptitudo "ad actum, non potest esse principium activum." ibid.

"cannot alter itself unless there be in it two parts,
"one which is the altering and the other the altered."(145)

St Thomas assumes that this "beginning of form" has all the necessary qualifications for acting as an active principle. He now proceeds to show the insufficiency of interpreting Aristotle's 'principle' in a purely active sense. Granting that this "beginning of form" is an active principle, it could not act on its own subject by altering it. Form is not a principle which acts but a principle by which something else acts. If, then, there is to be any change, it will be necessary that the subject act. It is here he shows that unless one can interpret 'principle' in a passive sense also, there will be no use defending or seeking to establish the presence of an active principle in natural beings. Having determined that it is the composite which moves in the alteration, St Thomas goes on to prove the need for a corresponding passive principle in the subject, if this latter is to change. The composite is going to act upon itself. But this is possible only by distinguishing in the composite two parts, one active by which the subject will alter, the other passive in virtue of which the same is alterable. If there is no passive principle, it is impossible that the composite change, since there is

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145. "Et praeterea, etiam si esset forma completa, non ageret in "suum subjectum alterando ipsum; quia forma non agit sed com- "positum; quod non potest seipsum alterare, nisi sint in eo "duae partes, quarum una sit alterans et alia alterata." ibid.

nothing in it to be changed. Since Aristotle, when speaking of natural things, maintained that they had an internal principle of principle their movement and rest, and since without an internal passive, these natural beings could not change, one must conclude that the principle for Aristotle had both senses, active and passive.

Having proven the error of attempting to designate the "beginning of form" as an active principle of change and having shown the inadequacy of interpreting the principle in only an active sense, St Thomas is now prepared to give his own solution to the objection. (146) It is this : in certain changes the principle of the change is extrinsic.

> "And hence it must be said that the principle of move-
> "ment is in natural things according to the mode in
> "which movement is proper to them. In those to which
> "it is proper to move, there is an active principle of
> "movement; in those to which it is proper to be moved,
> "there is a passive principle, which is matter." (147)

In virtue of what he had just established about the need of a passive principle in the changeable being, St Thomas now is in possession of the true solution of the difficulty. According

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146. See p.

147. "Et ideo dicendum est quod in rebus naturalibus eo modo
"est principium motus, quo eis motus convenit. Quibus ergo
"convenit movere, est in eis principium activum motus; qui-
"bus autem convenit moveri, est in eis principium passivum,
"quod est materia." II Phys., lect. 1, n. 4.

to Aristotle's idea it is necessary that the principle of movement be intrinsic, if movement is to be natural. But this does not force us to insist that both the active and the passive principle be internal. All that is required is that at least one principle be intrinsic. This is sufficiently evident from the following. It is proper to some to move, to some to be moved. In either case the absolute requirement for natural movement is the presence of an internal principle which corresponds to the type of movement proper to the thing. If the being is endowed with a capacity to be moved, without having any aptitude to move, then one cannot expect any other principle than a passive one. If the being has an aptitude to move, there must be present in it an active principle. In the light of this the movements which are alteration and generation do proceed from an internal passive principle, though the active principle of the movements is extrinsic. In this way the distinction between the natural and the artificial is saved.

Having escaped the danger of confusing the natural with the artificial, St Thomas must now avoid the danger of making the artificial appear natural. To escape the first danger he indicated that the presence of a passive principle of change within the being sufficed to establish the naturalness of the movement. But it is precisely this reason which tends to confuse the artificial with the natural. If the presence of a passive principle of change warrants calling a movement natural, then the artificial's movement is natural.

Admittedly the active principle of the artificial is external. But the passive principle is not. It is intrinsic to the matter or subject of art. Unless there was in the matter or subject of art a passive principle of movement, there would be no work of art. (148) Now, since all that is required for a natural movement and consequently for a natural thing (natural movement is an indisputable sign of the natural thing), is the presence of an internal principle of movement, active or passive, then the artificial is natural.

In response to this St Thomas undertakes to explain under what conditions an intrinsic principle (passive) can be called the principle of a natural movement.

> "which principle (matter) in so far as it has a natural "potency to such a form and movement, makes the movement " natural. And because of this the making of artificial "things is not natural: because, though there is a "material principle in that which is made, it (this "material principle) does not have a natural potency to

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148. "Oportet namque in materia qualibet esse aptitudinem ad for- "mam. Non enim quodlibet artificiatum potest fieri ex qua- "libet materia, sed ex determinata. Sicut serra non fit ex "lana, sed ex ferro. Ipsa ergo aptitudo ad formam artifi- "ciati, quae est in materia, iam est aliqua pars artificiati, "quae est in materia; quia sine aptitudine artificiatum esse "non potest. Sicut serra non potest esse sine duritie, per "quam ferrum est ordinatum ad formam serrae." St Thomas, VII Meta., lect. 8, n. 1457.

"such a form." (149)

That a passive principle be the principle of a natural movement, it is not only necessary that it be intrinsic, but also that it have a natural potency or aptitude to such a form and movement. It is here that the matter of the artificial fails. It has no natural potency or aptitude to the artificial form or movement. To fully understand this we must first consider the meaning of the phrase 'natural potency or aptitude'. It should be quite clear from all that has been said about natural things and the principle of their movement that the word 'natural' signifies intrinsic. Hence a natural potency or aptitude is one that is intrinsic, i.e. it is a fitness which is the result of internal principles. St Thomas defines it as follows : "a natural appetite is nothing more than an ordination of certain things to their end according to their nature". (150) With this notion in mind we can examine the matter of the artificial and see if there is present an ordination, by reason of the nature, to this end.

We must concede that wood or iron or any other matter

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149. "Quod quidem principium, inquantum habet potentiam naturalem ad talem formam et motum, facit esse motum naturalem. "Et propter hoc factiones rerum artificialium non sunt "naturales: quia licet principium materiale sit in eo quod "fit, non tamen habet potentiam naturalem ad talem formam. II Phys., lect. 1, n. 4.

150. "Nihil est aliud appetitus naturalis quam ordinatio aliquorum "secundum proprium naturam in suum finem." I Phys., lect.15,n.19.

used by the artist does possess a certain fitness for artificial forms. Otherwise, as the objection states, there would be no such thing as the artificial. However, this fitness for the artificial form is not natural to the wood, or the iron or the other matter, for there is not found in the matter an intrinsic ordination to the artificial form. The matter of wood (151) has a natural aptitude to substantial forms other than that of wood. Its nature is potency and is ordered to these other substantial forms as potency to act. By reason of its formal constitutive principle, the form of wood, the composite has a natural tendency to move downward. But to neither of these principles can there be traced an intrinsic fitness for that purely accidental form which is artificial. It cannot be traced to the material substantial principle, for this, being substantial, has an order to those forms which are substantial. Nor can it be traced to the formal substantial principle, for were there such a natural ordination to the artificial form on the part of the natural form of wood, the composite would be able to be moved by itself to produce such a form. (152) Plainly this is not the case. Therefore, since

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151. We use the example of wood as representative of the class of material used in artificial things.

152. "Sed pars dupliciter invenitur in materia. Quandoque quidem "ita, quod per eam materia potest moveri a seipsa per partem "formae in ea existentem. Quandoque vero non. Sicut in cor- "pore humano, quod est materia sanationis, inest virtus ac- "tiva, per quam corpus potest sanare seipsum. In lapidibus "autem et in lignis non est aliqua virtus activa, per quam "possit moveri materia ad formam domus." S. Thomas, VII Metm., lect. 8, n. 1438.

this fitness of matter for the artificial form is not reducible to the nature of matter, it is not a natural fitness or aptitude. The matter of the artificial, then, is not the intrinsic passive principle of the movement by which the artificial thing is produced and consequently the artificial is not natural. Actually the potency or aptitude of certain matter for artificial forms arises from the presence of some quality in the matter, such as hardness, i.e. a sufficient firmness which makes a matter a suitable base for the artist to work on. It is a quality of this sort that makes wood and other such things apt for artificial forms. As St Thomas says : "Just as a saw cannot be without hardness, accordingly iron is ordered to the form of saw". (153)

After explaining the essential feature of that intrinsic passive principle which is a principle of natural movement, St Thomas now proceeds to show certain consequences of the fact that principle has both an active and a passive sense.

> "And so even the local movement of the celestial bodies "is natural, although it is from a separated mover, in "so far as there is in the celestial body itself a "natural potency to such a movement." (154)

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153. "Sicut serra non potest esse sine duritie, per quam ferrum "est ordinatum ad formam serrae." ibid, n. 1457.

154. "Et sic etiam motus localis corporum caelestium est naturalis, "licet sit a motore separato, inquantum in ipso corpore caeli "est potentia naturalis ad talem motum." II Phys., lect.1, n.4.

Since the celestial body, thanks to the presence in it of a passive principle, has a natural potency to local movement, the field of natural things must be broadened so as to include such things in the study of natural things. We find this same doctrine in the Summa Contra Gentiles, where St Thomas explicitly traces the right of the celestial body to the designation of natural to the presence of a passive principle by reason of which that body has an aptitude for such movement. (155) This position of St Thomas on the naturalness of the movement of the heavenly bodies, though we find in them only a passive principle, is an important key to the problem of evolution.

But the distinction between the active and passive sense of the principle of movement not only broadens the field of study so that it concludes the study of the celestial bodies and the generation of simple bodies, a fact explicitly mentioned by St Thomas in the Contra Gentiles. (156) By reason of the distinction one must also

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155. "Non tamen est negandum motum caelestem esse naturalem. Dicitur "enim esse motus aliquis naturalis, non solum propter activum "principium sed etiam propter passivum: sicut patet in generationem simplicium corporum.---Sic ergo motus caelestis corporis, quantum ad activum principium, non est naturalis, magis "voluntarius et intellectualis; quantum ad principium passivum "est naturalis, nam corpus caeleste habet naturalem aptitudinem "ad talem motum." III Contra Gentiles, c 23.

156. "sicut patet in generationem simplicium corporum. Quae quidem "non potest dici naturalis ratione principii activi; movetur "enim id naturaliter a principio activo cuius principium activum est intra, natura enim est principium motus in eo in quo "est; principium autem activum in generationem simplicium corporum est extra. Non est igitur naturalis ratione principii "activi sed solum ratione principii passivi quod est materia, "cui inest naturalis appetitus ad formam naturalem." III Contra Gentiles, c 23 (par. 8)

take into account the upward and downward movement of bodies. These movements likewise are natural since such bodies have an intrinsic aptitude for these types of movement. Hence they have within themselves an internal principle.

> "In the heavy and light bodies there is also a formal "principle of their movement (but a formal principle "of this sort cannot be called an active potency to "which that motion pertains, but it is placed under "the passive potency: for gravity in the earth is not "a principle that it move, but rather that it be moved); "because just as others accidents follow the substantial "form, so too place and consequently to be moved to "place: not that the natural form is the motor but the "motor is the generator which gives such a form upon "which follows such a motion." (157)

The body which is heavy or light moves either downward or upward in virtue of its substantial form, for place and motion to place are, like all accidents, consequences of the substantial form. Since this is so, it follows that the heavy and the light have within themselves a formal principle of their motion and so are natural things.

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157. "In corporibus vero gravibus et levibus est principium formale sui motus (sed huius principium formale non potest "dici potentia activa, ad quam pertinet motus iste, sed "comprehenditur sub potentia passiva: gravitas enim in terra "non est principium ut moveat, sed magis ut moveatur): quia "sicut alia accidentia consequuntur formam substantialem, "ita et locus, et per consequens moveri ad locum: non tamen "ita quod forma naturalis sit motor, sed motor est generans, "quod dat talem formam, ad quam talis motus consequitur." St Thomas, II Phys., lect. 1, n. 4.

Is the formal principle of the heavy and light bodies an active or passive principle ?

There is a serious difficulty with regard to the formal principle in virtue of which the heavy and light bodies move. In the Physics St Thomas tells us that this formal principle cannot be called an active principle but must be placed in the category of passive principle. (158) This seems to contradict what he says of this principle in the Contra Gentiles. There he states that "the nature therefore of the heavy and the light body is the active principle of their motion." (159) Certainly the designation of one and the same principle as the active and passive principle of one and the same movement is a contradiction.

Were St Thomas really saying that under the same aspect the intrinsic principle of the movement of the heavy and the light bodies was an active and a passive principle of the movement, then definitely we would be face to face with a contradiction. But this is far from being true. St Thomas never claimed such a contradictory character for the principle under discussion. What he does say is

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158. "In corporibus vero gravibus et levibus est principium for-
"male sui motus (sed huiusmodi principium formale non potest
"dici potentia activa, ad quam pertinet motus iste, sed com-
"prehenditur sub potentia passiva:-) II Phys., lect. 1, n. 4.

159. "Natura igitur corporis gravis et levis est principium activum
"motus eius: natura vero corporis caelestis est motus ipsius
"passivum principium." III Contra Gentiles, c 23.

that the principle is an active one under one aspect, and a passive one under another aspect. Take the statement in the Contra Gentiles that "the nature of the heavy and light body therefore is the active principle of their movements:" The sense of the words "active principle" here is not efficiency or an efficient principle. He specifically denies any efficiency to this intrinsic formal principle. For in the very same chapter (160) St Thomas states that "heavy and light bodies are moved by the generator and by the one removing impediments, as is proved in VIII Physics: for it cannot be that the form in them be moving and the matter moved, for nothing is moved save a body." (161) Its meaning, then, must be something other than efficient principle. Its precise signification is easily determined by a study of the context. St Thomas calls the formal intrinsic principle of heavy and light bodies an active principle in opposition to the internal principle of the celestial body, which is called passive. And the reason behind these designations serves to impress upon us the meaning which he attached to the words active and passive here in this chapter. These are his words :

> "For anything is moved and suffers according as it is "in potency, it acts and moves according as it is in "act. The celestial body, however, according to its

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160. III Contra Gentiles, c 23.

161. "Corpora gravia et levia moventur a generante et removente pro- "hibens, ut probatur in VIII Physicorum: non enim potest esse "quod forma sit in eis movens et materia mota, nihil enim mo- "vetur nisi corpus." ibid, (par. 4)

> "substance, is as in potency, having itself indifferent-
> "ly to any place, just as prime matter is to any form,
> "as has been said. It is other-however, with the heavy
> "and light body, which, considered in their own nature,
> "is not indifferent to every place but its place is
> "determined for it by reason of its form." (162)

Since efficiency is ruled out, the question of the opposition between the principle of the heavy and the light and the celestial body is not one of efficiency versus non-efficiency. Rather it is a question of being indeterminate versus being determined. This is what St Thomas means when he tells us that the celestial body by reason of its nature is purely indeterminate or potential to place, whereas the light and heavy body are determined to place. Hence when he calls the form of the latter an active principle, he means a determined principle. When he calls the principle of the celestial body a passive one, he means that it is undetermined. Therefore the form of the light and heavy body is active, not in the sense of being the efficient principle of the movement, but merely in the sense of being a determined principle as opposed to an indetermined one.

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162. "Patitur enim et movetur unumquodque secundum quod est in "potentia, agit vero et movet secundum quod est in actu. Cor-"pus autem caeleste, secundum suam substantiam consideratum, "invenitur ut in potentia indifferenter se habens ad quod-"libet ubi, sicut materia prima ad quamlibet formam, sicut "praedictum est. Aliter autem est de corpore gravi et levi "quod, in sua natura consideratum, non est indifferens ad "omnem locum, sed ex suae naturae ratione formae determinatur "sibi locus." ibid, (par. 9)

When in the Physics (163) St Thomas speaks of this principle of the movement of the heavy and the light body as a passive principle, he is using these words in a sense foreign to that which we have just exposed. Let us consult the Metaphysics (164) where St Thomas is more explicit than he is in the Physics.

> "For there is a certain principle of motion or change "in that which is changed, namely matter itself: or "some formal principle consequent upon which motion "follows, just as consequent upon the form of heavy "or light there follows a movement up or down. But a "principle of this type cannot be said about an active "potency to which that motion pertains. For all that "is moved, is moved by another. Nor does anything move "itself save through parts, in so far as one part of "it moves another, as is proved in the VIII Physics. "A potency therefore according as it is the principle "of movement in that in which it is, is not placed "under the active potency but rather under the passive. "Gravity in the earth is not a principle that it move "but rather that it be moved. The active potency hence "must be in one other than that which is moved, just "as the power to build is not in the thing built but "in the builder." (165)

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163. II Physics, lect. 1, n. 4.

164. V Meta., lect. 14.

165. "Est enim quoddam principium motus vel mutationis in eo quod "mutatur, ipsa scilicet materia: vel aliquod principium for- "male, ad quod consequitur motus, sicut ad formam gravis vel "levis sequitur motus sursum et deorsum. Sed huiusmodi prin- "cipium non potest dici de potentia activa, ad quam pertinet "ille motus. Omne quod movetur, ab alio movetur. Nequa "aliquid movet seipsum nisi per partes, inquantum pars eius "movet aliam, ut probatur in VIII Physicorum. Potentia ergo "secundum quod est principium motus in eo in quo est, non "comprehenditur sub potentia activa sed magis sub passiva. "Gravitas in terra non est principium ut moveat sed magis ut "moveatur. Potentia igitur activa motus oportet quod sit in "alio ab eo quod movetur, sicut aedificativa potestas non est "in aedificato sed magis in aedificante." ibid, n. 955.

In this text we see that the principle which is called a formal principle of movement, is one that exists within the thing that is moved and influences the movement itself by imprinting its character on the movement. That is why St Thomas says that those things which possess the form of heavy or light, when they are moved, are moved either up or down. But the fact that this principle is in the thing moved, makes it necessary to say that it is not an active principle. The active potency is not within the thing moved but outside it, because whatever is moved, is moved by something other than itself. Hence, not being an active principle, it can only be placed in the category of the passive. The role which St Thomas assigns to what he designates as "an active potency", is that it moves the moveable. There can be no doubt, then, that this active potency is the efficient principle of movement. Now the reason for excluding the formal principle of movement from the class of active potencies is because, existing within the thing moved, it is not the efficient principle, which is always in a subject other than that which is moved. The reason for including it in the category of passive potency is because it is a non-efficient principle of movement. The opposition between the active and passive potencies as used in this text, is (not) the opposition between a principle according to which a thing moves and a principle according to which a thing is moved. The intrinsicness of the principle is merely a necessary requisite, since whatever is moved, is moved

reaction. (166) On the other hand, those principles which are not active in the sense of determinate, cannot suffer violence. Being indeterminate they have a natural aptitude to contrary movements. Note that we are here speaking of contrary movements, not contradictory movements. The difference is important. A contrary movement is between two positive termini, mutually exclusive, e.g. up and down. A contradictory movement is between a positive terminus and its simple negation, viz being and non-being. An example of a body which does not possess a natural aptitude to contrary movements is the heavy body. Because its formal principle is determined, it is determined to move downward. Lacking a natural potentiality to the contrary movement, i.e. the movement upward, by reason of the determined character of its form, it can only be moved in an upward direction violently. On the other hand, the

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166. St Thomas seems to hold the opposite, for speaking of the aptitude of the heavy body he says : "There is present in the heavy and light bodies a natural aptitude to the movement contrary to that by which they are moved by us, and so they are moved through violence by us." (III Contra Gentiles, c 23, par. 9). Actually St Thomas is not proposing a position opposed to ours. When he says that the heavy and the light bodies have a natural aptitude to a contrary movement, he means that since these bodies are determined in one direction by reason of their intrinsic form, they alone admit a movement that is opposed to their natural movement. For were they purely indeterminate with regard to the movement's direction, there could be no natural aptitude which would make a movement contrary to their intrinsic tendency. This is not the same as saying that such beings have a natural aptitude whereby they move naturally in any direction whatever.

celestial body, because it is purely indeterminate to place, has a natural aptitude to any place, and hence in its movement from place to place does in no way suffer violence.

Ross and the 'Search for the Definition of Nature'.

Before leaving this section, it would be well to call attention to a remark made by Ross anent Physics 192b9-21. (167) In his commentary on these lines Ross has the following to say.

> "Some things, says Aristotle, are by nature, others as "the result of other causes (i.e. of "and as T. 35.6 says). We expect him "therefore to point to a class of things which owe their " being to nature, in distinction from others which owe "their being to other causes. But he does not in fact "do this. What he points to is a class of things which "owe, not their being but their movement and rest, to "an internal principle (b13-14), while others do not "owetheir movement and rest to such a principle but, it "is implied, to a principle external to the moving or "resting thing (b18-19). To this extent the first words "of the chapter are misleading; but Aristotle, does "establish a distinction between two classes of things, "one consisting of things which as such have an internal "principle of movement (i.e. animals and their parts, "plants, and the four simple bodies earth, water, air, "fire), the other things such as beds and clothes which "as such have no internal principle, though in virtue "of the simple bodies of which they are made they have "such a principle (b17-20)." (168)

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167. These lines represent what we have designated as the "search for the definition of nature."

168. Op. cit., 'Commentary (Bk II, ch. 1) p. 499-500.

Ross' statement-"To this extent the first words of the chapter are misleading" - is based on two things. The first is that Aristotle fails to do what was expected of him, namely to point out a class of things which owe their being to nature in distinction from which owe their being to other causes. The second is that instead of doing what was expected, he points out a class of beings that owe, not their being but their movement and rest, to an internal principle.

An examination of the text of Aristotle shows that these two reasons are an insufficient basis for Ross' complaint about the misleading character of the first words of the chapter. Let us first examine the charge that Aristotle failed to do what he led us to believe he would do. Ross tells us that in consequence of the division of things that exist into things which exist by nature and things that exist by other causes, one is naturally led to expect that Aristotle would point out the things that belong to both classes. "But he does not in fact do this." One wonders what exactly Ross expected of Aristotle. A reading of the text shows that Aristotle explicitly pointed out those that belong to the class of things caused by nature and in obliquo those which belong to the class of things not caused by nature (these latter are later identified in b17), for immediately upon noting the division of things, the Stagirite mentions the things which are due to nature: "By nature the animals and their parts exist, and the plants, and the simple bodies (earth, fire, air, water) - for we say that these

and the like exist by nature." (169) It appears logical to suppose that Ross expected to find in this place not merely a mention of certain beings as caused by nature but a proof that all such beings were caused by nature. No other interpretation of Ross' disappointment with Aristotle is defensible. (170) Now if Ross actually expected Aristotle to prove that such things as animals and their parts, plants, and simple bodies are caused by nature, then we come face to face with a curious situation. Ross is expecting Aristotle to prove something that is per se evident, for, as Aristotle tells us, "it is obvious that there are many things of this kind," (171) i.e. things caused by nature. One wonders how Ross could have expected the Stagirite to prove that nature is the cause of animals and their parts, etc., in the face of his expressed opinion "That nature exists, it would be absurd to try to prove;" (172) Certainly if Ross was misled by the first lines of this chapter, he was not misled by Aristotle. Aristotle never had any intention of attempting to prove the obvious.

The other cause of Ross' disappointment is that in place

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169. II Physics, c i, 192b9-11.

170. There is no justification for Ross' remark if one assumes it to mean that Aristotle failed to name natural things. This is patently contradicted by the text.

171. II Physics, c i, 193a4.

172. Ibid, a5.

of a class of things which owe their being to nature, Aristotle points out a class of things which owe their movement and rest to an internal principle. This complaint is a consequence of the failure of which Ross accuses Aristotle. Naturally, if Aristotle failed to point out, the things caused by nature, then all that can be said of the following lines (b13-14) is that Aristotle is indicating a class which owes its movement and rest to an internal principle. Since the premise upon which this interpretation of lines b13-14 is based, is false, as we have already shown, then the interpretation is likewise false. In truth, as the text shows, (173) Aristotle is not pointing out a class of beings whose movement and rest depend on an internal principle. Rather he is indicating that the class of beings caused by nature possess a very distinctive feature with regard to movement and rest. He informs us that "All the things mentioned" (this can only refer to the things already mentioned: animals and their parts, plants, etc., which he has stated are caused by nature) possess an internal principle of movement and rest. To see in "Alls things mentioned" an unnamed group is at variance with the text. Likewise, to see in "All things mentioned" a group distinguishable only by the presence of an internal principle, is in disagreement with the text, for the group is also distinguished by the fact that it has nature as its cause. If

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173. ibid, 192b13-14.

one were to accept Ross' interpretation of b13-14, he would not be able to justify Aristotle's use of the internal principle of movement and rest as the element by which nature is defined. There is nothing, according to this interpretation, to prove that the things which possess this principle are caused by nature.

2) The Definition of Nature.

Text:

"-which seems to indicate that nature is a principle and
"a cause of being moved and of being at rest in that
"to which it belongs primarily, in virtue of itself
"and not in virtue of a concomitant attribute." (174)

Through his examination of the two species of existing things, the natural and the artificial, Aristotle has discovered in the natural a character peculiarly distinctive to it. Confident that he has attained to a true property or passion of the natural, he is now ready to define nature, the difference that constitutes the class of the natural.

"that nature is a principle and a cause etc." :

This is the classic definition of nature. The natural

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174. II Physics, c1, 192b23. In rendering this text into English, we have departed from the translation found in the Ross Edition of the Physics, where the Greek 'καὶ' is given the sense of 'or'. Following St Thomas we prefer the copulative sense of 'and'. This is more in conformity with the notion of nature in communi.

differs from the artificial in this that it has within itself the principle of movement and rest. This difference is so distinctively proper to the natural that it is its proper passion. Hence we can define nature, the cause, through this passion. Therefore nature is a source and a cause of being moved and of being at rest in that to which it belongs primarily, in virtue of itself and not in virtue of a concomitant attribute.

5) The Explanation of the Definition of Nature.

Text :

"I say 'not in virtue of a concomitant attribute', be-
"cause (for instance) a man who is a doctor might cure
"himself. Nevertheless it is not in so far as he is a
"patient that he possesses the art of medicine: it mere-
"ly has happened that the same man is doctor and patient-
"and that is why these attributes are not always found
"together. So it is with all other artificial products.
"None of them has in itself the source of its own pro-
"duction. But while in some cases (for instance houses
"and the other products of manual labour) that principle
"is in something else external to the thing, in others-
"those which may cause a change in themselves in virtue
"of a concomitant attribute-it lies in the things them-
"selves (but not in virtue of what they are). (175)

Because the definition of nature is so vital to the problem of selecting the method of demonstration for the science of natural things, Aristotle, wishing to make sure that its meaning is

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175. ibid, 192b24-32.

properly understood, explains the definition. As will be seen, in his explanation he concentrates his entire attention on the meaning of the phrase "not in virtue of a concomitant attribute". The remainder of the definition he leaves without comment. The extreme care with which he explains that phrase, was occasioned by the fact that certain arts seem at first glance to be similar to nature, i.e. they appear to be intrinsic principles of movement. This similarity he wanted to show, was superficial. These arts, e.g. medicine, were as unlike nature as the art of building, which is certainly an external principle of movement. The lack of comment on the other parts of the definition was undoubtedly due to the fact that for Aristotle they presented no difficulty. However, in the interest of making sure that this very important instrument is clearly and fully understood, we will expose the entire definition.

"nature is a principle or a cause" :

There were some, as St Thomas testifies in his commentary, (176) who were dissatisfied with Aristotle's definition of nature as a principle. They sought to give nature a more absolute value by replacing the notion of principle with that of power, saying that nature was a "vis insita in rebus". This definition of

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176. Commentarium in Libros Physicorum, Liber II, lect. 1, n. 5.

nature merits from St Thomas a scornful dismissal. He says that those who wish to define nature in this way must be laughed at. (177) The reason for this curt treatment is because to define nature as a "vis insita in rebus" is to so distort it as to make it unrecognisable. Nature is a connotative term, i.e. it suggest or indicates something else which is essential to its meaning. Being such, it cannot be expressed as something absolute, for the absolute signifies freedom from a relation to something else. To define nature, then, as a vis insita is to destroy its order to something, which order pertains to the very notion of nature. The connotative sense of nature and hence the aptness of the word 'principle' as its definientia is established by St Thomas through an argument based on the meaning of the word 'nature' in its origin. The word 'nature' is derived from the verb 'nasci' which means to be born. But only those are said to be born, which come to be by being joined with the generating principle. Hence 'nature' signifies the principle of generation. (178)

Nature, then, is to be defined as a principle. But why

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177. "Unde deridendi sunt qui volentes definitionem Aristotelis "corrigere, naturam per aliquid absolutum definire conati "sunt, dicentes quod natura est vis insita rebus vel ali- "quid huiusmodi." ibid, (par. 2)

178. "Ponitur autem in definitione naturae principium, quasi genus, "et non aliquid absolutum, quia nomen naturae importat habitu- "dinem principii. Quia enim nasci dicuntur ea quae generantur "coniuncta generanti, ut patet in plantis et animalibus, ideo "principium generationis vel motus natura nominatur." ibid.

does Aristotle employ the words, "and a cause", in the definition ? Why this double nomenclature ? If nature is a cause, and (179) every cause is a principle, why not omit any mention of it being a principle ? The very designation of nature as a cause will implicitly contain the assertion that it is also a principle. There are various reasons offerred to explain the use of the phrase "principle and cause". John of St Thomas lists four of them.

1. For purposes of being more explicit. (180)
2. To exclude privation from being called nature. (181)
3. In order to distinguish the two senses in which nature is to be accepted. (182)
4. For the purpose of emphasising the fact that the definition of nature is a definition of substantial nature. (183)

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179. "(causes are spoken of in an equal number of senses; for all "causes are beginnings.)" Meta. 1013a16.

180. J. a S. Thoma, Curs. Phil., T. II, Q. IX, Art. 1, p. 171B21-23: "aliqui solum maioris explicationis gratia."

181. ibid, B32-35: "alii quod addidit causam ad removendum priva-"tionem quae est principium motus, et non est natura, quia "non est causa."

182. ibid, B28-30: "D. Thomas, 2 Phys., lect. 1, dicit posi principium et causam ad designandum, quod in aliquibus natura est "principium passivum, in aliis activum et hoc designatur per "ly causam."

183. ibid, B31-33: "Possumus addere quod quia intendebat Philosophus definire naturam substantialem."

We shall examine each of these explanations and see whether they satisfactorily justify the incorporation of the words "principle and cause" into the definition of nature.

1) For purposes of being more explicit.

This explanation appears to be an extremely weak justification of the words "principle and cause". If Aristotle wanted to make explicit the fact that nature is a connotative term, the word "principle" alone would have been amply sufficient. This word clearly manifests the connotative character of nature in so far as it defines it in terms of a beginning. The addition of the word "cause", then, would be nothing more than an attempt to make obvious the obvious.

Again if the words "principle and cause" are employed to emphasize that nature is either a principle or a cause, then two meanings can be attached to the words. Either cause is used merely for the purpose of making explicit the character of nature as principle, or principle is utilized to underline the causal character of nature. This explanation is still inadequate. The use of the word "cause" to make explicit the notion of nature as a principle, or, on the other hand, the use of the word "principle" to make clear the notion of nature as a cause, are both doomed to failure. In both cases

the words used for purposes of clarification bring out a sense that is not 'ad rem'. The use of the word "cause" does not make explicit the character of principle, since "cause" introduces a note that is outside the notion of principle (a cause implies a certain influx into the being of the thing caused). (184) So too in the use of the word "principle" to make the meaning of cause more explicit. The notion of principle leaves untouched and hence unclarified the peculiar notion of cause (principle signifies the beginning in an order but not the very definite order of causality. (185)

In view of what has been said, this first explanation in no way explains the use of the words "principle and cause".

2) <u>In order to exclude privation from being called nature.</u>

This explanation reveals a reason for the introduction of the word "cause" into the definition. Were it not for the fact that privation, like matter and form, is a principle of movement, there would be no need for defining nature as a "principle and cause". It would have been sufficient to say that nature is a principle. But privation is a principle of movement. Unlike the other two princi-

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184. "hoc vero a nomen causa, importat influxum quendam ad esse "causati." St Thomas, V Meta., lect. 1, n. 761.

185. "Non hoc nomen Principium ordinem quendam importat." ibid.

ples, however, it is not a per se cause of movement. (186) Were one to define nature, then, merely as a principle, it would lead to the assumption that privation was also nature. Plainly it is not, since nature is a per se cause. Therefore the word "cause" is used by Aristotle to exclude the notion of privation as nature.

This opinion does put forth a good case for the use of the word "cause" in the definition. But there is something that is left unexplained. It is this. If Aristotle by the use of these words was intent on the exclusion of privation, why did he not omit the word "principle" and call nature merely a cause ? Such undoubtedly is what he considered nature to be. Its failure, then, to explain the use of "principle" makes this explanation unsatisfactory.

4) <u>For the purpose of emphasizing the fact that the definition of nature is the definition of substantial nature.</u> (187)

We have just seen that the second reason certainly

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186. "ergo subjectum et forma sunt per se causae et principia cu-"ius eius quod fit secundum naturam." St Thomas I Phys., lect. 13, n. 2.

"Est enim ibi considerare ipsum subjectum, quod est aliquid "positive, ex quo fit aliquid per se et non per accidens, ut "hoc quod est bonum et aurum, et est ibi considerare id quod "accidit ei, scilicet contrarietatem et privationem, ut im-"musicum et infiguratum.---;sed privatio vel contrarium est "principium per accidens, inquantum accidit subjecto;" ibid, n. 5.

187. Because the fourth explanation makes up for the defect found in the second, we invert the order to the extent of leaving the third opinion to the last.

offers a good explanation for the use of the word "cause" in the definition of nature. But it fails to offer any justification for the word "principle". In fact it proposes an excellent reason for the omission of that word and hence leaves us with our original problem. This brings us to the present opinion, which is John of St Thomas' own. Because he answers the question of the use of the words "principle and cause" so well, we think that it is worth quoting the text. Here is the reason John of St Thomas gives for the double nomenclature, "principle and cause".

> "We can also add that because the Philosopher intended "to define substantial nature, as will be established "from the fourth particle, it was necessary to signify "that it was a principle of movement, not in any fashion "whatever, but the first and radical and positively or- "dered to movement, hence he did not posit only princi- "ple, because this agrees also with privation, nor cause "only, for this agrees with the motive virtue or potency, "which is an accident, but he joined both in order that "it be understood that it must be a positive principle "causing movement, not as a potency or instrument of "operating, but as a principle, which is the root."(188)

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188. Curs. Phil., T. II, p. 171B30-172A2: "Addere etiam possumus, "quod quia intendebat Philosophus definire naturam substantia- "lem, ut ex quarta particula constabit, oportuit significare, "quod esset principium motus non quomodocumque, sed primum "seu radicale et positive ordinatum ad motum, ideo nec posuit "solum principium, quia hoc etiam convenit privationi, nec "solum causam, quia hoc etiam convenit virtuti seu potentiae "motivae, quae est accidens, sed utrumque coniunxit, ut in- "telligeretur, quod debet esse principium positivum causans "motum, non tamquam potentia seu instrumentum operandi, quod "est virtus, sed tamquam principium, quod est radix."

This reason does advance an adequate explanation for the presence of "principle and cause" in the definition of nature for it is in harmony with certain easily established facts. The first is that Aristotle intended to define substantial nature, or nature in the order of the substantial. This is verified not only by the fourth particle of the definition, to which John of St Thomas appeals, but also by the role Aristotle assigns to this nature which he is attempting to define. Of it he says : "Of things that exist, some exist by nature,". Hence his concept of nature is that it is a cause of things that exist. Such things are substances, for only the substance is said to exist. Since nature is their cause, it too must be substantial for there must be a proportion between the effect-things that exist-and the cause-nature-. The second fact is that Aristotle wanted to exclude privation from being considered as nature. This too is verified by the role he assigns to nature in the first lines of the second book. Nature there is called a cause and since privation is not a cause, it was his intention to exclude it from his notion of nature.

That the explanation is in harmony with these facts is very readily shown. The employment of the word "cause" would successfully exclude privation from being interpreted as nature. However this word alone would not guarantee that nature would be understood in a substantial sense. If nature were defined merely as a cause,

then one would not be wrong in understanding it as an accidental cause of movement. (189) Such a description fits the motive potency which is in the order of the accidental. Since the word "cause" used by itself has this ambiguity, Aristotle also makes use of the word "principle". For it was his intention to define nature in the order of substance and principle has the sense of radical, and so substantial.

This explanation by John of St Thomas reveals the necessity for defining nature in the way Aristotle does. To define it simply as a cause or as a principle will result in the admission of certain things which Aristotle most definitely wished not to be admitted, privation and the potencies of operation. If these are admitted, the consequences will be far reaching. If privation is admitted, then one must call into question the immediate obviousness of nature's causality. If, on the other hand, the motive potency is admitted to be nature, then one must call into question the fact that a proportion between the cause and the effect is demanded.

3) <u>In order to distinguish the two senses in which nature is to be accepted.</u>

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189. By accidental cause is not meant here a 'per accidens' cause but a 'per se' cause in the order of the accidental as opposed to the order of the substantial.

This is the explanation given by St Thomas in his commentary on the II Physics. (190) After exposing the reason for defining nature as a principle, he calls attention to the fact of the double nomenclature and explains it in the following manner.

> "It is, however, called a principle and a cause, in "order to point out that nature is not in the same "way the principle of all movement in that which is "moved, but in diverse ways." (191)

The implications contained in the introductory words of the chapter were quite obvious to St Thomas. Hence he passes over the explanations of "principle and cause" based on the exclusion of privation, the substantial character of nature, and concentrates on a totally different one. Since nature is both an active principle as well as a passive principle of movement, it was necessary that Aristotle find some way of expressing this twofold aspect in his definition. This was accomplished by using "principle" to denote the active sense of nature, and "cause" to signify the

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190. II Phys., lect. 1, n. 6.

191. "Dicitur autem principium et causa, ad designandum quod non "omnium motuum natura est eodem modo principium in eo quod "movetur, sed diversimode, ut dictum est." II Phys., lect. 1, n. 5.

passive sense of nature. (192)

There can be no doubt that St Thomas' explanation is important and consonant with the text itself. The importance of his interpretation of the words "principle and cause" is seen from the consequences that follow upon the distinction of nature as an active and a passive principle of movement. Thanks to the distinction of the active and passive senses of nature as a principle, the study of natural things is broadened so as to include the celestial bodies, the heavy and light bodies, both of which have within themselves a passive principle only. Its agreement with the text is proved by this that it supplies the answer to a problem created in the text. Aristotle makes a very definite statement about the presence of an

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192. The identification of "principle" as nature in the active sense and "cause" as nature in the passive sense is based on certain passages from St Thomas' commentary on the Physics. In I Physics, lect. 1, n. 8 St Thomas definitely identifies principle with the efficient cause: "Sic igitur per principia videtur intelligere causa movantes et agentes, in quibus maxime attenditur ordo processus cuiusdam; "For the use of "cause" as signifying the passive sense of nature we have, first, the identification of the formal cause with "cause" as distinguished from "principle": "per causas autem videtur intelligere causas formales et finales, a quibus maxime dependent res secundum suum esse et fieri:" (I Phys., lect. 1, n. 5), and, second, the classification of the formal cause as a passive potency of movement: "In corporibus vero gravibus "et levibus est principium formale sui motus (sed huiusmodi "principium formale non potest dici potentia activa, ad quam "pertinet motus iste, sed comprehenditur sub potentia pas-"siva:)" (II Phys., lect. 1, n. 4.

internal principle of movement in the thing that is altered. (193) Now there is no doubt that the active principle of such a type of movement as alteration is not within the thing changed but in something outside of it. His unequivocal insistence on this presence of an intrinsic principle of alteration can only be defended on the grounds that he understood nature to be an active and passive principle of movement.

Of the four possible explanations of the use of "principle and cause" in the definition of nature, two of them, that of St Thomas and that of John of St Thomas, offer adequate reasons for their use. There is no need of choosing between the two, for both are necessary for the complete understanding of the meaning of "principle and cause" in the definition of nature. Both bring to light important notions, as we have pointed out. The differences of the two explanations can perhaps be accounted for by the fact that in each case the author of the explanation directed his attention towards a particular prevailing error. Why did St Thomas and John of St Thomas take so limited a view and give us only a partial glimpse of the true meaning of "principle and cause" ? In the case of John of

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193. "Each of them has within itself a principle of movement and "of stationariness (in respect of place, or of growth and de- "crease or by way of alteration)." II Phys., c i, 192b15.

St Thomas it was simply that St Thomas had already dealt effectively with one meaning of the words. With St Thomas it was a question of refuting an interpretation of nature that did not take into account this, that nothing is moved, save what is potential or passive. The urgent need for correcting that misrepresentation of nature's character drew his attention away from the point which occasioned John of St Thomas' explanation. This latter lacked the urgency of the former for St Thomas, since the text of the Physics seemed to him sufficiently clear on the substantiality of nature. If this be so, one might ask why John of St Thomas bothered at all about bringing out the substantial character of nature through the use of "principle" ? Why was he not content to allow the text to speak for itself, as St Thomas did ? I believe that St Thomas' silence on this point was precisely the reason which impelled John of St Thomas to consider it. The fact that St Thomas speaks of only one meaning for the phrase might well lead others to suppose that "principle and cause" has but one explanation, namely active and passive. This could result in the errors which were treated above: (194) the conception of privation as nature, and of the active potency as nature.

"of being moved and of being at rest" :

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194. Cfr. p.

Nature is a principle and a cause of the movement and the rest of natural things. The importance of this particle of the definition of nature to the sciences of nature has already been noted. (195) There seems to be no special difficulty in defining nature as a principle of movement, for the natural thing, whose principle nature is, is marked by movement. Change is its most characteristic trait. But if nature is the principle of movement, would it not appear improper to designate it also as the principle of rest ? These two, movement and rest, are opposed to eanbother. In so far as a thing is in movement, it cannot be at rest, and, on the contrary, in so far as a thing is at rest, it cannot be in movement. How can nature be called the principle and cause of opposites ?

The rest, of which Aristotle calls nature the principle, does not signify simply a pure lack of movement, but a lack of movement by reason of the possession of a term. (196) In other words, this possessive rest does not signify a simple negation of movement but the terminus of movement, with nature as its principle. There is no impropriety in denominating nature as the principle of movement

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195. Cfr Chapter III, "Nature and Ens Mobile, a Substitution", pp.

196. J. a S. Thoma, Curs. Phil., T. II, Q. IX, Art. 1, p. 172a42-45: "Neque vero 'quietis' non intelligitur pura carentia motus, sed "carentia illius cum possessione termini."

and of possessive rest, for though there is a certain sense of contradictory opposition between the two (movement and rest cannot be predicated of the same subject, at the same time and under the same aspect), this opposition of contradiction does not flourish between them when considered by themselves. When we compare movement and possessive rest by themselves, the opposition found is that which exists between the 'via ad terminum' and the 'terminus'. This is in nowise an opposition of contradiction. Such an opposition no more excludes the two from having the same principle, than the opposition between means and end excludes these latter from being the objects of the same potency.

St Thomas, discussing nature as a principle and cause of movement and rest, gives as the reason for this double appellation the fact that "those, which are naturally moved to place, in similar manner or even more naturally rest in place." (197) The immediate consequent of this statement is that, for St Thomas, nature is more a principle of rest than of movement. Before examining his reason for such a conclusion, let us make it clear that, for St Thomas, nature remains a principle of both. The reason why St Thomas viewed rest as more natural than movement and therefore nature is

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197. "quia ea quae naturaliter moventur ad locum, similiter vel magis naturaliter in loco quiescunt." II Phys., lect. 1, n. 5.

more the principle of the latter than the former, is found in his De Potentia. (198) There, discussing the question of the perpetuity of the movement of the heavens, he says :

> "Since nature always tends determinately to one thing, "not having itself to many, it is impossible that any "nature incline towards movement for itself; because "of this that there is a certain difformity in any "movement, in so far as that which is moved, does not "have itself in the same manner; uniformity of the "mobile is in truth contrary to the ratio of movement. "Hence nature never inclines towards movement on "account of movement, but for something determined "which follows movement; just as the nature of the "heavy inclines towards rest in the middle; and con- "sequently it inclines towards the movement which is "downward, according as it is brought to such a place "by such a movement." (199)

Again, in this same article he remarks further :

> "For movement, by reason of its own ratio, rebels "against being placed as an end, because of this that "movement is tending to something other; hence it does "not possess the formality of end, but rather of that "which is to the end. The fact that movement is an "imperfect act, as is said in III de Anima (comm. 84 "and III Physica, comm. 45) attests also to this. The

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198. "Cum enim natura semper in unum tendat determinate, non se "habens ad multa, impossibile est quod aliqua natura incli "et ad motum secundum se ipsum; eo quod in quolibet motu dif- "formitas quaedam est in quantum non eodem modo se habet "quod movetur; uniformitas vero mobilis est contra motus ra- "tionem. Unde natura nunquam inclinat ad motum propter movere, "sed propter aliquid determinatum quod ex motu consequitur; si- "cut natura gravis inclinat ad quietem in medio, et per conse- "quens inclinat ad motum qui est deorsum, secundum quod tali "motu in telam locum pervenitur." op. cit.

"end, however, is the ultimate perfection." (200)

These two arguments are ample justification for St Thomas' position. Nature (not in the sense of being merely a principle of movement but in the sense of being the essence ordained to operation) is determinately one thing by reason of its formal principle. It is necessary, then, that there be a determined pattern to its operations, i.e. they tend to something definite, for the operation of a thing must be in accord with its manner of being, since the latter is the root of the former. Consequently, no nature, i.e. essence, can have for its end movement itself, since movement is, by reason of its very being, indefinite, indeterminate. From this it likewise follows that neither can nature in the sense of being a principle of movement and of rest, for both natures are identical quoad rem. The second argument establishes the same conclusion by manifesting the absolute repugnance contained in the idea of movement as an end. Such an idea is repugnant because movement is an imperfect act, always tending to the perfect act. To attempt to clothe it with the formality of end results in its destruction, since end is the ultimate perfection and

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200. "Motus enim ex ipsa sui ratione repugnat ne possit poni finis, "eo quod motus est in aliud tendens; unde non habet rationem "finis, sed magis eius quod est ad finem. Cui attestatur, quod "est actus imperfectus, ut dicitur in III De Anima (comm. 54, "et III Phys., comm. 45). Finis autem est ultima perfectio." op. cit.

movement is imperfection tending toward perfection.

This character of nature being more a principle of rest than of movement is of great importance with regard to the philosophy of change. The exponents of absolute mobilism, by their insistence on movement for the sake of movement, take away the very foundation of a philosophy of change. By insisting on change for change sake, they reduce nature to something as indeterminate as movement itself. For, if change is the end, then the nature which tends towards such an end must likewise be as indeterminate as that end, the relation of end, operation, and essence being what it is. The result of such a concept of nature is the destruction of a science of change, since under this aspect nature, by which one proves the passions of changeable being, becomes an indeterminate thing. Only by emphasizing the fact that nature regards movement as a means and hence is more the principle of rest than of movement, can one have a true philosophy of change.

Before leaving the exposition of nature as a principle and cause of movement and rest, there is the question of the extent of that double designation. Is "nature as the principle and cause of movement and of rest" to be understood of all things that have "nature"? In other words, each time we say that nature is a principle and cause of movement, must we admit at the same time that it is also the princi-

ple and cause of rest ? To insist on taking nature as, everywhere and in every instance, the principle and cause of movement and of rest involves us in a difficulty relative to the heavenly bodies, which, in Aristotle's opinion, were continually in motion. Nor can one escape from the difficulty by postulating another sense to nature in the case of the heavenly bodies. Such a postulate only succeeds in creating even greater problems. Such a postulate militates strongly against Aristotle's notion of the universality of his definition of nature and likewise against the character of the Physics as a general treatise which serves as the introduction to all the natural works. To escape such difficulties we are forced to hold that nature is not always the principle of both movement and rest.

But while this permits us to avoid such difficulties, it presents us with another. If the definition is not to be understood in the sense of being always and everywhere the principle and cause of movement and of rest, why did Aristotle use the conjunction "and" (καί)? Why did he not say "or" ? St Thomas gives an adequate explanation of the use of the word "and".

> "Nevertheless it must not be understood that in "everything that is moved, nature is also the prin- "ciple of it resting; because the celestial body "is indeed moved naturally, but does not come to "rest naturally; but this is stated just for this,

"because nature is not only the principle of movement "but also of rest." (201)

St Thomas recognises that nature is not always the principle of movement and of rest in the same thing. Sometimes nature is only the source of movement, as happens in the case of the celestial bodies. Despite this, he insists on the justice of the use of the conjunction "and". For nature, as defined in this place by Aristotle, is not nature as found in this or that thing, but nature in communi. Since nature is sometimes the principle of movement exclusively, sometimes the principle of both movement and rest, it is justifiable to designate nature in communi as principle of both. In line with this citation from St Thomas and because it brings out very explicitly the meaning of St Thomas, it will be well to call attention to the distinction made by John of St Thomas on this point. (202) He tells us that

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201. "Non tamen intelligendum est quod in quolibet quod movetur na- "turaliter, natura sit etiam principium quiescendi; quia corpus "coeleste naturaliter quidem movetur, sed non naturaliter qui- "escit: sed hoc pro tanto dicitur, quia non solum motus, sed e- "tiam quietis principium est." II Phys., lect. 1, n. 5.

202. Curs.Phil., T. II, Q. IX, Art. 1, p. 172af-b5: "Illa autem copu- "la "et" non intelligitur copulative, ita quod, ut aliquid sit na- "tura, oporteat utrinsque esse principium, sed intelligitur dis- "tributive distributione accommoda. In aliquibus enim natura est "principium motus, in aliis quietis, in aliis utriusque; solius "motus, ut in viventibus, in quibus, si omnis motus cessat, ces- "sat vita, solius quietis, ut in coelo empyreo et in toto terrae "globo, qui perpetuo quiescit, utriusque, ut gravia et levia, "quae aliquando quiescunt, aliquando moventur, eo quod in eis unum "ordinatur ad aliud, scilicet motus ad quietem. Quare tota natura "in communi est principium motus et quietis distributive. Non "autem ponitur disjunctive motus vel quietis, ne daretur intel- "ligi, quod ad naturam in communi seu ad totam collectionem na- "turae sufficeret alterum, scilicet sola quies vel solus motus. "Dum autem utrumque distributive intelligitur, omnia in tota "collectione naturae reperiri significatur."

the word "and" is not to be understood in a copulative sense, i.e. wherever nature is the principle of movement, there it is also the principle of rest. Nor on this account are we to substitute a conjunction which signifies a disjunction between the two, such as the word "or". To take 'nature, the principle of movement, of rest', either copulatively or disjunctively is to destroy the universality of the definition. If nature is the principle of movement and of rest in every case, then the definition is not applicable to nature as found in the heavenly bodies. If, however, nature is understood as the principle of either movement or rest, that nature which is the principle of both movement and rest, e.g. the nature of the heavy and the light, does not fall under this concept and the definition is no longer common. The only way to safeguard the universal character of the definition of nature is to employ the word "and" in a distributive sense, by accommodated distribution. Nature in communi, as representative of the total collection of nature, is defined as the principle of movement and of rest. This definition is accommodated to the various species of nature in so far as a specified type of nature is the principle of either one or the other or of both. "And", understood in this sense, guarantees the universality of nature's definition. This universality must be its character, if one is to continue to treat the Physics as the general introduction to the natural works of Aristotle.

"in that to which it belongs primarily,":

This qualifying phrase, denoting as it does the subject of nature, shows that nature is an intrinsic principle and a radical one. By signifying its intrinsicality the phrase differentiates nature from both art and violence. These latter are both external principles, art being subjected in the artist and not in the product of art, violence being subjected in the agent and not in the thing that undergoes the violence. They differ, however, from eachother in so far as violence is opposed to the natural appetite of the thing which suffers, while art is not opposed to the natural appetite in this sense that there exists in the matter of the artificial thing a certain aptitude for the artificial form. (203) The fact that nature is a principle in that to which it belongs primarily distinguishes it from other secondary principles of movement. Here it is to be taken in the sense of root or ultimate principle. The example, given by St Thomas on this point (204), helps bring out the signification of the word

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203. "Oportet namque in materia qualibet esse aptitudinem ad formam. "Non enim quodlibet artificiatum potest fieri ex qualibet ma- "teria, sed ex determinata. - - - Ipsa aptitudo ergo ad formam "artificiati quae est in materia, ipsa est aliqua pars artifi- "ciati quae est in materia; quia sine aptitudine artificiatum "esse non potest." St Thomas, VII Meta., lect. 6, n. 1457. For a discussion on why this aptitude is not truly a "natural passive principle" by reason of which the artificial might be denominated a work of nature, see pp.

204. "Unde quod animal moveatur deorsum, non est ex natura animalis "inquantum est animal, sed ex natura dominantis elementi." II Phys., lect. 1, n. 5.

"primarily". An animal tends to move downward but the primary reason for this type of movement is not the nature of animal qua animal, but the nature of the predominant element found in animal. In other words, the animal moves in this fashion, not because it is an animal, but because it is a heavy thing.

"in virtue of itself and not in virtue of a concomitant attribute":

As we have already mentioned at the very beginning of this section on 'The Explanation of the definition of nature' this present particle of the definition is the only one which Aristotle felt called upon to explain. The need for its exposition arose from the fact that certain arts seem very much like nature in so far as they appear to be internal principles of movement. Aristotle explicitly cites the case of the doctor healing himself. (205) To distinguish such arts from nature, Aristotle points out that, though the principle of the art of medicine and of such like arts is intrinsic, its connection with the movement of the thing moved is purely accidental, i.e. its connection is in virtue of a concomitant attribute. (206) The relation between a doctor and his healing himself is accidental to the

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205. "I say 'not in virtue of a concomitant attribute', because a "man who is a doctor might cure himself." II Physics, 192b24.

206. "- those which may cause a change in themselves in virtue of "a concomitant attribute-it lies in the things themselves (but "not in virtue of what they are)." II Phys., 192b30.

movement of healing, because it is not in virtue of being a doctor that he heals himself but in virtue of being sick and the connection between being sick and being a doctor is purely accidental. As St Thomas expresses it, the two, being sick and being a doctor, can be divided fro eachother; otherwise everyone who is sick would also have to be a doctor. Since this is not the case, it follows that the order between the two is accidental. It is different in the matter of nature where the fact of being moved and the fact of being the principle of movement are inseparable; the movement is in virtue of the principle of movement which is nature. The order between them is per se.

Difficulty : A charge against Aristotle of introducing superfluous elements into the definition.

Does it not seem to be tautological to describe nature as a principle in that in which it is "primarily, in virtue of itself"? The two are nothing more than a repetition of the same idea. If a thing is first or the 'primum principium', it follows of necessity that it is not purely accidental, and consequently must be per se. (207)

The identity of signification between the words 'prim-

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207. J. a S. Thoma, Curs. Phil., T. II, p. 178a47-50: "Nam si est "primum principium, hoc ipso non est accidentaliter conjunctum, "et consequenter est per se."

arily' and 'in virtue of itself' is only an apparent one. Actually the two are not synonyms, for one explains what is left unexplained by the other. While the word 'primarily' denotes the radical character of the principle which is nature, it leaves insufficiently explained what is to be the radical principle. (208) This indefiniteness is removed by the use of the particle-"in virtue of itself"-. Through this phrase, as opposed to the words - "in virtue of a concomitant attribute" - Aristotle manifests very clearly that being the principle of movement and of rest pertains to the thing, which possesses nature, by reason of its very essence. (209)

4) What it means "to have a nature" and "to be according to nature".

Having defined nature, Aristotle now introduces two expressions associated with nature, "to have a nature" and "to be according to nature". The reason why he explains the first phrase is to underline this notion : nature is not that which is absolutely but a principle 'quo'. Nature is not that which is moved, but that from which movement proceeds.

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208. ibid, b25-30: "Ad secundum dicitur, quod illa particula 'pri-"mum' denotat, quod principium debet esse intrinsecum radicale. "Sed quia non satis explicatur quid sit esse radicale princi-"pium, adhibetur illa particula 'per se'."

209. ibid, b30-34: "Sic enim intelligimus, quod non solum est primum "respectu operationis et motus, sed quod in ipsa essentia rei "est primum tanquam per se illi conveniens."

"The term 'according to nature' is applied to all these things and "also to the attributes which belong to them in virtue of what they are, for instance the property of fire to be carried upward-which "is not a 'nature' nor 'has a nature' but is 'by nature' or 'according to nature'." (192b36-38)

The first thing to be noted with regard to this second expression used by Aristotle in connection with nature is that it has a wider application than the first. (210) The term 'according to nature' embraces the things that 'have a nature' and the attributes which "belong to them in virtue of what they are". This is not true of the phrase "to have a nature" which is properly said only of the substance which is the subject, for Aristotle distinctly says that the attributes of such substances are neither nature, nor have a nature, but are merely according to nature. It should be noted that the phrase 'according to nature', when applied to substance and to the attributes of substance, does not have exactly the same meaning. Used in reference to substance, this phrase designates the radical reason for being according to nature. When used in conjunction with the attributes, it implies the thing that is consequent upon nature and hence according to nature.

Another point to be mentioned is that by showing the

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210. "Les substances qui possèdent une nature et d'autre part les "attributs essentiels de ces substances méritent les unes et "les autres la dénomination de choses conformes à la nature: "cette dénomination a donc plus d'extension que le concept de "substances possédant une nature." Hamelin, Aristote, Physique, Traduction et Commentaire, p. 41.

meaning and application of this phrase, Aristotle emphasises once more the true character of nature. The phrase "having a nature" allowed him to point out that nature is a principle which is subjected in a substance. This second affords him an opportunity to bring out the fact that nature is not an attribute flowing from a thing in virtue of its essence. It is something much deeper, the very cause of attributes.

A Difficulty :

If Aristotle purposely spoke about the phrase "according to nature' in order to emphasise the character of nature as the cause of the attributes, is he not guilty of going over the same ground twice ? John of St Thomas in his explanation of the principle "in virtue of itself" tells us that it was inserted in the definition of nature to show that nature pertained to the order of the essence of the thing which has nature. If nature's relation to the essence is manifested by the words "in virtue of itself", it follows that nature is not an attribute, but the cause of the attribute. Therefore the character of nature as something pertaining to the essence is twice proved.

The function of the particle "in virtue of itself" used in the definition of nature and the explanation of the phrase "according to nature" are ordered to the same end materially but not

formally. The first was introduced in order to manifest that nature is a principle which is not concomitantly but necessarily connected with the 'quid rei' of the thing of whose movement it is the principle. The second takes up the problem of nature's character from a different point of view. It involves nature, not from the aspect of concomitancy versus per-se-ness, but from the aspect of attribute and its cause. This latter consideration is important, if one is to avoid providing grounds for designating art and other such principles as nature.

Nature is formally constituted through this that it is the principle of movement in that in which it is. That which is "according to nature" or "by nature" is designated as such, because it follows upon nature's inclination. Now it happens that at least some of those things called "according to nature" are actions productive of movement ad extra. For instance the action of heating causes the movement of becoming heated in a subject that is ad extra. Likewise the generative act of the male causes the movement of fecundation in the female. Both these actions are called "according to nature" or simply "natural". But were it not pointed out that nature is antecedent to that which is "according to nature", and implicitly, as a consequence of this antecedence, that it is not constituted by that which is "according to nature", it might provide an apparent foundation for denominating art as nature. This apparent fundament

is to be found in the similarity between the action of art and such natural actions as we have mentioned. Just as the action of art produces movement ad extra, so too the action of heating and the action of generation. Since the latter are denominated natural, one might be led to consider nature as formally constituted through an order to movement ad extra, and, art, being a principle of such movement, might be mistakenly called nature. By revealing nature as antecedent, and that which is "according to nature" as subsequent, i.e. something that presupposes nature, Aristotle removes the occasion of such an error. (211)

5) The indemonstrability of "nature".

"That nature exists, it would not be absurd to try to prove; for it "is obvious that there are many things of this kind, and to prove "what is obvious by what is not is the mark of a man who is unable "to distinguish what is self-evident from what is not." (193a1-5)

With the definition of nature and the proper meaning of the two phrases settled, Aristotle turns his attention in the direction of those who attempt to demonstrate that nature exists. To

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211. This question of the meaning of the phrases, "to have a nature" and to be "according to nature", their distinction and its role in differentiating art and nature, is not treated by John of St Thomas in the way we have presented it. He considers the question in connection with the explanation of that particle of the definition of nature, namely "Nature is a principle and cause in that to which it belongs". (Curs.Phil., T.II, Q. IX, Art. 1, 172b1-173a7). The reasons for his treatment are 1) because the phrases serve admirably to manifest the internal character of nature, 2) because the author was not writing a commentary, but merely exposing the main points of Aristotle's doctrine.

all efforts to demonstrate this, he has one answer-absurd. This verdict is fully justified. As he points out, it is a fact that there are actually many things which possess nature- the animals and their parts, the plants and simple bodies, and the obvious neither requires nor is capable of proof. The attempt to prove the obvious is simply an indication that the difference between the 'per se' evident and that which is not 'per se' evident, is not apprehended. In the sentences that immediately follow, (212) Aristotle insists that such a state is possible and shows its foundation. He cites the example of the man born blind, who might reason about colors. Certainly such reasoning must be merely about words. Being blind from birth, the man could have no idea of what color is and therefore could not know the thing about which he was reasoning. (213) From this Aristotle draws a conclusion relative to the attempted demonstration of nature. Just as a man born blind might reason about colors as words, not as things, so too the one who attempts to prove that nature is, can only persevere in his effort, because his concern is with a word and not with the reality signified by that word. (214) St Thomas points

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212. "(This state of mind is clearly possible. A man blind from "birth might reason about colours. - -)" II Phys., 193a7.

213. "unde caeci nati, qui cunquam senserunt colorem, non possunt "aliquid de coloribus intelligere." S. Thomas II Phys., lect. 1, n. 8.

214. "Presumably such persons must be talking about words with- "out any thought to correspond.)" II Phys., 193a8.

out a difference between the two. The blind man treats the unknown, as if it were known (color), while the other insists on considering the known as unknown (nature). (215) This difference, however, has its explanation in the same foundation, a concern with words and not with the things signified by the words.

Though Aristotle expresses himself as convinced about the existence of nature, Mansion appears to have some doubts with regard to the proving value of Aristotle's procedure in establishing nature's existence. (216) He professes to find in it a certain weakness which affects the subsequent structure erected by the Stagirite. He says : "It nonetheless remains that all which he will add, in the following, to his theory of nature, will participate in the weakness of the beginning and, to say all, will have, as its ultimate foundation, nothing other than the extremely succinct analysis of daily experience and of ordinary language." (217) What is this weakness ? Mansion had

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215. "et sic utuntur non notis quasi notis. Et e converso accidit "his qui volunt demonstrare naturam esse: quia utuntur notis "ut non notis." II Phys., lect. 1, n. 6.

216. Op. cit., c iv, p. 101.

217. Op. cit., p. 101 (2ième Edition) "Il n'en reste pas moins que "tout ce qu'il ajoutera, dans la suite, à sa théorie de la "nature, participera à la faiblesse du début et, pour dire "tout, n'aura, comme fondement dernier, que l'analyse fort "succincte de l'expérience journalière et du langage ordinai-"re."

previously shown how Aristotle, in his argument against the Eleatics' denial of all becoming, had justified the existence of mobile being by an appeal to the testimony of experience which testifies to the fact that all or at least some beings are in motion. (218) Mansion accepts this conclusion as inescapable, based as it is, on an experience which cannot be contradicted. (219) He claims, however, that such is not the case in the matter of the existence of nature and experience. He says : "here the thesis goes far beyond and bears on the existence of a principle that transcends the experience." (220) His argument amounts to this. While experience is sufficient to make known the existence of mobile being, it is not sufficiently strong to make known the existence of nature. The reason is that in the first case ens mobile does not transcend experience, but nature does transcend experience. This transcendance of the principle, nature, over experience is the weak link in Aristotle's procedure, a link that must not be discounted when considering the additions made by him to his theory of nature.

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218. "We physicists, on the other hand, must take for granted that "the things which exist by nature are, either all or some of "them, in motion-which is indeed made plain by induction." I Phys., c ii, 185a12.

219. "C'est là, en effet, une constatation qui s'impose." ibid, p. 101.

220. "mais ici la thèse va plus loin et porte sur l'existence d'un "principe en somme transcendant à l'expérience." ibid.

Mansion's judgement about the weakness inherent in Aristotle's process is based on a misinterpretation or misunderstanding of the word nature as an object of experience. The phrase - the existence of nature is established by experience - can be taken in two ways. We can understand that experience establishes the existence of nature as clearly known, or we can take it to mean that experience establishes the existence of nature, not as something clearly known in itself but only as distinguishable from other principles, e.g. art. If one takes the word 'nature' in the sense of being a thing clearly known in itself, there can be no doubt that the existence of such a principle known in this fashion would certainly transcend experience. But when one accepts 'nature' in the second sense, there is no disparity between experience and the existence of nature as manifested by the definition. All that is demanded to arrive at a knowledge of the existence of nature so described is contact with natural things, a contact which is sufficient to furnish the data about the difference between the natural and the artificial. And this contact is made through experience. There can be little doubt about Aristotle's concept of nature as something not clearly known, otherwise it would be difficult to explain the lengthy passage which treats of the 'quid sit' of nature. (221) On the other hand

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221. II Physics, c 1, 192b11-31.

there is little reason to doubt about Maritain's concept of nature as something clearly and distinctly known. The proof of this is in the fact that he claims that nature is beyond the order of experience. Now we have shown that, when nature is taken as indistinct, it is not beyond experience. Only when it is considered as clear and distinct, is it beyond experience. Hence the sole justification for his position is that he accepted 'nature' as we have indicated. In confirmation of what we have said about nature and experience and as a conclusion to this discussion, it will be well to quote St Thomas who treated this point in his Commentary on the Physics. These are his words.

> "That nature, however, exists, is per se evident, in "so far as the natural things are manifested to the "senses. But what is the nature of each thing, or "the principle of movement, this is not manifest."(222)

Is the discussion of nature's 'an sit' at this point illogical ?

Before we close this exposition on the question of nature's demonstrability, there is one point that merits our consideration. It concerns the appropriateness of this discussion from the standpoint of its position in the development of nature's definition.

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222. "Naturam autem esse, est per se notum, inquantum naturalia "sunt manifesta sensui. Sed quid sit uniuscuiusque rei na- "tura, vel quod principium motus, hoc non est manifestatum." II Phys., lect. 1, n. 8.

If we recall the order in which Aristotle arranges the questions which must be answered if one is to know scientifically, (223) we become instantly aware of an inversion of that order here in the Physics. According to the II Posterior Analytics the question 'an sit' is prior to that of 'quid sit'. One cannot search for the reason that explains, unless it has been first established that there is something to be explained. In the text of the Physics under consideration, however, the question 'quid sit natura' takes precedence over the question 'an sit natura', for it is only after he has defined nature, does Aristotle take up the question of its existence. (224) Clearly this is in violation of the rules of correct procedure and merits the verdict of illogical.

At first glance the charge appears to have some foundation. The very words used by Aristotle to mark the end of the section on nature's definition and the beginning of a new development, seem to support the accusation. But the illogicality is only apparent and vanishes upon closer examination. If one reads the offending lines (193a1-3) in conjunction with the opening sentences of Book II, he will discover that these latter explicitly deal with the 'an sit' of

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223. II Post. Analytics, c i, 89b22 - c ii, 90a9.

224. "What nature is, then, and the meaning of the terms 'by nature' and 'according to nature', has been stated. That nature exists, it would be absurd to try to prove;" II Phys., c i, 193a1-3.

nature, and the former concern Aristotle's reaction to the attempt to demonstrate this 'an sit'. If the words "That nature exists, it would be absurd to try to prove;" do lend themselves somewhat to creating a false impression, the impression can be easily and speedily dissipated by the words that follow. For they definitely show that nature's 'an sit' was not Aristotle's concern then and there, but the need of demonstrating that 'an sit'.

One might ask why Aristotle did not take up this question of nature's demonstrability when he was discussing its 'an sit'. Surely it would have been more appropriate there. The reason for the postponement of this question was probably pedagogical and one, which, in the interests of sound methods of teaching, merits some consideration here. Had Aristotle elected, at the very beginning of Book II, to take issue with those whose opinion be dismissed as absurd, he would have only succeeded in creating dismay in the minds of the students. These were beginners and would have become confused, doubtful, on being confronted with an attack on something that had always assumed to be self evident. By postponing the problem until he had established the definition of nature, he avoided causing this confusion and doubt. Moreover, his own certainty on this matter, so strengthened the students' conviction about the self evidence of nature's existence, that they themselves could see the absurdity of the opposing opinion.