surely will soon come to realize the inadequacy of this manual, and only then of course will this manual have achieved the purpose for which such books are designed. 34-3

PART
~~B O O K~~ I

THE PRINCIPLES OF THE SUBJECT OF THIS SCIENCE

Lesson I

1. The many meanings of the terms "science" and "scientific". What is meant by the "matter" and "subject" of a science. This has already been established in Logic, but deserves brief repetition here. In one sense the subject of a science is known first and best; in another it is least known and last. Difference between "subject" and "object" of a science; between formal and material object and subject.

This science presupposes all of Logic, dialectical, or ~~this~~ method of research, as well as demonstrative, and Mathematics. Why, in particular, dialectic? Whether the latter is confined to mere opinion, and allows the possibility of the contradictory part of a statement.

2. The subject of the present science. Sense experience and the three modes of definition. Impossibility of a fourth mode. General division of the sciences, and the principle of this division. Definition "with sensible matter". What is meant by "sensible matter". Whether it is sensible per se. Various meanings of "sensible". Whether sensible matter can be called "mind-stuff" (Eddington).

3. Why this science is presupposed to Metaphysics, and why the latter can be taught apparently without the former. A question of words, their sovereign importance and many pitfalls. Whether it is possible to use words without knowing what they mean, and use what is not known as if it were; and to use what is known, as if it were not. Why this is more the case in Philosophy than in any other department of knowledge. The examples of "matter" and "form", "essence" and "existence", "substance" and "abstraction". Why ~~this~~ dependance on knowledge of nature is resented, when, admittedly, Metaphysics is the most "free" of the sciences.

The difference between "sensible matter" and "intelligible matter"; between "singular", "common", and "universal matter". Whether these distinctions remain relevant in the present context of natural science and Mathematics. Whether everything defined "with sensible matter" is sensible.

Whether there can be science of the singular. The difference between science of the universal and science of the singular. Can there be science of nature without dependance on the singular? Whether knowledge of the singular is the term of science.

Whether the present science is speculative or practical. Whether measurement is a practical operation. Whether the use of practical device makes the science practical.

In what the method of exposition of the Physics resembles that of Mathematics, which proceeds "disciplinabiliter". Why natural science is said to proceed "rationally" according to the third mode of "rational process" (the first being logical, the second dialectical.) Whether this excludes the first two modes.

Whether definitions are free. Whether every definition must explain what a thing is in itself. Whether this science proceeds from definitions, from induction, or from both. Whether all induction is a principle of science. Whether all natural doctrine is experimental, and all doctrine scientific.

4. The various parts of the study of nature and their order. The proper subjects of these parts: (a) mobile being in general and its main divisions; (b) local movement in particular, and the idea of universe; (c) movement according to quality, leading to absolute becoming and destruction; (d) movement according to quantity, i.e. growth, and the intrinsic principle of the living; etc.

Outline

5. The order of learning in the study of nature. What is meant by "principles of the subject", and by "principles of the science". The notions of "principle", "cause", and "element"; not all principles are causes, nor all causes elements.

Necess.? what you would say on p. 5 should be enough

When does the subject of a science have intrinsic principles? Why the latter must be considered before the principles of the science. In what sense the subject of this science and the principles of that subject are known first, and in what sense last.

6. Why begin by an investigation of principles that are most general. Two types of generality. Why the most confused is known first and with greater certitude. Whether certitude is the same as exactness. Why the generality of attribution cannot of itself lead to more particular knowledge.

7. What is meant by the "order of demonstration" and the "order of determination". The distinction between "knowable to us" and "knowable in itself" or "to by? nature".

omit

All philosophies, ancient and modern, divided by what they hold on the nature of generality. [To be examined in detail in Book II]. Aristotle versus Plato; Aquinas versus Averroes. Why this does not imply that investigation must begin from what is absolutely most general.

omit

Why it is that, neglecting the order of generality and proceeding from what is less known to us, a person can make, nevertheless, essential contributions to our knowledge of nature. The difference between what is apparently best known to us, and what is actually best known. Why some authors identify philosophy of nature with cosmology. Why "body moveable according to place", and even the subject of Metaphysics itself, are apparently better known than "mobile being".

8. The extreme difficulty of considering in critical fashion and of using that which is actually more known to us. How it gives rise to false and insoluble problems of "epistemology". Why our mind tends to invert the order of learning. The type of problem which arises, eventually, when, as is usually done and to a large extent inevitably, one begins the investigation of nature halfway, such as by the study of mechanics or of cytology, or even by cosmology, psychology. Because of incontestable achievements this procedure will always be with us, but not less so the far more elementary problems, then become insoluble or completely irrelevant, by reason of the terms in which they will be raised. As Aristotle pointed out, the first and main difficulty is to see that there is a problem at all. - A note on Jaeger's interpretation of the order in Aristotle's works.

Never mind Jaeger

9. Comparison of what is most known to sense and what is most known to mind. What "integral whole" and "universal whole" have in common and how they differ.

10. Whether to know the name of a thing and to know what the thing is are the same. Whether to know the terms which enter into a definition and to know them as parts of the definition are the same.

The importance of words in the initial study of nature, and their decreasing importance as words, in favour of mere symbol, in the special departments of natural science. The difference between word and symbol, although both are conventional signs of a representation. Example of the "name" of a number, a "numerical symbol", and the symbol of an "operational definition". A definition is not operational just because I wear glasses when seeing what I describe. Length is not reducible to how much of it there is. (In what sense an operational definition is a definition, to be examined in Book II). Why Philosophy should never begin by using terms in a sense which is proper to philosophy.

11. Whether the order of sensation, from confused to distinct perception according to place and time, is comparable to the order of learning. Why this comparability is no more than a sign that the latter is such as has been shown.

Not necessary

Chapter Two
Lesson II

How the Problem of Becoming Occasioned
What is meant by "mobile being" and whence the problem of "becoming".

1. Movement as a first datum of sense experience. What is meant by "mobile being". Why the subject of this science is neither "sensible" nor "material" nor "corporal being", nor "material", "sensible", nor "corporal substance". Why "mobile being" and not "changeable substance" is the subject of this science.

Here we beg in examining mobile being in general + its many divisions, a promiscuous group. This subject, as the proper theme of natural philosophy will necessarily fill up the greater part of any simple introduction to the science, and our treatment of it will carry us all the way to the end of Chapter —

Whether that which "being" stands for, in the complex expression "mobile being", signifies a complex object. Whether the complexity referred to by the subject which is one in notion, is signified by the words "mobile being". Mobility implies a "many" which is neither one of "being" and "sensible", nor of "being" and "mobile". Whether "mobile" being is quite the same as "moveable" being, as "changeable" or as "variable" being.

Necessary?

2. The problem of "the one and the many" in ancient Greek philosophy and ~~after~~ in Latin Philosophy, as related to the study of nature. Principles and elements. Why the ancients found of the had tried to explain becoming in terms of principles that are elements (Thales, Empedocles), and of functions (Empedocles and Democrites). The "infinite" of Anaximander and its attributes.

never mind Anaximander

3. How the early natural philosophers tried to explain what, whence and wherefore a thing is, merely in terms of what it is made of. How they used the analogy of artifacts, and assimilated the unity of beings in nature to that of an artifact. Why it is natural that they should have done this.

The attitude of contemporary physicists in this regard, such as expressed by Einstein, Planck, Eddington, Louis De Broglie, Schrödinger, Philip Frank, Oppenheimer. Why, to many, such as Descartes,

the nature of becoming raises no problem at all.

4. In what sense Parmenides and Melissus denied multiplicity and mobility, and in what sense not. Since the problem of the one and the many belongs to First Philosophy, why should it be discussed here at all?

5. Whether one should argue against opinions which are obviously false or improbable, such as that 'all things are one and immobile', 'all is pure change and nothing is true', 'all being is one single man'.

6. Whether it belongs to a particular science to argue against the negation of its own principles. The propositions stated above are drawn from contentions arguments, as will be shown in Lesson III.

7. Why, in this science, we must assume that there is movement, as well as that there is nature which, as we shall see in Book II, is defined by movement. The difference between an argument that leads to reject the principles of a science, such as continuity which the geometer assumes, and an argument which concludes something false from true and assumed principles. Illustration from Bryso's argument to square the circle, which assumed the principles of geometry; and the argument of Antiphon, which was contrary to those principles. Comparison with Parmenides and Melissus.

How the attempts of a particular science to argue against those who deny its first principles leads to the negation of the science itself. Illustration from recent attempts to argue for, and posit first mathematical principles in mathematical terms. How

a mathematical, or even "logical", definition of number implies the negation of number. Illustration from Bertrand Russell. The same holds for the mathematical definition of continuity, such as that given by Dedekind. Whether these definitions can be defended as "logical".

8. The science which is able to defend the principles of natural science is not a natural science, but First Philosophy. In what sense logic and mathematics can be used to defend such principles.

Chapter Three
Attempt to deal with the Problem of Becoming by denying its existence.

Lesson III

(Discussion of Parmenides' and Melissus's assertion that all things are one being.)

1. Comparison of the "physiologists", who used the natural method to investigate nature, with those whose enquiry into nature was logical or metaphysical. The postulates of the latter method. Their criticism must be deferred to First Philosophy; here we can only point out that such a method denies the very subject of this enquiry. To this end, we must analyze and argue against the position that "being is one", both by a reason taken on the part of the subject of this proposition, viz. "being", and by a reason taken from what is attributed to that subject, viz. "one".

Lest our mind remain in suspense regarding these basic questions it is expedient to show, & comment that the reason of the subject is unfounded.

2. The principle of such a discussion must be the fact that 'being' is said in many ways. Those who make the above-mentioned assertion should be asked in what sense they take 'being' in the proposition "being is one". The importance of what things are said to be; the relative priority of the order of predication. The various meanings of the word 'being', considered by way of induction. The same for the word "one". -- The meaning of "infinite" according to Melissus. If it is the infinity of something, being is neither one nor many in number.

all too metaph. for beginners

3. Three ways of being 'one': as the continuum; as the indivisible; as things which are one in definition. Justification of this order -- The difference between 'to be one in notion' and 'to be one in reality'.

Things cannot all be one single being by continuity, if the continuum is by definition divisible. Whether something can be both divisible and impossible to divide: whether 'divisible' and 'divisible in fact' are the same. (The notion of continuity is assumed here, but remains to be analyzed in Book VI.)

Whether whatever is one by continuity has the nature of a whole. Whether the whole and its parts are one or many. Whether 'continuous whole' and 'contiguous whole' differ in this respect. The distinction between 'to be relatively one with' and 'to be absolutely one with'.

all too metaphysics for beginners

4. All things cannot be a single 'one' in the sense of indivisible. This would imply the negation of quantity and of the kind of quality that is based upon quantity. A point is neither finite nor infinite, eventhough it may 'end' something, and be a term.

5. All things cannot be 'one in notion', for that would imply that contraries are one in notion; 'good' and 'evil' would be one in notion. Why one may be led to believe that contraries are one in notion: first contraries are opposed as 'having' and 'not having' or 'privation'. Privation is a negation, and cannot be defined without that of which it is the negation. -- The difference between 'to be one in mind' and 'to be one in notion'.

If contraries were one in notion, contradictories, too, would be identical: 'to be' and 'not to be' would be the

same. From this it would follow that all things would be, not only one being, but they would also be the same as nothing. For of things that are one in notion, what can be said of one of them can, in that respect, be said of the other. So that if 'to be' and 'not to be' were one in notion, and all beings one single being, all things would be nothing.

If all things were one in notion, the various kinds of reality, such as quantity and quality, would be identical in notion.

These arguments are ad hominem. They begin from assumptions stated by the adversary who uses what is less known as if it were more known. (We shall be faced with a similar assumption in arguing against those who deny 'nature'). Illustrations from Nicolas of Cusa, Leibniz, Hegel, Feuerbach, Marx. They conceived the "infinite name" as a name.

Include in chapt. III

(Lesson IV)

1. Parmenides and Melissus assumed as quite identical 'to be relatively one' and 'to be one absolutely'. Whether the original notions of being and of one are both naturally confused.

2. Their successors were faced with the persistent appearance of the 'many', which turns up in every enunciation, such as in 'Socrates is pale'. They tried to reconcile this appearance of the many with the reality of the one by rejecting the verbal copula 'is'. To conform with reality, they held, one should say 'Pale Socrates', and not 'Socrates is pale'. Obviously, 'this pale man' and 'this man Socrates' are the same man. But if we are confined to such expressions, we are left with incomplete meanings and nothing can be expressed as true or false. We can just as well say 'square circle'. Aware of this, later followers of Parmenides and Melissus resorted to still another device. To avoid the incompleteness of 'pale man', as well as the many understood when saying 'a man is pale', they confined themselves to enunciations such as 'a man whitens'. The reason why they thought this solved their problem is that 'to whiten' is not a given thing, but a changing of some one subject, and it does not exclude contraries from the same subject. For so long as a thing is in the state of becoming white, it is neither determinately white nor determinately non-white. 'Becoming' allows contraries to be together in the same subject. — The difference between

their being together 'in mind' and 'in reality'.

3. Parmenides and his followers all failed to distinguish the various modes of being 'one'. The latter distinctions applied to the present problem.

Comparison with contemporary views on this subject. Ernst Cassirer's interpretation of the problem of the one and the many. The distinction to be made between the one and the many on the part of the things themselves, and the one and many on the part of the knower. -- A note on the current criticism of so-called "predicational logic". Whether calculation and reasoning are the same. Whether calculation requires self-awareness. The type of operation that can be transferred to a machine.

omit

Chapter Four

Lesson IX

Anaxagoras provides the first hint of the true solution

1. The opinion of Anaxagoras deserves more ample discussion because of all the ancient philosophers he came closest to the subject of absolute becoming (although he himself did not hold that there is such becoming); and also because his ideas were resumed, or rather transposed, by Nicolas of Cusa and thereby entered ~~into~~ the mainstream of modern philosophy.

2. What he took for granted as first, self-evident principles : (a) no thing comes from nothing; (b) no thing comes from what already is; (c) anything comes from anything; (d) natural quantity has all the properties of abstract quantity. This led him to believe that the principles of all natural things must be infinite, inasmuch as he held, with all the other natural philosophers, that that which does not exist absolutely, can in no way come to be; hence whatever comes to be must already exist as to its absolute being.

> How modern physical theories seem to favour this conception. What things are appears to be du to the arrangement of what they are made of, and what they are made of was this same material as <u>these things</u>,

> before the things of which we say that they become, such as Socrates, or this fish, ever were. In this conception, Socrates can come to be because he is not an absolute being, but a <u>this</u> thing as a house is said to be <u>this</u> something. The only absolute being in him is what he is made up of, which was before he was, and shall still be when he no longer is, like ~~just as~~ the bricks of a house that has collapsed.

3. The ancients recognized the distinction between potency and act, but only in the sense that letters, considered by themselves, such as h, o, u, s, e, are potentially a word, and a pile of bricks, a stack of boards, kegs of nails, etc., potentially a house.

4. Anaxagoras posited further that one contrary comes from another as that out of which it comes to be. This seemed plausible because even the negative contrary has something positive. Now in view of his opinion that what comes to be already is as to what it is absolutely, he interpreted 'black' in 'to become white from black' as something already given and 'out of which' comes 'white' as something which was already in 'black'. The same would hold in the opposite case. We concluded that in black there must be white, and in white, black.

5. Assuming that no thing can come to be from what is not, he concluded, generally, that something of whatever comes

to be must already exist in that from which it becomes. - Now because sense does not allow us to verify this precontainment of whatever comes to be in what it comes from, he explained that the precontainment is according to parts so small that they escape the perception of the senses. He said, in fact, that "there is no smallest of the small, but there is always a smaller; for being cannot be non-being... since the absolutely smallest thing cannot exist, it could not be separated" (fragm. 3 and 6). And because of this he thought that everything is precontained in any other thing according to parts that may be smaller and smaller without end; for if there were and end to smallness, this end could only be nothing. And just as nothing can come from nothing, neither can anything turn into nothing.

> This again seems plausible, for when Socrates is destroyed as Socrates, we remain with his corpse, still flesh and bones, though not those of Socrates; and these are resolved into cells, cells into molecules, into atoms, into its components, into radiation; but not into nothing at all - it seems. This opinion, in which Socrates is Socrates as a house is a house, is still prevalent today.

6. But if everything contains something of everything else, how do things differ ? The answer was, according to Anaxagoras, that things differ and are named according to what there is most of in them.

Thus water is called water, not because it is only water, but because there is more of water in what we call water than of anything else; and flesh, flesh, because it is mostly flesh. Hence nothing is purely and simply what it is said to be, but also something of everything else.

Note that what the Ancients called "elements', are actually most involved. 'Earth' is a good example, when we know that its chemical composition is extremely complexe, and that a good pinch of rich garden earth contains individual living organisms more numerous than mankind. However, this ~~adds~~ does nothing to bolster Anaxagoras' theory. The definition of a name is one thing, the definition of what is named, another. The former can be verified by pointing out to sense what we make the name stand for. This implies in no way that we know the "what it is' of what we name. Anaxagoras, however, refers to what things are in themselves and not to the 'what' of the name. Hence, what anything is, is infinitely something of everything else, the same holding of any other things. Superficially considered, Anaxagoras' theory could suggest that he seeks the solution of the problem of becoming, and of the variety of things that become, by infinitesimal analysis; as in certain philosophical interpretations of the mathematical method of limits. An instance of such an understanding is found in Plato's generation of numbers and of universal forms (1). But this would lead far beyond anything Anaxagoras envisaged. Nor should we forget that he tried to explain things in natural terms.

---

(1) - See A. E. Taylor, Forms and numbers, in his collection of articles entitled Philosophical Studies, MacMillan, and Co., London, 1943, pp. 91-150.

7. If the first principles of whatever becomes and of what the thing is that becomes, are infinite, the infinity is one either of quantity or of kind. (a) If they are infinite according to quantity, either in number or in magnitude, they are unknown as to their quantity. For if it is their infinite quantity which makes them to be what they are, and since the infinite, as Anaxagoras himself understood it ("there is no smallest of that which is small", and "there is always a greater of that which is great"), is always beyond what can be grasped, in trying to know it in its infinity, one would be assuming that there is a smallest of the small, and a limit to the unlimited.

Chapter Five
The Problem of Becoming in more Outline explicit form.

Lesson X

RESTATEMENT OF THE PROBLEM : ABSOLUTE BECOMING.

1. All the ancients who took becoming for granted, did posit a multiplicity of "contrary" principles. Why it was fitting that they should have done so. How Anaxagoras [had] explained what becomes as proceeding from the negation implied in contrariety.

2. The distinction between "to become this", e.g. "Socrates becomes pale" and "to become absolutely", e.g. "Socrates comes to be". Why, in the Physics, we discuss absolute becoming in terms of absolute being, and not precisely in terms of substance as will be done in the treatise on Generation and Corruption, which are nevertheless absolute becoming and absolute destruction.

3. Why the ancient natural philosophers overlooked the possibility of absolute becoming. The pertinence of this problem: the reason why today it appears insoluble if not irrelevant.

4. The analogy of artifact and nature. How the ancients assimilated nature to art as if they were univocally the same.

Why they who refuse the usefulness of the analogy of the artifact are finally led to extreme exaggeration conceiving, as they do, natural things as artifacts of an extrinsic character quite like those of our own craft. The "visual" conception of reality in Descartes and his followers. Why and in what respect mathematical physics appears to support such visualisation.

5. In what sense it is natural that the ancients should have exaggerated the comparability of art and nature. What is meant by committing a "natural error"

in the development of philosophy. The kind of historical conception of philosophy which actually denies its history, thereby raising pseudo-problems without end -- which appears to be its aim -- and gathering all under the apparently neat heading of "-isms" and "semi-isms". What it means to be caught in an "-ism", and what types of philosophy are thereby aptly classified. Why this comes about quite naturally, and yet is not commendable.

Lesson XI

include in ch. first.

DIALECTICAL APPROACH TO THE PROBLEM OF ABSOLUTE BECOMING.

1. Analysis of our primitive notion of becoming, as in: to become a musician. This notion involves "first contraries", as the ancients recognized. Such "contraries" are extremes referring to a distinct, common and identical subject, which subject is not an intermediary term. Becoming involves such a subject, indeed a permanent one, and therefore supposes more than the two opposite principles.

2. Actually, the ancients supposed as much in their theories when postulating, as they did, a subject to the contrary terms. The distinction between the opposition of contrariety and that of privation; the notion of "first contrariety". The difference between a negative contrary and privation; between "contrary elements" and "contrary principles". Difficulties taken from physics and experimental psychology: black as a negative contrary and darkness as privation. Hegel's understanding of opposition. Why, to him, as well as to the Marxists, becoming, which they hold to be real, must imply a contradiction in the strict sense of this term.

3. Why this analysis today appears inane even to advocates of "perennial philosophy". Why, when becoming is accepted as a problem, preference is given to Hegel, and why Aristotle's whole discussion of it is qualified as logical.

4. The contrary terms are not contrary to the subject. In what sense the subject which, while permanent, becomes other, is one in number, yet twofold in notion. Why, to be many in notion and one in reality, implies no contradiction. Of the subject to which becoming is attributed, something is permanent, and something is not.

Chapter Six

Lesson XII

What is ~~Locating~~ THE SUBJECT OF ABSOLUTE BECOMING.

1. Why the analogy of acquiring a recognized skill is well-chosen to point out that becoming involves a subject which is permanent. Other analogies, which cannot bear critical scrutiny. Why, in this connection, the direct approach to nature, animate or inanimate, can lead nowhere.

2. Why this analogy of acquiring skill is valid when compared to becoming in nature. A.V., why skill as better known can be used to make known what is natural. That in which art and nature communicate. Whether this is a postulate. (To be examined further, in Book II).

3. Proof, from induction, that it is determinate, absolute being, such as sperm and ovum, oak or acorn, from which proceed the things that become absolutely, such as when "Socrates comes to be", or "this oak tree comes to be", as opposed to "Socrates becomes pale", or "this oak tree grows". Why we ought to choose, as the first instance of coming to be absolutely, a "this man", and why not beast, plant, or an inanimate thing? Why must we point out by induction that what becomes absolutely, comes from something determinate that is itself absolute? Two meaning of "to be absolute", as when said of acorn, or seed, and of oak or man.

4. Proof, by induction, from the various modes of becoming that are first known to sense, namely: by transfiguration, i.e. change of figure or form, as from slab of stone to statue; by apposition, as a river from raindrops; by abstraction, as a statue by chiselling off chips from a slab

of stone; by composition, as a house; by alteration, i.e. change of quality as when a stone becomes hot. Why this induction comprises artifacts.

5. In all these instances there is a permanent subject and two opposite terms, one of which is not permanent.

Lesson XIII

MATTER AND FORM

1. The meaning of the words "form" and "matter" according to their first imposition. "First imposition" not the same as etymology; it is valid, as first, so long as it refers to something immediately known by sense, whether etymologically correct or no. An example taken from Isidorus's Etymologiae.

2. The original meanings of hylè and materia, morphè and forma, refer to something well known to sense, viz. shape and building material.

Why, in this connection, reference to a first imposition is indispensable, and why we generally avoid such reference. Excursus on how words become hopelessly abstract and produce the dismal void of a so-called Metaphysics: an imposition which is second, third, etc., is assumed and granted as a first. This alienation frequently due to borrowing words from another language, such as "abstraction", "philosophy", "quiddity", and even "matter" and "form", "essence" and "existence", while ignoring every original reference to sense, the extended meaning being taken as first. The main vice of scholasticism in the pejorative sense and which for centuries it has held in common with the new philosophies. Why the average learned person prefers to use words whose meaning he assumes, but cannot convey, and why verifiable words are uninteresting to him. By what process Philosophy becomes a problem of discovering the reference of "technical" terms to the unteachable imaginary constructs which happened to some individual because of some other individual.

3. Examples of how most historians of philosophy avoid all reference to first impositions while explaining philosophers who considered such impositions as most essential inasmuch as they refer to what is first known to us since it is by what we already know that we come to know what is not yet known. Objections against the latter statement. In historicism -- the opposite extreme of history -- the person of the philosopher becomes, as it were, the "substance of the names" he used, i.e. that which the words he employed stand

for. This makes of philosophers the kind of "authorities" which are inacceptable in philosophy. Why modern philosophers, far less critical, are accorded greater authority than the ancients. — In what sense "the wise do not trouble about names".

What is valid in the criticism offered by "logical positivism", can be shown from the nature of the rebuttal. How, in turn, "logical positivism" compounds the confusion. Its confusion of signification and verification, and its own constant use of "unverifiable" terms, such as "logic" and "positivism".

The relevance of first impositions is disputed because of an inability to see the relation between it, and what it is extended to mean; and because of failure to see what is first, as first, and as principle. The usual defence: Philosophy is not Etymology, and Etymology a History hardly known. Others reject new impositions because they cannot be verified in the same manner as the first. E.g., when a person says, or writes: "I see where his calculation is wrong".

4. The case of mathematics: why its impositions do not have the same relevance.

Chapter Eight

Lesson XIV

THE CONDITIONS OF BECOMING.

1. The notion of that which becomes, such as 'a musician', is resolved into subject and form, namely: 'a man', and 'that by reason of which he is a musician'. Whatever becomes in this fashion, must have subject and form, i.e. that which remains, and that by reason of which the thing is now such or such.

2. When a man, from non-musician becomes musician, that from which he becomes musician is something both positive and negative: man, but non-musician. That which becomes, proceeds per se from what is positive, per accidens from its own negation, i.e. its contrary or privation. What, in this context, is meant by per se and per accidens principles.

3. Why privation, though essential to becoming and remaining in what has become, should be only a principle per accidens, and by no means an aptitude for, nor an inchoation of form, nor in any sense an active principle.

Comparison with the assumption of Spinoza, Hegel and Engels: "All determination is negation". In what sense there are only two principles of becoming, and in what sense three.

4. Since privation is mere negation in a subject, why call form and its negation "contraries"? There is no contrariety in absolute becoming, but only privation. Why, in this connection, one should consider cases of contrariety first.

5. The subject of absolute becoming. This subject can be known only by analogy, i.e. a proportion. Why, instead of using the analogy of a man becoming skilled, must we now have recourse to the analogy of an artifact, such as a wooden one. Why the analogy of "shaped", "formed", or "figured" and "shapeless", "formless" or "figureless" is apt.

6. Why the subject of what becomes absolutely is called matter, and why "primary matter". Earlier meaning of "primary matter". New imposition of the words "matter" and "form". Various meanings of the expression "primary matter": (a) that from which an artifact is made; (b) the elemental subject; (c) the first subject of what becomes absolutely.

7. The subject of absolute becoming is not a "this thing", nor is it "one" as a "this thing" is. Nor is this subject that which becomes.

8. Two meanings of "to know primary matter by analogy". Why the "pure indetermination" or "potentiality" of primary matter should be discussed not so much in the present treatise as in that on change according to contradictories, i.e. generation and corruption, and, finally, in First Philosophy.

9. There is becoming neither from what is, nor from what is not. Why the ancients failed, and in fact were unable to discuss absolute becoming. In a sense it is true that nothing can become from what is, nor from what is not. Two meanings of "to be" and "not to be".

10. To become from something per se, and per accidens. Various modes of attribution per se. The multiple meanings of "non-being". In what sense no thing can become per se from non-being. Nor can what becomes, become per se from what it is.

11. The common notions of "non-being" and of "what is not being in act". Various impositions of the words "act" and "potency". In what sense the latter is that from which something becomes per se. The distinction between the negation that is privation, i.e. "non being per se" and the negation that is "not being in act", i.e. "non being per accidens". John Dewey's interpretation of becoming.

12. The distinction between being "one in number", "in subject", "in potency" and "in notion". Whether it is true that everything either is or is not.

> Why these distinctions, easily known to all and in current use, tend to be neglected or ignored in philosophy. [Excursus on Plato's Sophist, and the role of the kind of non-being that is ens per accidens, in discussion. Whether the distinction between per se and per accidens obstructs the free flight of imagination and of thought, and should be discredited as "reactionary". Whether equivocation is fruitful. The distinction between "equivocal", "metaphorical", and "analogical".]

Lesson XV

WHETHER FORM IS THE GOOD OF MATTER.

1. The Platonists' conception of the subject of becoming. The duality they posited was not that of non-being per accidens, and non-being per se, but of "great and small". Plato's idea of matter in the Timaeus. Why a discussion of that view is still relevant.

2. Why form is called "something divine, good, and desirable", and how this question arises in the present context. Whether "that by reason of which a thing is of this kind", and "this thing of that kind" are the same. Whether it is true to say that whatever is, is, by reason of its form?

3. Whether a thing is good because it is, and what is left of good when we abstract from "what" the thing is. Whether "form" can be that by reason of which something is "good".

4. Whether something can be good without reference to passion or to will. Whether perfection is the same as goodness. Whether the perfection that is goodness, has any meaning in nature, apart from man.

5. Whether all appetite is action. Whether a purely passive nature can be called "appetite". Whether the subject of absolute becoming is called "appetite" by metaphore, or by analogy. Whether all forms are objects of this appetite, indifferently. Whether "non-being per se", is a kind of evil.

6. To what extent these questions are among the preambles to the study of nature.

7. That no subject can be prior to that of absolute becoming. "What", in the question "What is prime matter?" can never be but something of the mind.

8. The subject of what becomes absolutely, neither becomes per se, nor is it "corruptible" per se. Whether this entails that it has always been and shall always be.

9. The discussion of whether form is one or many does not pertain to this science, but to first Philosophy, whereas only matter and privation are characteristic principles of changeable being. Yet the kinds of form which are in a subject shall be discussed later in this science.

Whether to know that all that becomes absolutely has three principles is the same as to know what is the form and what are the material component of each and every mobile being. Whether this general knowledge of the subject's principles is pertinent to the further problems of this science.

Whether knowledge of prime matter can be attained only by enquiry into the conditions of absolute becoming. Whether pure potentiality can be inferred from the fact that the material singular is not intelligible in act. How the question arose, historically. Whether this argument should be established in the present Book.

PART ~~BOOK~~ II

THE PRINCIPLES OF THE SCIENCE OF NATURE

Chapter Eleven

Lesson I

WHAT IS MEANT BY "NATURE".

1. Why the discussion of the principles of the science should begin by seeking the definition of "nature". Why, with regard to the principles of this science, should the subject be called "nature", and not, as previously, "mobile being". What are the divisions prerequisite to the definition of nature. What things are "said" to be "by nature".

2. What is the difference -- ~~commonly held as expressed~~ in popular parlance and here pointed out by mere induction -- between "to be by nature", ~~and~~ "by art", and "by chance".

3. Why the induction should begin with animals. The first imposition of the word "nature", namely "birth". How this word is extended to mean an intrinsic principle of change, such as of growth in plant and animal, as opposed to the extrinsic principle of an artifact, such as the carpenter's craft. III, a-2,

4. Whether there is an intrinsic principle of change in artifacts as artifacts, e.g. when a wooden table rots. Why an artifact is unchangeable inasmuch as it is an artifact. Note on the "visual" conception of nature in Descartes. omit?

5. Nature being an intrinsic principle, is the destruction of wood by something extrinsic such as exposure to excessive moisture or dryness, worms or fire, "by nature"? Whether nature, as such, must be an active principle. Whether privation can be an active or passive principle. Nature is said of the passive principle as well as of the active, provided it be intrinsic.

6. Why, ~~as most~~ like a few modern scholastics, some of the ancient philosophers conceived only the active principle as being a nature. Whether a formal principle and an active one, are the same. Relevance of this question to the principle of inertia, and to discussion of natural evolution.

7. The definition of nature: a principle and cause of movement and rest in that to which it belongs primarily and per se, not per accidens. Examination of the parts of this definition. Nature is a principle, and not something absolute, Why it is fitting to add "cause". What is meant by "rest", whether it is something absolute, and how nature is a principle of rest.

8. Movement "in that to which it belongs", distinguishes nature from artifacts, in which there is movement only per accidens.

9. "Primarily" is a necessary part of the definition. The weighing downward of an animal is not to be attributed to its nature of animal, but to that which, in the animal, is a nature. Difference between the meanings of nature in "the nature of animal" and in "the nature in the animal". Nature, in the latter sense, and as here defined, is said only of what is an intrinsic principle or cause of movement and rest, common to living and non-living beings. But why, then, do we designate animal, plant, and their parts as first and most obvious instances of what is "by nature"? Necess?

10. Why it is essential to add "per se". When a doctor heals himself, the principle of this healing, the art of medi-

Mr Hess

cine, is intrinsic to the healed, yet the doctor is not, in that respect, healed by an intrinsic principle that is nature.

11. The fittingness of this particular example taken from medicine. Why art cannot be an intrinsic principle per se, and yet be cause of a product, such as bread or wine, that even as such has nature in the sense defined. Note on whether the possibility of producing life from the inanimate, by artificial means, should be ruled out.

12. What is meant by "to have a nature", "to be according to nature", and "to be by nature".

13. Whether it is possible to demonstrate "that there is nature". Whether it is obvious to sense that there is nature.

14. Whether First Philosophy can demonstrate that there is nature. Whether this notion can be approached dialectically. Whether it is possible to use the word "nature" without knowing what the word means, and yet know that there is nature. Whether it is possible to deny nature more than in words. Whether to know that there is nature, and to know what is the nature of this or that being in nature, are the same.

15. What is meant by "nature" in "a being in Nature". Why the same word "nature" has obtained so many different meanings. Ten instances of these diverse meanings (currently used by scientists even today) and their coordination. The inadvertent use of this term as meaningful, by philosophers who deny its every meaning.

useful but not necessary.

Chapter Twelve

~~Lesson II~~

Matter and Form in relation to Nature

1. Whether both intrinsic principles of the subject of this science are "nature" in the sense here defined. What the "physiologists" meant by "nature". How, by reasoning from a wooden artifact, Antiphon identified it with a material, permanent subject, conceived as a "this thing". In what respect his argument is valid.

2. Why the "physiologists" considered all form as secondary and accidental. The likeliness of this conception upon first approach. Why, in pre-Socratic philosophies, form, inasmuch as it is that in virtue of which things differ in kind, should be considered as both rational, and secondary. Why, when considered as analysable to infinity form itself is reduced, now to the nature of matter, then to a product of free thought, the "freedom" of thought to sheer will and, finally, will to necessity. Some modern interpretations of the ancients' conception of substance [Hume, Kant, Eddington, Weyl] and their likely reason.

3. Taking into account the difference between primary matter in the elemental sense, and primary matter as the first subject of absolute becoming, why do we enquire first whether matter is nature in the sense defined, and only in the second place whether form, too, is nature? Whether nature is said of matter in the elemental sense, or in the sense of first subject of absolute becoming.

4. Three reasons showing why form is nature. (a) The argument from analogy with an artifact. Nature, in the present sense, is said only of first, intrinsic principles, not of the composite. When speaking of "the nature of man", or of

"the nature of circle", the term "nature" is understood in a derivative sense, meaning the same as "what" a thing is. Form is nature even more so than matter is. (b) Restatement of Antiphon's argument, this time to show that the form of a natural thing is nature. (c) That form is nature can be shown from the mode of denomination in the first imposition of the word "nature", viz. "nativity" or birth. The value of this argument.