The Riddle of the Early Academy
Prefatory Note

The lectures contained in this volume were delivered at Berkeley in April, 1942. Their author, Professor Cherniss, entered the United States Army as a volunteer soon afterward, and is at present in the military service abroad. Consequently he has had no opportunity, during the process of publication, to make any revision or alteration in the text, and the lectures are printed here, with his permission, in the form in which they were heard by the Berkeley audience.

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## Contents

<table>
<thead>
<tr>
<th>Lecture</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Plato’s Lectures: A Hypothesis for an Enigma</td>
<td>1</td>
</tr>
<tr>
<td>II. Speusippus, Xenocrates, and the Polemical Method of Aristotle</td>
<td>31</td>
</tr>
<tr>
<td>III. The Academy: Orthodoxy, Heresy, or Philosophical Interpretation?</td>
<td>60</td>
</tr>
<tr>
<td>Notes</td>
<td>87</td>
</tr>
</tbody>
</table>
LECTURE I

Plato’s Lectures: A Hypothesis for an Enigma

Aristoxenus, the pupil of Aristotle, begins the second book of his *Harmonics* with a prefatory outline of the subject matter to be treated and the method which he intends to employ; and this procedure he justifies by telling a story which, he says, Aristotle used to recount for the same purpose. According to this story, most of the audience which attended Plato’s lecture on the Good had come with the expectation of hearing about some one of the recognized human goods, such as wealth, health, strength, or some marvelous happiness; and when Plato’s remarks turned out to be concerned with mathematics, numbers, geometry, astronomy, and finally the unity of goodness, some treated the affair with disparagement and others with censure. To Aristotle, apparently, as to Aristoxenus, the reason for this deep disappointment was that the audience, attracted by the mere word “good,” did not know what lay before it, and the fault was Plato’s because he failed to give a general outline at the beginning so that only those would remain who were truly interested.

I shall not take the time to profit by the moral which Aristotle drew from Plato’s unhappy omission. I assume that this community’s large experience of public lectures suffices to guard it against such disappointment as the Athenians suffered; and, in addition, I trust that the title announced for these lectures of

¹ For notes to Lecture I see pages 87–92.
mine will have been recognized as a warning rather than an enticement. At any rate, I recall this story at the beginning not as a rhetorical device and not as an indication of the Peripatetic interest in pedagogical method, but because it is the earliest evidence we have for this lecture of Plato's which has come to play a decisive role in most of the modern expositions of Plato's philosophy.

Since Plato is supposed to have taught in the Academy for some forty years, it seems strange that the only lecture of his to which we have any direct reference at all is this lecture on the Good. Strange as is the evidence, what modern scholars have made of it is stranger still. Some, to be sure, simply pass over the lecture in silence or, having made a perfunctory reference to it in their outlines of Plato's life, proceed to resume and analyze the dialogues. One even protests openly that the aged Plato's single lecture on the Good is unique and that no generalizations may be drawn from it. Yet in most of the authoritative treatments of Plato, after a scholarly reference to this lecture on the Good, the singular becomes an unexplained plural within the paragraph, the lecture a whole series of lectures, and before the section has been finished we are being told that Plato gave "regular lectures," "systematic and continuous expositions in lecture form on some of the most important points in his doctrine." This "expansion" of the evidence—if I may use the term—has been embellished by the different expositors with different details, a comparison of which would afford a certain cynical amusement to the historian of critical scholarship. So, for example, Burnet and Taylor know that Plato lectured without manuscript or notes; Field tells us that in the Seventh Platonic Epistle we have a specimen of Plato's lectures which he himself reproduced from his own lecture notes; and Hubert has the information that Plato, when he lectured, handed his students a syllabus which they copied out. It is fruitless and unbecoming, however, to indulge in the easy sport of playing off such fancies against one another,
nor is it worth while to protest too seriously against the natural
tendency of enthusiasts to outrun the evidence in their desire to
reconstruct the life and activities of a writer whose words have
fascinated the Western world of art and thought for more than
two millennia. What is important is not the harmless, though
unverifiable, picture of Plato giving regular lectures to classes of
students whose scurrying styluses sought to keep abreast of his
anacoluthic sentences—with what probable result for his mean­ing
any modern teacher is competent to conjecture. May we not
fancy that such scenes as this lie behind the words which he
makes the king of Egypt address to the mythical inventor of
writing?—"You have found a charm not for remembering but
for reminding, and you are providing your pupils with the sem­
blance of wisdom, not the reality. For you will find that they have
heard much without having been taught anything and that they
will seem men of many judgments, though for the most part
being without judgment and hard to live with into the bargain
since they have become conceited instead of wise." Probably
every modern teacher who reads these words sees in them the
accurate expression of the desperation which he has so often
felt as he surveyed the distortion of his own thoughts wrought
by the passage through his students' notebooks. It is difficult for
him, then, not to conclude that, since Plato's words fit this ex­
perience, Plato in writing them must have been motivated by
the same experience. Strictly this is a "non sequitur," the kind
of unconsciously analogical thinking which is characteristic of
so much historical reconstruction and the danger of which for
the historian lies not in the fact that it is analogical, but in his
unawareness of its being so. If the reader of the passage which
I have just quoted understands why he thinks of the writer as
a disillusioned lecturer with a gift for mordant expression, it is
not important in itself to know for certain, even if that were
possible, whether Plato really was thinking of notebooks or text­
books, since what he says is equally true of both. So, as regards
the larger question, what is important is the motive for the “expansion” of our evidence concerning Plato’s lecture, the reason why these interpreters seek to enlarge the extent and stress the importance of his oral teaching.

So far as Plato’s philosophical doctrines and theories are concerned, there would at first sight appear to be the less reason for curiosity about the content of this oral instruction since we have the unusual good fortune to possess intact everything that he wrote for publication. At any rate, there is no indication that anyone in antiquity knew of any work of his which is not now extant. Moreover, while we do not know which of his writings was composed first or exactly when he began to write, we do know that the *Laws* was the last of all his works and that he was probably still occupied with it when he died. In addition, there is now general agreement on the relative chronology of three large groups into which all the dialogues can be distributed. Without falling into the easy error of mistaking general agreement for demonstration, we may feel reasonably sure that the *Philebus* and *Timaeus* are the last of Plato’s works before the *Laws*, and that the *Sophist* and *Politicus* belong in the same chronological group with them. This—and especially our certainty in regard to the *Laws*—would seem to insure us against the possibility that the written works might after all give us no information on the nature of Plato’s thought in his later years.

From among the earliest of the dialogues on through the last—and this means, then, to the very end of Plato’s life—the doctrine of ideas is the cornerstone of his thought. It is not discussed at length in many; in some it is not even mentioned openly; but it is, to use the felicitous characterization of Professor Friedländer, the center of gravity of all the Platonic writings. It is possible that a few of the earliest dialogues antedate the birth of the doctrine in Plato’s mind; but that is neither demonstrable nor even likely, for, although many have tried, no one has succeeded in pointing to a dialogue and saying convincingly: Here is its first
appearance. The ideas are called πολυθρόλητα, "notorious," in the Phaedo; and they are certainly as early as the certainly early Euthyphro, which for that reason one recent writer would like to declare spurious, if she dared, in order to save her thesis that the later Meno exhibits them aborning. On the other hand, it has been denied that the doctrine appears in the late dialogues. John Burnet, as Sather Professor in the University of California, asserted that there is not a word about the ideas in any dialogue later than the Parmenides except in a single sentence of the Timaeus. This is mere paradox. Even that sentence of the Timaeus—which is not a single sentence, anyway, but a long and emphatic paragraph—would be an exception important enough to invalidate the general negation; but, in addition, the ideas appear in the Laws, as anyone will see who can read with an eye unjaundiced by a preconceived thesis, and as Brochard proved long ago for those who, like Lutoslawski, could not do so, they appear in the Philebus; and for the sake of those who, like Professor Burnet, believe the Epistles to be genuine they also appear in two Epistles which would have to be assigned to the latest years of Plato's life.

In the dialogues the cardinal propositions of this doctrine of ideas are few and simple. The phenomenal world, which as a whole and in all its parts is continuously in process, cannot be the reality which is the object of knowledge. The apparently disparate phenomena of human conduct, of mental activity, and of physical process can each and all be accounted for only on the assumption that there exist outside of the phenomenal process real entities which are the standards of conduct, the termini of process, and the objective correlates of knowledge. These entities are the ideas, and for every phenomenal multiplicity to which a common name is applied one of these ideas exists as the real correlate. Each of these ideas is an immutable and eternal unit. Each is a perfect individual because, not being involved in the restrictions of place, its existence is not a consequence of
its being in something other than itself, and, being unaffected by process and motion, its existence is timeless, transcending all duration; but each is a universal with respect to all the similar phenomena which are only transient reflections or imitations of it in space. For the moment, it is unnecessary to consider the problem of this relation of particulars to ideas or the inter-relation among the ideas themselves, which Plato takes for granted in the Phaedo and the Republic and discusses at length in the Sophist. Aristotle is as bitterly sarcastic in his criticism of both relationships as he is in laying bare what he conceives to be the self-contradiction involved in making the ideas at once individual and universal. Our immediate concern, however, is not with the nature and validity of his criticism, but with the simple fact that he does ascribe to Plato the theory of ideas which is found in the dialogues and the essential principles of which I have just roughly outlined.

In the first book of the Metaphysics he makes this ascription in the following fashion: Plato in his youth first became intimate with Cratylus and the Heraclitean doctrines that all sensible things are in constant flux and there is no knowledge concerning them, an opinion which he afterwards retained. Then, in accepting the teaching of Socrates, who was concerned about ethical matters and not at all about the whole of nature, but who within the field of his interests was looking for the universal and was the first to fix his attention on definitions, Plato conceived that the object of this procedure must be other than perceptible things, for the reason that the common definition cannot refer to any of the sensibles which are constantly changing. He therefore called such entities "ideas" and said that the sensibles are all called after these and in accordance with them, for it is by participation that there exist the multiplicities of things called by the same names as the ideas. In this passage the epistemological motivation of the theory is stressed, although the reference to the ethical concern of Socrates may be considered as sufficient
recognition that it was reflection upon ethical problems which first brought Plato to posit ideas; elsewhere, however, Aristotle indicates that he was also aware of the purely ontological aspect of the theory.\footnote{32}

What I have paraphrased from the first book of the *Metaphysics* is repeated in substance in two other places in the same work,\footnote{33} where, however, instead of Plato's name, Aristotle uses the circumlocutions "those who assert the ideas"\footnote{34} and "those who first said that the ideas exist."\footnote{35} Now, while one might argue that it is unnecessary to accept as true Aristotle's account of Socratic and Heraclitean influence on Plato, it would seem to be impossible to deny that, whether rightly or wrongly, Aristotle does represent Plato as the author of the theory of ideas which is put forward in the *Phaedo*, the *Republic*, and the *Timaeus*. Yet this *has* been denied by Burnet\footnote{36} and Taylor.\footnote{37} That they were mistaken in denying it has been proved over and over again;\footnote{38} and I mention their strange denial of an undeniable fact, not to refute once more what never needed any refutation beyond the text of Aristotle itself, but because the circumstances which seemed to them to require this denial are the same as those which have led to the expansion of the evidence for Plato's oral teaching.

What I have paraphrased from the first book of the *Metaphysics* is only part of what is said about Plato in that passage. Continuing without any formal transition and quite as if the same doctrine were still under discussion, Aristotle first makes some critical remarks about the notion of "participation" and then goes on with a report which, to omit the criticism intermingled with it, contains the following chief assertions: 1. Plato said that mathematical objects exist apart from the sensibles and the ideas and are intermediate between them. 2. He thought that the elements of the ideas are the elements of all things, and consequently he took as matter the great and the small for principles, and as essence the One, for it is from the former by par-
ticipation in the One that the ideas are the numbers so produced.

3. In his own terminology, then, Aristotle concludes that Plato uses only two causes, the essence and matter, for the ideas are the cause of the essence of the rest of things and the One is the cause of the essence of the ideas, while the underlying matter of which the ideas are predicated in the sensibles and of which the One is predicated in the ideas,—this material principle is a dyad, the great and the small. 4. Finally, he says that Plato assigned the cause of good and ill to the elements, one to each. 

This separate and intermediate existence of mathematicals, this identification of the ideas with nonmathematical numbers, and the derivation of these idea-numbers in some manner from two ultimate principles, the One and the dyad of the great and the small, which principles are at the same time the causes of good and of evil respectively—of all this there is not a word in the Platonic dialogues; and but for Aristotle and the later commentaries on his works or derivations from them no one would ever have dreamed that such notions as these could have had any place in Plato's theory of ideas. Yet Aristotle's ascription of them to Plato is not restricted to the single passage which I have paraphrased, though that passage contains the most extensive account of the system and the most definite assertion that it was Plato's. In fact, one is likely to find it stated in modern treatises that Aristotle "constantly" attributes the doctrine of idea-numbers to Plato and even that he knows of but one Platonic philosophy, that which identifies the ideas with numbers; and, although this way of putting the matter is, to say the least, an exaggeration and really misrepresents the complexity of the Aristotelian evidence, it remains true that Aristotle does ascribe to Plato the doctrine of idea-numbers.

There is a fundamental discrepancy, then, between the theory of ideas as it appears in Plato's writings and what Aristotle represents as being Plato's theory of ideas. Some few scholars like Teichmüller and Shorey have made short shrift of this dis-
crepancy simply by refusing to accept the testimony of Aristotle; but for a hundred and fifteen years at least, that is, ever since Trendelenburg published his monograph on Aristotle’s account of the idea-numbers, almost everyone has insisted that Aristotle was a member of the Academy for twenty years and therefore, though he may have misunderstood what Plato meant, must certainly be accurate in reporting what Plato said. Common experience may cast suspicion upon the cogency of this argument, for in ordinary life one would hesitate to accept as evidence of a philosopher’s doctrine a student’s or colleague’s report of his oral remarks against the authority of the philosopher’s own writings. A careful and conscientious critic prefers an author’s published exposition even to his own memory or records of the author’s conversation. So Professor Norman Kemp Smith, when he outlines Stout’s theory of universals, writes: “I am here going beyond Mr. Stout’s published statements, in reliance upon what I have gathered from personal discussion and from correspondence with him; and may very easily, therefore, be giving an incorrect or inadequate account of his position.” Yet a canon of evidence the very opposite of this is assumed by most modern scholars when they estimate the relative adequacy and trustworthiness of Plato’s writings and what his students have reported concerning his opinions. Burnet and Taylor, in fact, have resolved the discrepancy between the two classes of testimony by denying that Plato’s writings can be admitted as evidence for his ultimate convictions on the most important questions. Since he did not commit to writing the theory of idea-numbers reported and criticized by Aristotle, they conclude that the theory of ideas about which he did write in the dialogues is not his own doctrine but that of Socrates and that what Aristotle refers to as Platonic is not this but the philosophy of Plato, about which Plato never wrote at all. Even the later dialogues, in which according to Burnet the Socratic theory of ideas does not appear—even these are said to contain not Plato’s real teaching
but only “what he thought fit to give a wider public in order to define his attitude to other schools of philosophy.” This paradoxical theory is sufficiently refuted by the evidence of Aristotle himself, for in a passage in which the relation of ideas and numbers is expressly disregarded" Aristotle ascribes to those who, he says, first posited the ideas, the same theory, and the same historical development leading to the theory which had been ascribed to Plato by name at the beginning of chapter 6 of *Metaphysics* A—the passage which I paraphrased as evidence that Aristotle does ascribe to Plato the theory of ideas found in the dialogues. (See above, pp. 6–7.) Nevertheless, although few if any of the “higher critics” of Platonism accept the Burnet-Taylor hypothesis, all of them adopt explanations which differ from that hypothesis only in degree. They allow the dialogues to stand as expressions of Plato’s own thought and they admit that the theory of ideas in the dialogues is Plato’s own doctrine; but, accepting Aristotle’s testimony concerning the idea-numbers, they find themselves constrained to assert that the theory of ideas underwent at Plato’s hands a radical alteration or a radical development and that this new form of the theory, which was in fact a new theory of the ultimate principles of reality, was never committed to writing by Plato and can be recovered only from the reports of Aristotle and the fragmentary references which seem to derive from the writings of Plato’s students. Here, then, is the reason why the single lecture on the Good which ancient sources mention is magnified and multiplied until it becomes a systematic course of oral instruction in the Academy. This systematic oral instruction is a hypothesis set up to account for those aspects of the theory of ideas which Aristotle ascribes to Plato but which are not found in Plato’s writings.

To modern scholars educated in modern schools the hypothesis seems immediately plausible, for Plato was the head of a “school” and as such would “naturally” lecture to his students on the central doctrine of his philosophy. This obvious analogy
with modern schools is not necessarily justified even by the procedure which Aristotle followed in his school. Because Aristotle gave systematic lectures which are preserved and wrote dialogues which are not, it does not follow that Plato, whose dialogues we have, must have given lecture courses which have been lost. Even if the analogy were shown to be valid, however, the hypothesis itself is not thereby established; in order to stand, it must save all the phenomena which it pretends to explain.

Let us for the moment grant that Plato lectured to the school and in his lectures went beyond his writings in working out details and resolving various problems connected with the general theory of ideas. Still, the identification of ideas with numbers and the derivation of ideas from two supreme principles are not such details. They concern the very foundations of the theory; and if in the lectures they had such importance as the modern hypothesis assumes, it is legitimate and necessary to ask why there is no mention of them in the later dialogues which treat of the ideas. The usual answer to this question, when it is recognized at all, is that Plato wrote the dialogues for the general public and consequently omitted from them any exposition of the more profound and technical aspects of his philosophy.

This answer is sometimes bolstered up by citing the disparagement of written books at the end of the Phaedrus and the passage in the Seventh Epistle attributed to Plato in which the writer says there is not and never will be any composition of his dealing with the ultimate principles. This easy explanation, however, only makes the mystery still more obscure, for, if Plato felt, as the author of the Seventh Epistle says, that this doctrine was incommunicable in words, and if he did not put his ultimate philosophy into the dialogues because these were designed for the general public which he believed incapable of comprehending anything so profound, why is it that the one occasion which he is supposed to have chosen for an exposition of it in all its technical profundity was precisely a lecture given to a
public audience which had no preliminary experience of the sort of thing he was likely to say? Zeller seems to have had a premonition of the difficulty here involved, for he sought to avoid it by insisting that the lecture on the Good was attended only by Plato’s students; but, though he rightly rejects the circumstantial account which Themistius gives as nothing but a rhetorical amplification of Aristoxenus’ story, Aristocles himself makes it perfectly clear that the lecture was delivered before a public audience. What was thus publicly expounded was obviously not meant to be a secret or esoteric doctrine; but neither could it have been excluded from Plato’s public writings for the reason given by scholars who, having assumed for him a special oral doctrine in order to explain away the discrepancy between his writings and Aristotle’s reports, must then account for the discrepancy which they have conjured up between this hypothetical oral teaching and his written works. Furthermore, the attitude of Plato’s own students toward the lecture on the Good is hardly compatible with the hypothesis that they received within the Academy regular instruction in the ultimate philosophy which that lecture is supposed to have contained. It is said that Aristotle, Speusippus, Xenocrates, Heraclides, Hestiaeus, and other pupils attended the lecture and recorded Plato’s remarks in the enigmatic fashion in which he made them. Moreover, most of them apparently published their notes or transcripts of the lecture. If Hermocrates was present, he may have incorporated his in his work on Plato. Aristotle’s notes were certainly published under the title Περὶ τὰ γαθοῦ. If in the school they regularly heard systematic expositions of Plato’s ultimate philosophy, it is strange that they attached so much importance to this public lecture as to take it down and publish it alone of all the lectures which they heard; but it is more than strange that what Plato said in that public lecture should have seemed to them enigmatical—as apparently it did. Nor is the importance of their published reports enhanced by the evidence
of the *Seventh Epistle*. Those who cite from that *Epistle* the author’s denial that he has written anything about ultimate principles usually take more lightly the sentence which immediately precedes this denial. Yet there the author says: “So much I can assert about all writers past and future who say that they know the subjects with which I am seriously concerned, whether because they have heard it from me or others or because they have found it out themselves: it is not possible, in my opinion, that they understand anything about the matter at all.” Whether authentic or not, this assertion is certainly directed against such publications as those of Hermodorus and Aristotle. Those who accept the *Epistle* as authentic and say that Plato there warns us not to look for his ultimate philosophy in the dialogues should be at least consistent enough to admit that he also disowns his students’ published reports of his lecture. Thorough consistency would, in fact, require an admission much more serious than this. For myself, I do not believe that Plato wrote this *Epistle*; but if I did, I should recognize that he has himself borne witness beforehand against anything which I might write about the real purport of his thought, and I should account it the madness born of stubborn insolence to seek to describe or even to discover the serious doctrine of a man who has condemned all those who ever have made the attempt or ever will. Surely the *Seventh Epistle* exacts a fatal price from anyone who would use it to support the hypothesis that Plato expounded orally in his school a philosophical system of ultimate principles more technical and more profound than that in his dialogues; but, the two-edged testimony of the *Seventh Epistle* aside, the real evidence for the lecture on the Good which I have set before you must itself, I am sure, appear to be incompatible with such a hypothesis.

Have I not, however, overlooked the most important evidence there is that Plato did give systematic lectures in the school? According to Zeller, Aristotle himself informs us that Plato in his lectures presented a different conception of the fundamentals
of his system from that which he gives in the dialogues; Taylor says that Aristotle commonly refers to the teaching given in the Academy as Plato’s “unwritten doctrine”; and this “unwritten doctrine” is, according to Natorp and Kluge, specifically cited by Aristotle as his source for the theory of idea-numbers. Most of the “higher critics” make assertions which, like these, must give any unsuspecting reader the assurance that Aristotle does frequently and unmistakably mention lectures given by Plato and that these explicit references to the lectures occur in his discussions of the theory of idea-numbers. Yet upon investigation one discovers that there are two and only two specific passages in the whole Aristotelian corpus which these scholars can or do adduce in evidence of their general statements. Of these, one occurs in a section of the De Anima in which Aristotle is trying to prove that all philosophers who were concerned with the soul chiefly as the subject of cognition and perception identified it with whatever cosmological principles they assumed. To support this thesis he cites first Empedocles, next Plato’s account in the Timaeus, and then a third theory which he says has been explained ἐν τοῖς περὶ φιλοσοφίας λεγομένοις and to which, among other characteristics, is ascribed the identification of numbers and ideas and their derivation from certain elements. Although Plato’s name is not mentioned in connection with this third theory, most modern critics, commentators, and translators assume that it is his doctrine and that the introductory words mean Plato’s lectures on philosophy. These introductory words, however, can just as well mean Aristotle’s own dialogue entitled Περὶ φιλοσοφίας, a work in which he discussed not only the theories of Plato but also those of other Platonists. That the words can mean this is proved by the fact that the ancient commentator Themistius so understood them, for Themistius knew Greek even though he did not know this dialogue of Aristotle’s any more than Philoponus and Simplicius knew Aristotle’s published report of Plato’s lecture which they took to be the object
That the words probably mean this is indicated by the further evidence of Themistius, who says that the first part of the third theory is to be found in Xenocrates' treatise On Nature, a work which he refers to elsewhere in such a way as to show that he really knew its contents. The decisive proof, however, that the third theory is not Plato's and that the introductory words, therefore, cannot refer to any lecture of his or published report of such a lecture is furnished by Aristotle himself. An essential characteristic of this theory in the De Anima is that the idea of line is the number two, the idea of plane the number three, and the idea of solid the number four; but in the Metaphysics this characteristic is ascribed to a doctrine which is sharply distinguished both from that of Plato and from that of Speusippus and which by comparison with other passages is clearly shown and generally recognized to be the doctrine of Xenocrates.

So, one of the two passages in which Aristotle is supposed to refer directly to the lectures of Plato—and a passage which, incidentally, has been widely used to reconstruct the content of those lectures—does not concern Plato at all and was not meant to be so understood. In the other, a passage of the Physics, Plato's "unwritten opinions" (ἀγραφα δόγματα) are cited; but, whether by this term Aristotle means to designate the published reports of Plato's lecture on the Good or just opinions which Plato had expressed in conversation with students and associates and which they may or may not have written down and collected, at least three conclusions must be drawn from this citation, and all of them contradict the statements which this passage is usually presumed to support. First, since the citation here is unique, Aristotle does not "commonly" refer to the teaching in the Academy as Plato's "unwritten doctrine"; second, he does not even here cite these "unwritten doctrines" as his source for the theory of idea-numbers; and, third, he mentions them only to assert their agreement with the Timaeus. He admits that in
that dialogue and in the “unwritten opinions” the participant has different designations; but he implicitly denies that this is anything more than a difference of terminology, for he contends that whether the participant be called “the great and the small,” as in the “unwritten opinions,” or the material principle, as in the Timaeus, since it is in either case spatial position, the ideas in which it participates ought to be in place and Plato is faced with the difficulty of explaining why they are not. When we consider that it was just the discrepancy between Aristotle’s reports and Plato’s dialogues which suggested the hypothesis that Plato in his lectures taught a doctrine of ultimate principles which he omitted from his dialogues, it is startling to find that Aristotle himself, in the one passage which could be taken as a direct reference to such lectures of Plato’s, dismisses as merely a verbal variation the discrepancy between the unwritten opinions and the dialogues and insists that what is taken to be one of the two ultimate principles of this supposedly recondite oral theory is identical with the participant concerning which we can read Plato’s own words in the Timaeus. Startling as this is, however, it is useless to pretend that this passage in any way differentiates from the participant of that dialogue “the great and the small” of the “unwritten opinions.” Not only would Aristotle’s argument be pointless unless he took them to be identical; he says in so many words that by either name the participant is space. To be sure, his identification of the space of the Timaeus with his own conception of position, his assumption that the participant there is the equivalent of his own “material principle,” his flat statement that Plato says that matter and space are the same—all these are misinterpretations or even misstatements of great consequence; and, since he misinterprets and misquotes the Timaeus, what he says of the “unwritten opinions” may be erroneous too. Even so, his misinterpretations of both expositions are likely to be of a similar kind, since he takes the meaning of both to be the same; and we can establish the general tendency of his
interpretation, for we control one of the expositions from which that interpretation is derived. In any case, the significance of the passage for the hypothesis of Plato’s oral doctrine is that it justifies, or rather requires, the use of the *Timaeus* as a criterion for the possible nature of such a doctrine and for Aristotle’s reports and interpretations of it.

Consequently, this one passage by itself would suffice to refute the widespread notion that for the theory of ideas or the Platonic metaphysics Aristotle always refers to Plato’s lectures and discussions in the Academy and never to his published dialogues. At the same time it provides a valuable touchstone for the thesis that the dialogues *do* contain indications of the theory of idea-numbers and ultimate principles which, because of Aristotle’s references, it has been supposed must have been expounded by Plato orally in the Academy. For among the higher critics there are now some—and they are not the least erudite and impressive—who have in this fashion almost come full circle. They adopt the hypothesis of an oral doctrine which was set up to explain how Aristotle can ascribe to Plato a theory which is not to be found in the latter’s writings; but, obviously troubled by the new discrepancy thus created between Plato’s written and oral philosophy, they insist upon finding definite indications of this hypothetical oral doctrine at least in the later dialogues.

Even in the early dialogues, of course, there are *ideal numbers*, that is, ideas of numbers in the same sense as there are ideas of all phenomenal multiplicities; but this is quite a different thing from the theory of idea-numbers, according to which *every* idea is a number, the idea of horse and the idea of man, for example, and not just the ideas of two and three. Since no such identification of ideas and numbers is to be found in the dialogues, the next best thing would be to discover there references to the ultimate principles from which these idea-numbers are supposedly derived; and such references, it is averred, are to be found in the *Philebus*. In this dialogue Plato posits four classes which he calls
the limit, the unlimited or infinite, the mixture of these two, and
the cause of the mixture. To this, consequently, appeal all those
critics who desire to find in the dialogues some corroboration of
Aristotle's report that the ideas were identified with numbers
and derived from "the One" and "the great and small" as ult­
imate principles. According to Aristotle, Plato held that "the
great and small" constitute the unlimited or infinite, and here
in the Philebus is not one aspect of the unlimited specifically
designated "the greater and smaller"? If this classification in
the Philebus corresponds to the theory of principles as Aristotle
reports it, however, the class of the limit must be identifiable
with "the One" and the class of the mixture with the ideas;
and, unfortunately for all attempts to maintain the correspond­
ence, the class of the mixture in the dialogue is distinctly and
unequivocally equated with the objects and events of the phe­
nomenal world, the things that are in process of becoming and
never really are, while the ideas are called "monads" and are
described as "eternally immutable and unmixed." Here, then,
the classes of the limit and the unlimited are not ultimate prin­
ciples from which the ideas are derived, and no identification
of ideas and numbers is involved in this classification just as no
such theory is implied by Plato's admonition to observe the exact
number between the unlimited and the One. This clause, taken
out of its context in the same dialogue, has in the past been
cited as a clear reference to the theory of idea-numbers; but
here, too, "the unlimited" is not a principle of the ideas but the
phenomenal multiplicity, "the One" is any given idea, and the
number referred to is not an idea but just the number of specific
ideas which there may be between any more general idea and
the unlimited multiplicity of particulars which reflect or imitate
any one idea in the sensible world.
Moreover—and this is what chiefly concerns us as we con­
sider Aristotle's report,—if the unlimited or infinite of the Phile­
bus is identical with "the great and small" of the "unwritten
opinions,” then by Aristotle’s own testimony it cannot enter into the constitution of the ideas, for, according to his statement in the *Physics*, that “great and small” is, save for its name, the participant of the *Timaeus*, and of this participant, space, Plato says most emphatically that it never enters into the ideas just as the ideas never enter into it. It is not only the participant of the *Timaeus*, however, with which Aristotle identifies this principle. In an earlier passage of the *Physics* he declares that “the great and small” is nonbeing, and he explains that the material principle was thus conceived because in view of Parmenides’ dilemma it was thought necessary to admit that absolute genesis is from nonbeing. This reference to Parmenides suggests that he is identifying “the great and small” with the nonbeing, the existence of which Plato establishes in the *Sophist*; and this suggestion is confirmed by a passage in the *Metaphysics* in which he argues that the Platonists were misled in their search for principles by the obsolete form in which they put the problem. They thought that all entities would be one—that is, absolute being—unless Parmenides’ objection were met by proving that nonbeing exists, for only from a combination of “being” and “something else” could a multiplicity of objects exist. The quotation here of a line of Parmenides’ poem proves conclusively that Aristotle is referring to Plato’s dialogue in which the Eleatic Stranger quotes the same line and states the necessity of establishing against Parmenides the existence of nonbeing. This nonbeing, Plato explains with emphasis and care, is not the opposite of being, but simply “otherness”; and Aristotle is quite wrong when he insists, as he does, that it is absolute nonbeing, a notion which Plato expressly dismisses as meaningless. His reason for so insisting is his contention that by positing an idea of being, that is, “absolute being” which is not just the being of any particular entity, Plato fell back into the difficulty of Parmenides. To the consequences of this contention I shall presently return; at the moment what concerns us is simply Aristotle’s identifica-
tion of "the great and small" with the nonbeing of the Sophist. If he is right in making this identification, his own testimony requires us to take as applicable to "the great and small" what Plato in that dialogue says of nonbeing and so proves that "the great and small" is not the material substrate of phenomena, for the nonbeing in the Sophist is an idea which pervades all the ideas, including the idea of being by which it is pervaded in turn, whereas the participant of the Timaeus is in no idea and no idea is in it.

At this point, I believe, one would be justified in suspecting that the supposed discrepancy between the Platonic metaphysics reported by Aristotle and the philosophy of Plato's dialogues may be in large part a discrepancy of another kind. Aristotle's evidence itself, testifying against itself where it can be controlled, puts itself under suspicion in other places where a direct control is lacking. We know that the participant of the Timaeus and the nonbeing of the Sophist are not the same; since he identifies them both with "the great and small," we are in duty bound to suspect the truth of his general statement in the Metaphysics that this same principle was at once the substrate of phenomena and of ideas. Simplicius observed that it is inconsistent to identify "the great and small" with the so-called material principle of the Timaeus, which is expressly confined to the phenomenal world, and at the same time to make it a principle of the ideas. This observation is noticed and scornfully dismissed by Stenzel, one of the most authoritative and obscure of the modern interpreters who have tried to reconstruct from Aristotle's remarks an oral doctrine for Plato and then have tried to find signs of this doctrine in the dialogues. To Stenzel such observations as that of Simplicius are merely proof of inability to understand Plato directly and of unwillingness to listen for the possible difference of meaning which seemingly familiar terms may have had in the context of an earlier philosopher's thought. Stenzel himself explains that the "indefinite dyad of the great and small"
was not meant to be identical with the "space" of the *Timaeus* but was the most general principle of extension or dimension, of which the participant of the *Timaeus* is just one specific aspect, the "otherness" of the *Sophist* presumably being another. Yet he gives no explanation of Aristotle's testimony against this thesis; it may be that he was unaware of it, since he does not mention the passages in which it occurs, although it is curious that, while overlooking the part of the *Physics* passage which equates "the great and small" with the participant of the *Timaeus*, he did not fail to notice and to quote that other part of the same passage which, taken by itself, seems to differentiate the treatment in the *Timaeus* from that in the "unwritten opinions." Whether as a result of oversight or not, Stenzel has constructed for Plato a doctrine which does not conform to the testimony of Aristotle, whose testimony in the first place was supposed to be the compelling reason for assuming some such Platonic doctrine. In this Stenzel constitutes no exception but only a typical example of the procedure and results of the "higher Platonic critics." They all find it impossible to believe that Plato meant the material principle of phenomena to be one of a pair of principles from which the ideas themselves are derived; consequently, they say that he set up different material principles for the different levels of existence. As to the designations and interrelation of these different principles or different aspects of one principle, each interpreter has his own minor variations; all of them, however, suppose that their hypotheses are made necessary by Aristotle's evidence and successfully account for that evidence, whereas in fact all of them contradict that evidence in one of two ways. Either they deny that he ascribes to Plato one and only one material principle, or they must assert that he errs in doing so and errs because he failed to understand or failed to report accurately what Plato said. Some few, like Watson, have chosen the former alternative; they are refuted not only by the passages which I have cited and
which state categorically that Plato's material principle of ideas and phenomena was one and the same, but also by Aristotle’s objections which are directed against that identity and by the fact that wherever species of “the great and small” are mentioned, as they are, Aristotle distinguishes this characteristic as a development different from Plato’s own doctrine. Those who choose the latter alternative, whether they do so explicitly—as Zeller did—or implicitly and apparently unconsciously—as do Robin, Ross, and Stenzel,—adopt a position hardly less objectionable. They have from the same witness, Aristotle, two pieces of evidence: one, that Plato made “the great and small” the material principle of the ideas, and the other, that this “great and small” was identical with the participant of the *Timaeus*. They reject the second because they believe—and rightly believe—that it is inconsistent with the first; but it would be just as reasonable to reverse the process and reject the first because it is inconsistent with the second. After all, their only reason for supposing that Plato assumed any substrate for the ideas is the testimony of this witness whose further testimony concerning the nature of this substrate they refuse to accept. I submit that sound principles of evidence demand that, if either statement of the single witness is rejected, the other should for that very reason be held suspect too.

We have, moreover, the means of specifying this abstractly logical suspicion, of determining its proper direction and degree. We can read the *Timaeus*. We know that the participant there described is “space,” as Aristotle reports; but we also know that it is not “matter” as he says it is, not even the material principle of phenomenal objects. It is not that out of which particular things come to be, that which was this particular thing potentially and which, having become this particular thing actually, is potentially the contrary of its present determination; it is not the substrate which is the logical subject of change and so accounts for the generation of bodies from one another; it is
not an element or principle immanent *in* particular things at all. This is what Aristotle means by “material principle.” He was convinced that the theory of the spatial participant was just an unsuccessful attempt on Plato’s part to formulate this conception, and much of his criticism of the *Timaeus* and of Platonic physics is determined by this conviction; but the spatial participant or receptacle is neither in its nature nor in its motivation Aristotelian matter *manquée*. On the contrary, it is that *in* which all phenomenal processes take place and which itself is unsubject to any alteration and unaffected by any of the events which come and go in it. Plato himself explains that his theory of space as the participant or receptacle is a consequence of his doctrine that physical particulars, being constantly in process, are *imitations* of reality, for as such they imply not only real entities—that is, the ideas, *of* which they are images,—but also a field or medium *in* which they can, as images, appear and disappear. In Plato’s theory, then, there is no material principle even for sensible objects; and if not for them, it is hardly likely that Plato assumed for the immutable ideas themselves a principle such as this, which was conceived by Aristotle as the subject of change. Furthermore, it would be insufficient to grant that Aristotle’s identification of the participant with matter is erroneous and misleading but to conclude that, once this mistaken equation or accommodation is corrected, his statements can be accepted as valid evidence that for the ideas as well as for phenomena there was a participant or receptacle which, if not identical in nature, had at least a similar function in both spheres. It is, on the contrary, certain that Plato assumed for the ideas themselves no such principle as the spatial participant of the *Timaeus*. On the evidence of his own words, as it is the *unreality* of phenomena that makes such a medium necessary for *them*, so the ideas, because they are real entities, cannot be *in* this or any other medium; and to posit such a principle for the ideas would be to declare that they are themselves not real entities, but transient phe-
nomina. Plato, therefore, expressly repudiated the notion of an ideal analogue of space, an ideal participant or receptacle. Certainly, the nonbeing of the *Sophist* was not conceived as such a principle, any more than it was meant to be the material substrate of phenomena. (See above, p. 19.) Aristotle, who identifies it with "the great and small," says that from it in combination with being the multiplicity of entities was derived; but, as we could control his interpretation of the *Timaeus*, so we can read Plato's own words in the *Sophist*. We, therefore, know directly that the nonbeing there is an idea, the idea of "otherness" or "difference," that this idea and the ideas of being and identity intercommunicate with one another as they do with all other ideas and all other ideas do with them, and that all interrelations among ideas are reciprocal. This being so, there can be no thought, as there is no mention, of any derivation of the ideas from being and nonbeing; and the idea which is this nonbeing certainly is not a medium in which appear, as different ideas, transient images or imitations of the idea of being. In short, this nonbeing does not stand to the other ideas as the spatial participant does to phenomena, or to the idea of being as the spatial participant does to the ideas.

As it is certain that Aristotle is mistaken in making the nonbeing of the *Sophist* absolute nonbeing, in identifying it with the participant of the *Timaeus*, and in interpreting it as a substrate whether of phenomena or of the other ideas, so the reasoning by which he reached these conclusions is clearly indicated in his writings. I have already mentioned his contention that Plato, in positing an idea of being, fell back into the Eleatic difficulty. (See above, p. 19.) By this he meant that absolute being thus became, like every idea, a unity; and from this he concludes that any substrate of plurality as other than this absolute being would have to be absolute nonbeing. Since, in his own terminology, the participant of the *Timaeus* must be such a substrate, however inadequately conceived, it must be
PLATO’S LECTURES

absolute nonbeing; then, inasmuch as nonbeing is, in fact, mentioned in the Sophist, it is but a step for him to identify with it the participant of the Timaeus which he has already shown on other grounds must be absolute nonbeing. The nonbeing of the Sophist, however, is a factor in every idea; and so, once the identification of this factor with the participant is assumed, it follows that Plato must have posited a material substrate of the immutable ideas themselves. This is a compendious statement of Aristotle’s reasoning, the different steps of which he supports with many different arguments; but all of these, like the general outline of the whole which I have given, are derived from interpretations of the dialogues and are not based upon any deviation from them in Plato’s oral teaching. In the light of this, then, if Aristotle writes or is reported to have written that Plato in lecture or conversation posited a material principle of ideas, a historian is surely obligated to assume, in the absence of strong, independent evidence, that this report derives from the same kind of misinterpretation, especially if the principle in question is identified—as is “the great and small”—with the very concepts in the dialogues which are so misinterpreted.

So the clue of Aristotle’s one specific reference to Plato’s “unwritten opinions” leads away from that systematic philosophy which Plato is supposed to have taught orally in the Academy; it leads instead to the conclusion that one of the two ultimate principles of that hypothetical system was derived by Aristotle directly from the dialogues and by means of his own polemical interpretation. The consequence immediately suggested is that the idea-numbers may be no more genuinely Platonic than this ultimate principle which is represented as their material substrate. This logical consequence, however, constitutes at best presumptive evidence. If the correct explanation of the idea-numbers which Aristotle ascribes to Plato is similar to the conclusion which we have drawn for the so-called material principle of ideas, then the conditions attendant upon the former ascrip-
tion should be analogous to those which led to our conclusion in the latter. In that case, *some* such conclusion is called for because Aristotle's statements concerning the nature of this ultimate principle are inconsistent with one another and not only do not correspond to any doctrine in the dialogues but are flatly contradicted by the dialogues to which they themselves refer; and the validity of our *particular* conclusion is established by the fact that Aristotle's own words and arguments show how and why he drew from the dialogues this notion of a material substrate of ideas.

Now, Aristotle's evidence for the idea-numbers *is* characterized by the first of these conditions. Even if only those of his statements are considered in which the identification of ideas and numbers is assumed, contradictions in the evidence become obvious. So, to take but one example, he criticizes the theory of idea-numbers on the assumption that it limits these numbers to ten;¹⁰⁷ but elsewhere he complains that it contains no statement concerning the number of real entities but sometimes seems to treat the numbers as unlimited and sometimes as only ten,¹⁰⁸ and in this same book he ascribes to Plato the doctrine that there are as many ideas as there are natural classes.¹⁰⁹ Such inconsistencies caused Robin to conclude that the idea-numbers were really meant to be the models and archetypes of the ideas and that when Aristotle talks as if each idea were itself a number he is for polemical purposes drawing an unjustified inference from the Platonic theory.¹¹⁰ This conclusion is particularly instructive, for it was Robin's avowed purpose to rediscover the true meaning of Plato's doctrine from Aristotle's testimony alone and without any reference to the writings of Plato himself;¹¹¹ and yet that doctrine, as he finally reconstructs it, answers to nothing at all in the testimony of Aristotle. This reconstruction of his is not acceptable and has not been accepted, for its sole support is a single, questionable sentence of Theophrastus, interpreted in a way which contradicts everything that Aristotle says
about the idea-numbers;113 but the scholars who on the authority of Aristotle's evidence reject this reconstruction and identify the ideas and numbers do not even try to explain the inconsistencies in that evidence which led Robin to his conclusion.

There is, however, in the evidence another, more important kind of inconsistency, one to which even Robin pays no attention. Aristotle is inconsistent not merely in his statements about the idea-numbers as such; he also describes and criticizes the ideas in a way which would be meaningless if the ideas were numbers or derived from numbers in any sense whatever. By this I do not refer to those passages which could be interpreted either as deliberately disregarding for legitimate, methodological purposes one aspect of the idea-numbers to criticize another, or as possibly composed before Plato had developed the theory of idea-numbers. One might, for example, try to explain on the latter hypothesis why there was no reference to idea-numbers—as we know there was not114—in Aristotle's lost book "On the Ideas"; and the use of a résumé of that work in the Metaphysics, where it appears twice over,114 could be explained by the former, methodological reason. Still there remain passages which cannot be explained away by either hypothesis. No one supposes or could suppose that the third book of the Metaphysics (B) might antedate the Platonic theory of idea-numbers.115 Yet in this book Aristotle asserts that the ideas differ from the sensibles of which they are the ideas only in that they are eternal while the sensibles are perishable; and this, he contends, is proved by the fact that the ideas are called "absolute man," "absolute horse," and the like, without any further qualification whatsoever so that the ideas are merely eternal sensibles just as anthropomorphic gods are nothing but eternal human beings. He makes the same kind of criticism based upon the same kind of report in the supposedly late Metaphysics Z, in Metaphysics I, in Physics B, in Nicomachean Ethics A.117 If his arguments in such passages are not arrant nonsense, if his reports in such pas-
RIDDLE OF THE EARLY ACADEMY

sages are not to be rejected as utterly false, the ideas cannot have been numbers at all. Yet why should we reject these reports, which implicitly deny the identification of ideas and numbers, in favor of those which assert that identification, when both classes of evidence are given by the same witness and the first is in accord with the evidence of Plato's writings while the second has no support in that evidence? The situation is the same as that which obtains with respect to the material principle. In order to save the integrity of some reports and interpretations of Aristotle, the higher criticism has set up the hypothesis of an oral Platonic doctrine and supposed that this is what Aristotle reports and criticizes; but then, in order to maintain this hypothesis, it has had to construct for Plato a theory which not only is absent from his writings but is either entirely at variance with all the testimony of Aristotle himself or tacitly disregards that part of his testimony which contradicts the very premises of the reconstruction. Nor is the reconstruction supported even by the remaining accounts of Plato's one attested lecture, for what credible ancient testimony there is for that lecture on the Good indicates that in it there was no specific identification of ideas and numbers. Of the commentators who cite the contents of that lecture none had seen Aristotle's report of it save possibly Alexander of Aphrodisias. His scattered résumés and explanations were the ultimate source of information on this subject for all the other commentators whose remarks have reached us. Alexander himself says that in Aristotle's report of the lecture "the One" and "the great and small" were represented as the principles of number and the principles of all entities; but the identification of ideas and numbers, and the notion that the principles of number are the principles of everything, he derives from the doctrine that points are substantially prior to lines and are monads with position. Yet in the Metaphysics Aristotle testifies that Plato denied the existence of points altogether. If we accept his evidence in this matter, it follows that Plato in the
PLATO’S LECTURES

lecture on the Good did not give any account of the identification of ideas and numbers; for Aristotle could not have said that he gave the explanation which Alexander proposes, and if Aristotle had reported some other account Alexander would have had no reason to propose this one. Alexander himself indicates that in this explanation he is running together Platonic and Pythagorean doctrines. His reason for doing so is obvious. He is here commenting upon Aristotle’s identification of ideas and numbers in Metaphysics A, 6, where Aristotle himself compares Plato’s theory with Pythagoreanism. To explain this passage he cites the remarks on number in Aristotle’s report of the lecture on the Good; but, since that report failed him in the crucial question of the identification of ideas and numbers, he has had to fill in the lacuna by conjecture and in so doing has failed to observe that his conjecture is inconsistent with another of Aristotle’s reports. So Alexander’s account betrays itself in the same way as does the modern higher criticism which uses it as factual evidence for the content of Plato’s oral doctrine.

This oral doctrine, a hypothesis set up to save the phenomena of Aristotle’s testimony, has come to be treated as if it were itself part of the phenomena to be saved. The history of human thought has known many such inversions; in this instance, as in all others like it, the result has been to disregard, explain away, or deny those factors in the phenomena which contradict the hypothesis. The only healthy and reasonable course, however, is to discard this hypothesis and try another: to accept that part of Aristotle’s testimony which agrees with the Platonic writings and, since this testimony is at variance with the identification of ideas and numbers, to see whether that identification may not have its origin and explanation in Aristotle’s own critical interpretation of Academic thought rather than in any suppositious oral exposition of Plato’s own.

I shall, then, in the next lecture try this key in the lock of the riddle. Let those who think it overbold to suggest that the the-
ory of idea-numbers was not a theory of Plato's at all, but an interpretation of Aristotle's, consider Aristotle's assertion that Leucippus and Democritus, too, make all entities numbers and derived from numbers. That they do not state this clearly he admits; but he insists that this is what they really mean, for Aristotle is one of those who cannot be refuted by an author's words because he is sure that the author was unable to say what he really thought.
Lecture II

Speusippus, Xenocrates, and the Polemical Method of Aristotle

The riddle of the early Academy is epitomized in the discrepancy between Aristotle's account of Plato's theory of ideas and that theory as we know it from Plato's writings. To explain that discrepancy, scholars have constructed the hypothesis of an oral Platonic doctrine. I have tried to show that that hypothesis is unsatisfactory not only because the evidence for Plato's one attested lecture fails to support it, but also because the inconsistency in Aristotle's testimony itself appears to contradict it; but the alternative hypothesis which I have proposed, namely, that the identification of ideas and numbers was not a theory of Plato's at all but the result of Aristotle's own interpretation,—this hypothesis also seems to assume the restriction of the whole enigma and the conditions of its solution to the testimony of Aristotle alone. Yet one might object that there were other members of the Academy, members who might be expected to have greater sympathy with Plato's teaching than had the founder of the Lyceum, who called the ideas "meaningless prattle." If, then, Aristotle deduced from the written or spoken words of Plato a doctrine which Plato had never meant to pro­ound, would not such an ascription have been denied and such an interpretation opposed by these other members of the Academy, and especially by Speusippus and Xenocrates, the successors to the headship of the school? One might even expect

¹ For notes to Lecture II see pages 93–98.
that these two men, at least, would have maintained intact the philosophical system taught by Plato, in which case their own doctrines could serve as a means of controlling directly Aristotle's reports and interpretation of that system.

There is evidence to show that concerning the intention of some important aspects of Plato's thought there was disagreement among his immediate pupils or associates, who rejected as misinterpretation what Aristotle imputed to him as explicit doctrine; but the surviving evidence of these controversies fails us in the crucial question of the identification of ideas and numbers. What Speusippus, Xenocrates, and the rest may have said, if they said anything, about Aristotle's ascription of this doctrine to Plato, we are prevented from knowing by the chance or providence which, while preserving the technical writings of Aristotle, has left no single work of any other pupil of Plato's save only Philip's Epinomis—if that dialogue is really his. We can at best venture a probable inference of what Speusippus and Xenocrates may have believed in this matter; and such an inference we can draw only from the nature of their own positive doctrines. Nor can these doctrines serve as a canon of Plato's teaching, for Speusippus and Xenocrates held metaphysical theories different from each other and each of them different not only from the theory of ideas in the Platonic dialogues but also from that discrepant theory of idea-numbers which Aristotle ascribes to Plato. Instead of being a control upon that ascription, then, these doctrines of Plato's successors only manifest anew, and reflect from another angle, the same enigma which it epitomizes. Yet this very multiplicity of aspects in which the single riddle appears may in combination supply the clue to its solution, just as different distortions of an image in several mirrors will enable the observer to reconstruct the true proportions of the original though any one distortion alone might leave him deceived and unsuspecting. Moreover, Aristotle almost always refers to the theory of idea-numbers in close connection with his
references to these Platonistic theories. So even the scholars who accept his account as having reference to what Plato taught orally in the school usually recognize that his criticism of this theory ascribed to Plato is somehow affected by his related criticism of Speusippus and Xenocrates, and they frequently assert that he has distorted Plato's doctrine in the direction of other Platonistic theories, especially that of Xenocrates. To admit so much, however, is in fact to admit that Aristotle's whole treatment of what is assumed to have been Plato's oral doctrine may have been determined by his concern with these Platonistic theories.

Speusippus rejected the Platonic ideas altogether and assumed instead the separate and independent existence of mathematical numbers; the mathematical decad, from one to ten, he called the most natural and perfective of entities and, in words reminiscent of Plato's description of the ideas in the *Timaeus*, a complete model for the god who creates the universe. Xenocrates, on the other hand, upheld the existence of ideas but identified these ideas with mathematical numbers—a conception which, according to Aristotle, is worse than either the separate mathematical numbers of Speusippus or the idea-numbers of Plato's theory. So Aristotle recognizes that Plato's numbers differ from the idea-numbers of Xenocrates in that they are nonmathematical, though his criticisms make it certain that he did not appreciate the significance of this conception; in fact, in his dialogue *On Philosophy* he complained in so many words: "If the ideas are a kind of number other than mathematical, we could have no comprehension of it; for who of most of us understands any other number?" Yet from his reports and from the Platonic dialogues themselves what was meant by nonmathematical number becomes clear, and it is also clear that this conception is not essentially related to the identification of all ideas with numbers but is part of that theory of ideas which appears in the dialogues. Since Plato assumed an idea for every multiplicity to which
a common name is applied, consistency would require him to posit a separate idea of each number; and the Phaedo itself attests that he did so. There it is said that the cause of the production of two, for example, is not the addition of one to one or the division of one but the participation in twoness, the idea of two. A separate idea of each number is posited for the same reason, then, as are all other ideas; and these ideas of numbers are not combinations of units or products of factors into which they can be analyzed, but each is a simple and unique unit just as is every other idea. This disposes of what must have seemed a special objection to assuming ideas of numbers, an apparent difficulty of which Plato himself takes cognizance in the Cratylus. Phenomena as imitations or images necessarily fall short of the ideas which are their models. Now, one might admit the plausibility of such a relation in other things, for no particular white is perfect whiteness and no particular human being is perfect humanity, and yet one might object that a particular number, ten for example, cannot fall short of its model without becoming a different number, nine or eight, in which case ten would not be its model at all, while if it does not fall short of the model it is identical with it and so is as much an idea as the supposed idea itself. Once it is recognized, however, that the ideas of numbers are not aggregates of units at all but are the universals of number, each of which is a perfect and unique unit without parts, the phenomenal numbers which are aggregates can be related to them as images or imitations, their unity of aggregation being a derogation and dispersal of the real unity of the ideal numbers. Yet to assume the existence of numbers which are not aggregates of units must have seemed to men of "common sense" a paradox which raises greater difficulties than it solves. In the first place, such numbers, being each a single indivisible and unique unit, would be inaddible, since "two plus three are five," for example, means that any two units plus any three units are five units, but the ideal two or twoness is not two
units but *one*, the ideal three or threeness not three units but another *one*, and these *ones* are entirely different from each other and from the ideal *one* or oneness which, being a universal, is also unique. In the second place and for the same reason, although these ideal numbers are assumed to be different from one another, it is difficult to see what constitutes this differentiation since threeness cannot differ from twoness as any three differs from any two by the addition of a one. So Aristotle, arguing against the “differentiation of numerical units,” contends that, since units differ neither quantitatively nor qualitatively and two numbers must be either equal or unequal, if one number is neither greater nor less than another the two are equal and therefore identical;¹ and he can only express amazement at the supposition that the ideal three is not a larger number than the ideal two, although he recognizes that according to the theory of unique universals of number it cannot be larger.² His amazement had been anticipated by Plato, who in the *Republic*³ made the incredulous critic ask: “What kind of numbers are you talking about, marvelous sirs, in which each unit is all equal to every other, not differing in the slightest and having in itself no part at all?” What is here called “each unit” is the unity of each of the numbers which are accessible only to the intelligence and which, as indivisible units, are all “equal” and quantitatively indifferent.⁴ Yet Aristotle’s own scattered remarks make it possible to see how Plato conceived the differentiation of these quantitatively indifferent numbers. Because they are inaddible and so entirely outside of one another in the sense that none is part of any other, these ideal numbers stand to one another in the relation of prior and posterior;⁵ and this relation is the serial order, two-three-four- and so forth,⁶ the series beginning with two because by Plato, as by the Greeks generally, one was not considered to be a number. What distinguishes each of the ideal numbers from all the rest is its position in this series, as is shown by the fact that Plato defined the ideal two as the “first number,”
the ideal three as the "second number," and so on. This order is not one of ontological priority, however, for in the ontological sense each ideal number is called "first" or "primary" in relation to the respective numbers which are aggregates and not ideas (so, for example, the "second number" is the "first three") and in this sense "the first number" is used not of the idea of two but collectively of the whole series of ideal numbers. Herein lies the explanation of Aristotle's further statement that no separate idea of number in general was posited because the numbers stand to one another as prior and posterior. Aristotle himself generalized this principle and used it to refute the existence of ideas which Plato certainly posited; but it is only to the serial order of the ideal numbers that it originally applied. As soon as the essence of each idea of number is seen to be just its unique position as a term in this ordered series, it is obvious that the essence of number in general can be nothing but this very order, the whole series of these unique positions. The idea of number in general, then, is the series of ideal numbers itself; and to posit an idea of number apart from this would be merely to duplicate the series of ideal numbers. The proof that no such duplication of any idea is possible occurs in both the Republic and the Timaeus.

Plato's ideal numbers, then, are just what mathematicians call the series of natural numbers. The Phaedo and the Republic show that this conception was the consequence of applying to numbers the general principle according to which a unique idea was posited for every phenomenal multiplicity and that it could not have depended upon any notion that all ideas are numbers which are generated or derived from certain ultimate principles. If the opposite impression has been given by Aristotle because his obvious references to these inaddible numbers occur in passages concerned with that identification of ideas and numbers which he ascribes to Plato, another passage, usually overlooked or misinterpreted, makes Aristotle himself a witness against
any such connection. In a section from which he has expressly
excluded all consideration of the idea-numbers and the principles
from which they are supposedly derived, he introduces an argu­
ment against the theory of ideas which assumes that no idea of
number was allowed apart from the numbers of which the idea
of two was "first." This designation of the idea of two implies a
fixed order of the numbers, so that the two essential character­
istics of the theory of inaddible numbers are here attested by
Aristotle himself for what the higher critics call Plato’s “origi­
nal” theory of ideas: a relation of prior and posterior among the
numbers and the denial of an idea of number in general apart
from these.

In the theory of idea-numbers which Aristotle ascribes to Plato
it is these inaddible numbers, the ideas of number in the theory
of the dialogues, with which all the other ideas are supposedly
identified. Since this is just the kind of number which Speusippus
and Xenocrates did not retain although both set up numbers
of a kind as absolute and independent entities, it is safe to con­
clude at least that neither of them understood the real signifi­
cance of Plato’s nonmathematical numbers. To the extent that
they failed to do so, they did not differ from Aristotle, so that
there was at least one common factor, though that a negative
one, in the interpretation which all three put upon Plato’s theory
of number. This provides one constant among the terms with
which we must deal in attempting to infer from the doctrines
of Speusippus and Xenocrates the nature of the Platonic theory
from which they deviated.

Speusippus held that in order to define anything one must
first know the particular difference of that thing in respect to
everything with which it is not identical, in short, that the
nature of any object is just the complex of its relations to all
other entities. This doctrine, which is similar to that held in
modern times by Hegel, Bradley, and Joachim, did not lead
Speusippus to adopt a skeptical attitude toward the possibility
of knowledge; on the contrary, he apparently thought it possible to make an exhaustive classification which would set forth the relations of each object to every other and to the whole of nature, since his own work on "Similar Things," if not that classification itself, must have been intended as a study preliminary to it.81 The method which he used for classification was the diaeresis or division discussed and employed by Plato in the dialogues, though unlike Plato he applied it in the form of a rigid dichotomy in which both sides of the bifurcation are equally extended.82 The recognition of similarity and difference and the application of the method of division, however, themselves imply previous knowledge; and to save his account from circularity Speusippus assumed that the mind apprehends the principles of all knowledge without any discursive process but directly by a kind of vision more clear than sight.83 As the objects of this direct knowledge he posited the separately existing numbers,84 from which the mind passes over to seek knowledge of other things by a process of analogical reasoning,85 for, while there are various levels of existence, each with its own principles, a bond of analogy or proportion holds them and all the universe together.86 So the point, the principle of magnitudes, is not "one," which is the principle of numbers, but analogous to the One;87 an entity—or substance—is analogous to a point;88 and the good is not one as a principle but that unity which is the completed whole.89

Since Speusippus felt that to save the possibility of knowledge there must be separate nonsensible entities which the mind knows directly, why did he abandon the ideas which Plato posited as such entities to serve this very purpose? The answer to this question, if it could be discovered, would indicate what Speusippus thought was the nature of the ideas which he rejected. The first clue to the answer is the fact that the objects which he classified by the method of diaeresis are not the separate mathematical numbers which he substituted for Plato's ideas as the objects of direct knowledge, whereas it was just these ideas
which were reached by the method of diaeresis as Plato used it. This suggests that to Speusippus there must have seemed to be something about the ideas as separate entities which is incompatible with the method of diaeresis and which required that they be rejected if the method was to be retained; and that this was his motive for rejecting them is confirmed by the fact that Plato himself mentions such a course of reasoning in the *Philebus*, a work in which he discusses another doctrine known to have been held by Speusippus. Near the beginning of that dialogue, after remarking that almost everyone now recognizes as merely vulgar paradox the eristic difficulties concerning the simultaneous unity and plurality of phenomenal objects but that the problem of the One and the Many is still debated when one posits man or ox or beauty or goodness as a single unit, he says that in the case of such units the great zeal connected with diaeresis grows into controversy and casts doubt upon the very existence of these ideal monads. The subsequent lines of this passage, though their exact grammatical interpretation is uncertain, indicate that the question thus raised concerned the immutable and indivisible uniqueness of each idea in relation to the multiplicity of its manifestations. That it did not move Plato himself to entertain the doubt he mentions is clear enough, since he continues to call the ideas simple and unique units and still to apply diaeresis to them, though admitting the fallibility of the method; nor does he explain any further why to others diaeresis seemed necessarily to annul the existence of the ideas. On this point, however, specific information is to be had from Aristotle.

Three times Aristotle says that Speusippus recognized a “difficulty” in Plato’s doctrine. Once it is the difficulty of treating unity as a principle and connecting goodness with it; but twice it is the difficulty of the ideas. Within neither of these passages itself does he say what this difficulty was that Speusippus saw. In neither, however, is there any suggestion that these ideas
were all identified with numbers. On the contrary, in the second it is said that each of Plato's separately existing numbers was an idea and it is implied that there were ideas which were not numbers; in the first, Speusippus is said to have rejected "ideal number," a term which means "ideas of number" in the theory of the dialogues, and to have rejected them because he rejected ideas as such. What the difficulty was, however, Aristotle does indicate just before he begins to criticize Speusippus, a little earlier in the chapter of which this first passage is a part. It is the difficulty involved in the relation of species to genus when the universals are assumed to be separately existing ideas, for then in each specific idea of animal—in the ideas of man, horse, and ox, for example—is the animality different from the unique idea of animal or is it that idea of animal itself? This dilemma is here put thus succinctly as if it were a well-known argument to which a mere reference by title would be sufficient. It is fully developed elsewhere in the Metaphysics to show that the assumption of Platonic ideas is incompatible with the constitution of the species from genus and differentiae. If the animality in the specific ideas of man and horse is one and the same thing—that is, the idea of animal,—then these specific ideas would have to be a numerical unit in spite of the fact that they are distinct entities and the unique idea of animal would in fact be separate from itself. Moreover, the idea of animal as a single individual would simultaneously have contrary characteristics such as bipedality and multipedality, for it would have to partake of all the differentiae of the genus at once. On the other hand, if the animality in each of the specific ideas is different, the idea of animal will not be unique, for there will be a generic idea of animal in each specific idea, and the relation of these many generic ideas of animal to the idea of animal distinct from any specific idea will be inexplicable. Finally, in the Topics, one of the earliest of Aristotle's technical works and one which has been shown to have been strongly influenced by Speusip-
pus, the same argument is briefly outlined as a stock method of disproving the theory of separate ideas by showing that the existence of such ideas would destroy the possibility of diaeresis and definition.

This notion that the existence of ideas is incompatible with the method of diaeresis and that the former must therefore be abandoned and the latter retained,—this notion assumes that diaeresis is not merely a practical heuristic method, but an exact representation of objective existential relations. From this point of view the entities thus related could not be unique and immutable units, for the higher stages in the division would have to be both subsistent units in themselves and elements in the lower stages, since the lower must contain the higher, including the genus, either as constitutive factors or as partial aspects of some kind. Aristotle's own solution was to make the genus merely the abstracted material element of the species, existing only as informed by the ultimate differentiae; thus to him the intermediate differentiae were superfluous for the definition and the essential nature of anything, although he insists that in constructing a definition it makes a difference which attribute is predicated first and which second and that diaeresis enables one to achieve the right order and to be sure of omitting no step in proceeding to the ultimate differentia. This solution of his, however, is only the conclusion of an Academic debate of which traces still exist. The so-called *Divisions of Aristotle* testifies to the technical use at some time in the early Academy of the terms "genus," "species," and "differentia" in connection with diaeresis, designates the genus as "naturally prior" to the species, and explains that that is naturally prior to another which would in being destroyed involve the destruction of the other without being involved similarly in its destruction. In the form of diaeresis here employed the ideas are not reckoned with at all; the genus is called the common predicate of the species which are "divisions" of it, and yet the genus is said to be prior to the
species as the part is to the whole and the monad to the dyad. This literally splits the genus into the parts present in the various species without explaining the unity which is nevertheless asserted. It is very close to Aristotle's own diaeresis, requiring only the application of the metaphor, "material," to the genus which has already lost all separate existence and is only the ghost of its original self; the species has already absorbed the genus, an indication that by those who used this form, as by Aristotle too, the diaeretical schema was taken to be identical with objective existential relations. The form of diaeresis which Speusippus retained was also a pattern of reality, but in a sense much stricter as well as more exhaustive than the "reformed" method which Aristotle considered serviceable for establishing definitions. Aristotle's doctrine of the specific form as the actualization of the generic matter, which in itself is merely the potency of becoming the species, allowed him to consider diaeresis as an analytical diagram of the essential nature of each species showing the course of the actualization of the genus; this is the specification of each object, the differentiae being stages in the process, that is, exclusive possibilities of actualization, and not, except accidentally, relations among the actual species. For Speusippus, however, the essential nature of each thing is identical with the complex of all its relations to all other things, so that the content of existence is nothing but the whole network of relations itself, plotted out in a universal diaretical scheme. Consequently he could regard any particular being as the analogue of the point, for the different entities are simply different foci of the single system of relations. It is in the light of this theory of essence that the separately existing numbers are to be understood. Since Speusippus felt it necessary to assume some direct knowledge as the principle from which the mind proceeds to discursive thought, and since he required as the object of this direct knowledge something outside of the system of relations which is discovered by this discursive procedure, he posited as
SPEUSIPPUS, XENOCRATES, ARISTOTLE 43

separate and absolute entities the numbers of the mathematical
decad not only because, as Aristotle says,²² the mathematical
axioms carry immediate conviction though they are not true
of sensible things but also because within the decad he found
the pattern of all the relations and proportions²³ which for him
constituted the whole of existence on every level.

Although the paucity of our information prevents us from
knowing many details of this system, and the fragmentary and
indirect nature of that information makes it difficult to under­
stand the significance even of some details which are reported,
there can be no doubt that Speusippus made a highly original
departure from the doctrine of Plato and exercised an important
influence on the thought of Aristotle. In this departure from
Plato, however, the chief concern for our problem is the reason
why he abandoned the ideas, for this reason shows that it was
the ideas of man and horse and animal which he knew and
rejected—not those hypothetical ideas which are all identified
with numbers, but the ideas of the dialogues which are the ideas
that Aristotle calls incompatible with diaeresis. To be sure, in
rejecting these he rejected along with them the “ideas of num­
ber” which belonged to the same theory; he was moved to do
so, however, not by any difficulty that he saw in ideal numbers
as such or in separately existing number at all, but by the prob­
lem of relating the separate generic and specific ideas. In fact,
since he obviously did not understand the significance of the
natural numbers, it is probable that, had he known a Platonic
theory which made all ideas numbers, instead of rejecting ideas
he would simply have identified them with the mathematical
numbers of his own system.

Yet was not something like this just what Xenocrates did? His
identification of all ideas with mathematical numbers proves
that he did not understand the meaning of nonmathematical
number either; but, if this error were the only cause for his devi­
ation, it would also imply that the Platonic theory which he so
misinterpreted did make all ideas numbers of some kind or other. His version of the theory was something more than this, however; it was a deliberate attempt to reconcile the doctrines of Plato and Speusippus and to do so by interpreting Plato in such a way as to discover in his statements whatever in the doctrine of Speusippus might seem to be an original departure. It was not only in regard to the nature of the ideas that Xenocrates used this method. He appears to have been strongly impressed by any objection which was urged against Plato’s doctrine and to have built up his own system in a way which he thought would avoid each of these objections, without always considering very carefully or acutely whether the objection was well founded or not; but, furthermore, not satisfied with having thus devised what was in fact an original doctrine, he then sought to ascribe the result to Plato himself. Xenocrates was the first of that long and still continuing line of Western philosophers who seem to think it necessary to prove that all their own various theories are “just what Plato really meant.”

Fortunately, there exists in a question not essentially connected with the nature of the ideas certain proof that Xenocrates did use this method and an instructive example of the way he used it. Plato had defined the soul as self-motion, which is the ultimate principle of all physical motion and change; but in the *Timaeus*, where in the form of a “creation myth” the constitutive factors of the soul are described, there is not the slightest reference to self-motion or any explanation at all of the motion ascribed to soul. The reason is obvious: had he declared that the soul is self-motion, he would have ruined the whole structure and form of the *Timaeus*; if he was to put his exposition of the nature of the universe into the synthetic form of a cosmogony or “creation myth,” he had to suppress discussion of that essential characteristic which for him guaranteed that the soul—and, therefore, the physical universe also—is without beginning and without end. The significance of this suppression, however, was
entirely missed by Xenocrates, even though he understood that the generation of the universe depicted in the *Timaeus* was not meant to be taken literally; in fact, he went further and sought to deny or repair the omission. That the soul is self-moving he too maintained, defining it as self-moving number; but impressed by such objections as those of Aristotle that soul must be a cause of rest as well as of motion and that, if self-moving, it must have an internal principle of motion, he assumed within the soul distinct factors to be the principles of rest and of motion respectively. Now, to deal with the objection in this fashion was, first of all, to ignore Plato's fundamental conception of motion, namely, that it cannot be analyzed into factors which are not motion and that therefore the principle of all motions must be irreducible self-motion, and, secondly, to lend the objection the validity which it does not have against Plato's position, for, if in self-moving soul there is a principle of motion, then either this factor is a motionless mover of the apparently self-moving soul or it alone is truly self-motion and so, by definition, alone is soul. Yet this deviation from Plato's theory of the soul Xenocrates did not simply put forward as his own. He ascribed it to Plato himself; and if only this bare ascription were preserved, there can be little doubt that the higher critics would have explained it too as a reference to that doctrine which they suppose Plato taught orally in the school. Fortunately, however, we know what Xenocrates adduced in justification of the ascription; it is not the lecture on the Good or any oral instruction or so-called "unwritten doctrine," but just the passage in the *Timaeus* which anyone today can read and compare with his interpretation. In that passage Plato describes the soul as a unity blended of three factors, Being, Sameness, and Difference, each of which is a mean between two extremes: the indivisible and immutable Being, Sameness, and Difference on the one hand, and divisible or dispersed Being, Sameness, and Difference on the other. The former of these two sets of extremes are
the ideas of Being, Sameness, and Difference, three of the five ideas which are used as examples in the exposition of the intercommunion of ideas in the *Sophist*; the second set of extremes are the phenomenal “dispersions” or “imitations” of these ideas in space: the Being, Sameness, and Difference of physical process. So the soul’s ability to apprehend both ideas and phenomena is accounted for by its intermediacy between the two kinds of existence. Xenocrates, however, in order to ascribe his own doctrine to Plato, said that by Sameness here is meant the principle of rest in the soul and by Difference the principle of motion. This interpretation was rejected even by his own pupil Crantor, the author of the first formal commentary on the *Timaeus*; Plutarch easily refuted it by citing the *Sophist*, where Rest, Motion, Sameness, Difference, and Being are all described as distinct and underivative one from another; and it has been recognized in modern times as a characteristic example of the method by which Xenocrates imputed his own doctrines to Plato.

Xenocrates’ interpretation of this passage of the *Timaeus* is more, however, than an example of the method by which he may have sought to impute to Plato what was in fact a compromise of his own between the doctrines of Plato and Speusippus. He further read into this same passage his own theory that soul is self-moving number. Not only is this theory neither stated nor implied here or elsewhere in the dialogues, but furthermore, Aristotle himself always sharply distinguishes it from Plato’s conception of the soul. In reading it into the *Timaeus* Xenocrates identified the indivisible Being there with “the One” or unity, the divisible Being with multiplicity or “the indefinite dyad,” and then argued that what Plato calls the blending of these two to form an intermediate kind of Being is nothing but the generation of number. Now, the indivisible Being of the *Timaeus* is the “idea of Being”; the *Sophist* makes it possible to reject with certainty an identification with “the One.”
The indivisibility of which the *Timaeus* speaks is characteristic of each idea as the divisibility characterizes the phenomenal dispersion of the ideas. There is no possibility that what are here called "divisible" and "indivisible" could be principles of number; and if there were, the resulting "blend" could be neither ideal nor mathematical number, since the indivisible would belong to the level of the ideas whereas the divisible is explicitly referred to phenomenal being. It is not necessary, however, to prove in detail the impossibilities involved in this interpretation of the passage by Xenocrates; for our problem the significance lies in the fact that he interprets a normal passage about the ideas in the dialogues in such a way as to ascribe to Plato his own theory of numbers generated from the One and the indefinite dyad. His identification of ideas and mathematical numbers, then, presupposes as the Platonic theory from which it is a deviation not the identification of all ideas with the series of natural numbers, but just the theory of ideas which we now read in the dialogues. Aristotle himself, when he explicitly contrasts the doctrines of Xenocrates and Plato, does not say that the latter identified all ideas with nonmathematical numbers, but only that he distinguished mathematicals from "ideas" or from "ideal number" or from "the number among the ideas," any of which formulations would be compatible with the theory of the dialogues; and in one passage he even draws between the theory of Xenocrates and that of Plato the distinction that the latter did not identify the idea of line with a number as the former did. The same distinction between Plato and Xenocrates seems to be implied when the numbers of Speusippus are differentiated not from two different kinds of idea-numbers but from idea-numbers on the one hand and from ideas without qualification on the other.

The only Platonic doctrine of ideas known either to Speusippus or Xenocrates, then, was just the doctrine of the dialogues; and it is this Platonic doctrine which in some places at least Aris-
totle compares and contrasts with theirs. Had he intended no other anywhere, his systematic method would still have caused confusion, for in this doctrine there are ideas of numbers as well as ideas of other things, but he treats the latter separately and then criticizes the numerical aspect of the ideas of number along with the idea-numbers of Xenocrates and the substantial nonideal numbers of Speusippus. When in such contexts he speaks of “ideal number,” one would be at a loss to know whether he intends this “ideal number” to be understood as only one class of ideas in the theory concerned or means to imply that all the ideas in that theory are numbers. The confusion is further confounded because, although he knows that Plato’s ideal numbers are different from the idea-numbers of Xenocrates, his criticism of them rests upon the assumption that, since they are numbers, they must be multiplicities of units just like the mathematical ideas of the Xenocratean compromise. Consequently, since he did not appreciate the significance of Plato’s ideal numbers, much of what he says concerning them may not be evidence of Plato’s opinions at all but only the result of his own misinterpretation. Furthermore, and most important of all, he had a polemical reason for reducing all the Platonic ideas to identity with numbers, for the separate, nonsensible entities of Speusippus and Xenocrates were numbers, though numbers of different kinds, and, if those of Plato could be shown to be numbers too, then all three theories—and any possible variation of them—could be refuted by a single systematic proof that number of any kind, just because it is number, cannot have separate existence.

Since this kind of systematic refutation is Aristotle’s favorite polemical method, it is surprising that almost no attention has been paid to his use of it and to the way in which it affects his analyses and reports of the philosophical doctrines he criticizes. Let me, therefore, put before you an example of this polemical method, one out of many that could be chosen, but one pecu-
liarily suited to our purpose just because it involves interpretation of Platonic doctrine but not the problem of ideas and numbers. In the third book of the *De Caelo* Aristotle undertakes to determine the number of simple bodies or elements; and to do this he first excludes the possibility of an unlimited number and then proves that there must be more than one of them. Although the Atomists, along with Anaxagoras, are here used as the representatives of the theory of an unlimited number of elements, it is indicated that they have but one element in the proper sense of the word because they differentiate air, water, and so forth, by relative size, and their distinctions of size and shape leave the underlying substance of all things identical, reducing difference to mere quantitative relation. Consequently, when Aristotle comes to refute the theory of a single element, the Atomists and Platonists, who are frequently grouped together as “pluralists,” are both tacitly included with the “material monists” against whom the same objection is brought, namely, that their theories reduce everything to quantitative relations, for to generate the rest of existence from a single element by means of density and tenuousness is the same as to do so by means of relative size. Now, since all such theories must admit the priority of the body that is more subtile, Aristotle argues that, even if water, air, or some intermediate state is called the element, by the very reasoning of these systems fire is really primary since fire is admitted to be the most subtile of bodies. Having thus forced all monistic systems to designate fire as their element, he distinguishes those who assign it a definite figure from those who do not; the latter group is represented by Heraclitus and his followers, the former by Plato and Xenocrates, both of whom make the figure of fire the pyramid, but a divisible pyramid in the case of Plato, who assigned it to fire because it is the sharpest figure, and an atomic pyramid in the case of Xenocrates, who reasoned that fire as the most subtile body must have as its figure the primary solid. Now, neither
Xenocrates nor Plato posited a single element only, and Aristotle is well aware of that. He can use them here only because he thinks that by drawing out the necessary consequences of their theories he has shown that they have but one element even while they suppose that they are recognizing more than one; he does so use them because by refuting in turn Xenocrates and Plato he can neatly show that the element cannot have any figure at all. If it had, it would be either indivisible or divisible; and it can be neither. Then by refuting Heraclitus, who assigns no figure to fire, he shows that the element cannot be fire at all. If it were, it would either have a figure or not; and both are impossible. Having already proved that anyone who posits a single element must make that element fire, he has thus proved that there cannot be only a single element.

So Aristotle can prove that Plato’s doctrine was necessarily the contrary of what Plato himself said and thought, and he can refute Plato by refuting the general principle manifested in what he holds to be the necessary consequence of Plato’s words. Now, according to Aristotle, Plato’s theory of separate ideas must represent the general principle that substantiality varies directly with universality, since the only legitimate reason for separating the species from the particulars is the universality of the former. The most universal predicates, however, are unity and being, so that the consequence of separating universals must be that unity and being are not only separate ideas but are also the most substantial or highest entities and the principles of all others. If, on the other hand, unity and being are not separate entities, no universal can be separate; and Aristotle indicates that one method of refuting the whole theory of ideas is to prove that unity and being cannot have separate and independent existence. For Aristotle, however, the essence of unity is to be the principle of number. He maintains that unity is always a determinate unit, that is, the predicate of a determinate subject, so that the numbers, of which it is the principle, exist
only as numbered things; but, if it were not always "one something," the numbers too would exist as just numbers, so that if the One is an idea and a principle of the ideas, all the ideas must be numbers.  

The importance of absolute Unity, the idea of One, in Plato's doctrine need not and should not be doubted. Every idea is an immutable and indivisible unit; in the Philebus they are designated "henads," "monads," and "units"; in the Timaeus the ideas are distinguished from their phenomenal manifestations by being called each "indivisible," which term Xenocrates employed to read into this passage his own derivation of numbers from the One; and in the Sophist, even where the intercommunication of ideas is explained, Plato insists that each idea is a unit, different from every other and from all others together. What he says in this last dialogue shows that, as the being of each idea comes to it from the idea of Being and the difference of each from the single idea of Difference, so the unity of each idea must come to it from the idea of One. No other source than this need be hunted for Aristotle's statement that the One is the formal cause or essence of the ideas. This formulation implies, to be sure, that each idea is a complex of matter and form, and so it implies an interpretation of the ideas which is un-Platonic in the same sense as is Aristotle's identification of the nonbeing in the Sophist with the receptacle or material substrate. (See above, pp. 19-20.) The formulation itself, however, is just the inevitable result of Aristotle's attempt to translate into the terminology of his own system Plato's doctrine that the idea of One is the principle of the unity of every idea. This is Aristotle's invariable procedure: to recast into the terms of his own philosophy the statements of other philosophers and then to treat as their "real meaning" the implications of the statements thus translated. So he insists that all his predecessors took as their principles "contraries" and derived from them all existence; that Xenophanes posited Unity, which he identified with God;
that Anaxagoras really meant to set up two ultimate principles, the Platonic Unity and Difference, which are then identified with his own formal cause and indeterminate matter. If the idea of One was in some sense a principle of Plato, it was certainly not a generative principle even of ideal numbers. He who made the series of natural numbers the ideal numbers, who saw that the essence of each is just its order in this series and that the idea of number is this series, and who distinguished the priority and posteriority of this ordered series from ontological priority and posteriority,—he by this very conception denied the derivation of ideal numbers in any sense, since every term implies the whole series and the whole series implies every term equally. Even Speusippus, who, positing the One as a principle, held that as such it could be only the principle of mathematical numbers, did not think of these separately subsisting numbers as literally generated by the One; and Xenocrates, who read into the *Timaeus* his own generation of idea-numbers which were multiplicities of units, explained that this generation was only a form of exposition used for the sake of elucidation in the same fashion as geometrical constructions. Aristotle, however, in characteristic fashion undertakes to prove that, no matter if these men do deny it, they must really mean that their eternal numbers are literally generated. Such is his justification for addressing so much of his criticism of the various theories of substantial number to the difficulties involved in their generation; but even that cannot justify him for making Plato’s ideal numbers subject to the same criticism in this respect as the mathematical ideas of Xenocrates, and the fact that he does so is a clear indication that from Plato himself he had no account of the generation of ideal number at all.

Neither did Plato conceive the idea of One to be an immanent element in the ideas, the unity of each of which it causes. Aristotle, however, criticizes the ideas of unity and being as if they were meant to be both genera and immanent elements.
contends, on the one hand, that the more universal ideas must stand to the less universal as genera and differentiae to species; and he objects, on the other hand, that the genera, since as ideas they are separate entities, would have to be the ideas of the species, being the essences of the latter just as these specific ideas are supposed to be the essences of the particulars. That is, he maintains that the idea of animal must be to the idea of man as this idea is to particular men, that the idea of One must be to each ideal number as the latter is to the phenomenal numbers, in short that the relation among the ideas is of the same kind as that between ideas and particulars. This conception with the difficulty involved in it arose, as I have already shown (pp. 38-41), from the assumption that the schemata produced by the diaeretical procedure were meant to portray the real arrangement of the ideas, which would thus form an ontological hierarchy. Yet doubt is cast upon the validity of this assumption by Aristotle himself and by his best ancient commentator, Alexander, who, when it suits the purpose of their arguments, indicate that for Plato there was no higher principle than the ideas themselves, that no idea was ontologically prior or posterior to any other, and that none was immanent in any other as a part. The doubt is confirmed by Plato himself, who in the Sophist has left us a concise but exact account of the way in which he conceived the relation among the ideas. Some ideas do not have communion with one another, while some do; and of these latter ideas different ones differ in the extent to which they have such communion, some communicating with only a few others and some with all. As illustrations of ideas which do communicate Plato here uses Being, Difference, Identity, Motion, and Rest. With his usual studious avoidance of a strict technical terminology he calls this relation communion, blending, intertexture, consonance, receptivity, and even participation; but though this last is the word most often used to designate the relation of particular sensibles to an idea, he makes it clear that
the participation of one idea in another is entirely different from the participation of particular men, for example, in the idea of man. In the latter case the relation is unilateral: the idea does not participate in the particular and is in no way affected by the participation of the particulars in it. In the former case, on the contrary, the relation is reciprocal or symmetrical: the idea of Being participates in the ideas which participate in it whether these ideas are, like Motion and Rest, less extensive than it, or equally extensive with it, as are the ideas of Identity and Difference. The terms “blending,” “communion,” “inter­texture” are, therefore, more suitable to this relation than is “participation”; but even these are not exact, for the ideas which blend or pervade one another are still separate, unmixed, and indivisible units, the relations among them being really those of implication and compatibility. This proves not only that the relation among the ideas is of a different order from that between ideas and particulars, but also that no idea is to any other as a constituent part to a whole or as a genus to its species, for in neither of these cases is the relation symmetrical. Nor does Plato anywhere make the distinction of genus and species among the ideas; but what Aristotle calls genus, differentia, and species are for him all distinct ideal units, each other than the others, each having aspects which imply the existence of the others or are compatible with them, but each being an independent nature which cannot be exhaustively analyzed into the others. Plato could not, then, have intended by the use of diaeresis to produce an ontological hierarchy of the world of ideas. The Sophist and Politicus, which have come to be considered as handbooks of diaeresis, show that he meant it rather to be a heuristic method, an instrument to facilitate the search for a definite idea, the distinction of that idea from other ideas, and its implications and identification, and that he did not imagine it to be a description of the “construction” of the idea, its derivation, or its constituent elements. He describes it as a useful
means of narrowing the field of search; but the formal method alone may lead one to any number of definitions of the same thing unless one has the additional power of recognizing the essential nature that is being sought. In short, diaeresis appears to be only an aid to reminiscence of the ideas, a process the stages of which are important rather as a safeguard to insure the right direction of the search than as representative of necessary ingredients of the idea, for "longer" and "shorter" roads may lead to the same conclusion. That is why he could retain unaltered his conception of the ideas and still employ the method of diaeresis in spite of Speusippus' contention that the two are incompatible. (See above, pp. 38-41.) The objections of Speusippus, which Aristotle adopted, assumed a meaning for diaeresis which Plato never intended and never acknowledged.

The account in the Sophist demonstrates in still another way that Plato envisaged no diaeretical scheme expressing an ontological hierarchy of ideas, that he could not in fact have thought of the world of ideas as such a hierarchy at all. The ideas of Being, Identity, and Difference, each a single idea different from the other two, are all equally extensive; they communicate with one another and with every other idea and no one of them can be the genus of the other two or prior to them in any sense. Moreover, the less extensive ideas, Rest and Motion, though less universal, in Aristotle's sense, are not any the less independent, ultimate, or substantial than the three more extensive ideas. They communicate with all these other three, but they are not natural divisions of any, nor does Plato reach them by division; and even should one try to treat them as species of a higher genus, there would be no reason to make them species of any one of the three more extensive ideas rather than of either of the other two. The ideas of Rest and Motion are not derivative from Being, Identity, or Difference, as here described; and of these three more extensive ideas no one can be the ultimate principle from which the other two are deduced or derived; for
each is a principle of one aspect of the other two, as it is of that aspect in every other idea. The five ideas of the *Sophist*, therefore, could not be arranged in any diaeretical scheme; and since three of them are as extensive as any idea can be, Plato certainly did not intend to represent the ideas as derivative from some single ideal principle.

These five ideas are chosen to illustrate the nature of the communion of ideas and it is indicated that the rules which hold for them in this respect hold for all ideas. They would therefore hold for the idea of One also, which is as extensive as the three most extensive here mentioned, though no more so. The ideas of Being, Identity, and Difference, like every other idea, is each one by reason of its communion with the idea of One; but this idea in turn has existence, identity, and difference because of its communion with these three ideas. What was said of these three ideas, consequently, must be said of the idea of One also: it is a principle of every idea in the sense that it is the cause of one aspect of all of them, but it is not *the* principle in the sense that the other ideas are derived from it in any way, or in the sense that it is a "higher" or even a more extensive idea than all others. This idea of One might well be given special stress in an exposition of the ideal numbers, for it is the principle which makes each of them an indivisible unit, and each is just a unit with a different order in the natural series; but it is an equally important principle for every other idea, since each is a single entity and not just a focus of all relations, as each substance was for Speusippus, and even for the ideal numbers it is not a more important principle than the ideas by communion in which they each have existence, identity, and difference.

How, then, could anyone suppose that Plato made the One the highest principle and derived all the other ideas from it, when the idea of Being—to mention no other—is just as extensive and must be the principle of existence even for the idea of One? Modern scholars, who ascribe to him this system of deriva-
tion and the theory of idea-numbers connected with it, say that he identified Unity and Being; and for this assertion, of course, they cite Aristotle as their authority. Yet Aristotle reveals that this identification is an inference of his own—an inference, moreover, which is based upon his own assumption that the ideas must be related as genera and species. He does not anywhere say that Plato himself identified Unity and Being,—in fact, he frequently refers to them as if they were two distinct ideas; he argues, however, that they must be the highest genera since both are predicated of everything, but that, since they are thus equally extensive, they cannot stand to each other as genus and species. He should have taken this as an indication that the ideas were not meant to be related as genera and species, all of which fall under a single ultimate genus; but instead, since he himself holds that one and being, implying each other, are just two different designations for the same reality, he solves the difficulty into which this interpretation of the ideas has led him by assuming that Plato must have meant Being and Unity to be a single idea. Now, the correspondence of being and unity Aristotle found in Plato’s Parmenides, but this correspondence is the result of the pervasion of all ideas by the two ideas of Unity and Being; and it is utterly impossible that these two were meant to be a single idea, not only because that would transgress the rules laid down in the Sophist, but because Plato says explicitly that they were two and criticizes Parmenides for identifying absolute Being and absolute Unity.

The much-debated identification of Unity and the Good has a similar origin. The idea of Good would also be one of the most extensive ideas, though not more extensive than the ideas of One and Being and Difference, for these are the principles of its existence as one idea different from all others. Now, it is just as a single idea that Plato’s Good is criticized in the Nicomachean Ethics, for Aristotle contends that there is not one good, but many. Since he maintains, moreover, that good has
as many senses as being, he might be expected to say that for Plato the ideas of Good and of Being must be identical; and in fact he does once assert that Plato made the Good an accident of Being or of Unity. In the one passage, however, where he flatly identifies the Good with the idea of One, his reason for doing so is somewhat different, though equally patent and arbitrary. He practically admits that Plato did not expressly make this identification; but he contends that it is necessarily implied in the doctrine that the good is an element of ideas, for it is consequently an element of ideal numbers and so must be identical with the idea of One which is their principle. Such reasoning would identify Being, Identity, and Difference too, all of which Plato proves must be distinct and unitary ideas.

That by such reasoning Aristotle justifies his identification of the Good and the idea of One, however, supports the hypothesis by which I would explain his identification of Plato's ideas with numbers. Because he believed that the essence of one is to be a principle of number and because he took diaeresis to be meant as a universal ontological scheme in which the more specific ideas are derived from the more general, he felt it to be a necessary inference that, since the One is a principle of all ideas, all the ideas must be numbers. In this he may have been influenced by Speusippus and Xenocrates, who also thought that the One could be a principle of number only, though Speusippus, in consequence, denied that the entities of which it is a principle could be ideas at all and Xenocrates sought to compromise by keeping the ideas and identifying them with numbers; but there can be no doubt about the fact that the discrepant theory ascribed to Plato by Aristotle was an inference drawn by Aristotle and not a doctrine taught by Plato in the Academy. Aristotle tells us as much himself, for, when he begins his criticism of what he considers all the various conceptions of substantial number which might possibly be entertained, he undertakes to prove that, if the ideas are not numbers, they cannot exist at all; and
this he proves by arguing that the principles which Plato posits are just the principles and elements of number, so that, since the ideas cannot be either prior or posterior to the numbers of which these are the principles, the ideas must be identical with these numbers or else they would have no principles at all.

If your opponent asserts a thesis which you undertake to refute, you do not begin by proving that he asserts it. That you do only when you wish to refute him by refuting the inferences which he does not himself draw. Such is the procedure of Aristotle here, a method which he habitually employs. In this particular case, as in a good many others, the inference which he draws depends upon misinterpretation; but—and for our problem this is still more important—it is misinterpretation of the doctrine in the Platonic dialogues. So the Plato reflected with different distortions in the criticism of Aristotle and the heterodox systems of Speusippus and Xenocrates is not a hypothetical Plato of lecture platform or seminar, but the Plato of the dialogues still extant in their entirety.
That the theory of idea-numbers which Aristotle ascribes to Plato is just Aristotle’s own interpretation of the necessary consequences implied in the doctrine of the Platonic dialogues; that it was this doctrine of the dialogues and not some different system taught orally by Plato which Speusippus rejected when he rejected the theory of ideas; that it was the dialogues of Plato to which Xenocrates appealed and into which he tried to read his own compromise between Speusippus and Plato,—all this bears significantly upon the nature of the Academy in its first generation, upon the question of Plato’s activity there, and of his relation to these men who are usually called his “pupils.” How could they have misinterpreted the master’s writings when he was there to explain his meaning to them? Did he think it unimportant to teach his pupils to understand and accept the doctrine of ideas, he who in his Parmenides wrote that to reject the ideas is utterly to destroy the significance of discourse,¹ who in his Philebus declared that they alone are the objects of intelligence and knowledge,² and who at the end of his last work, the Laws, emphatically asserted that there is no surer method than to turn one’s gaze from the many, unlike particulars to their one idea?³ If he did not teach them this, of which he wrote with such fervor, what did he teach them? And if he taught them something else, why did he not write that

¹For notes to Lecture III see pages 99–103.
which he taught, and why is it not any such oral instruction, but the doctrine of his written dialogues to which their own theoretical deviations, their interpretations, and their criticisms always lead us back? By showing that they do so and how they do so we have resolved the ostensible riddle, to answer which the higher critics of Platonism have set up their hypothesis of a special oral doctrine; but that riddle resolved poses another more genuine problem: What, then, did Plato really do in his Academy?

The name “Academy” is, in all the modern European languages, a living word designating an actuality in the various cultures of which those languages are the vocal expressions. Its general meaning is in all deceptively similar: a formal organization of men for the purpose of promoting by their joint efforts learning in the sciences or skill in the arts. Yet the specific nature of such organizations—and so the real meaning of the word which designates them—is essentially different in the different countries which use these languages. Even within the sphere of a single language the word may have essentially different meanings; consider that in English “academy” is used to designate a secondary or preparatory school, a special technical school, particularly a school for teaching one of the arts, or a kind of honorary society of mature scholars or artists, the purpose of which—so far as it is not merely honorific—is, I fear, usually indefinable even by its members. Nevertheless, “Academy” and “Academic” are terms which men of formal training, who speak as their own the modern European tongues, have been pleased to apply to themselves and their organizations. It is not wonderful, therefore, that by a more or less unconscious retrojection modern scholars have attached the particular significance which “Academy” has in their own milieu to that garden of Plato’s which was situated in the suburb northwest of Athens called “Academia” after a mythical hero. So to the German philologists of the last century Plato was the first organizer of scientific research and
his Academy was a kind of German university with a regular program of lectures by the professor and seminars in which the more mature students were apportioned plots of scientific ground to cultivate under the watchful eye of the master. A French Platonist describes the Academy in terms of a French university with “conférenciers” and professors of various faculties; and an Englishman says that it “resembled a modern college”—college in the English sense, of course—“with its Master, Fellows, and Scholars.” No American, to my knowledge, has yet undertaken to prove that it was really the prototype of our coeducational state university, though the evidence for such an interpretation would be no weaker than is that for some of the others, since according to one tradition—or scandal, if you please—there were two women in the student body.

The external evidence for the nature of the Academy in Plato’s time is extremely slight—so slight that Professor Jaeger is able safely to assert, in contradiction of the earlier German view, that modern universities cannot look to Plato for a precedent. Plato’s conception of Reality, he contends, was incompatible with the notion of a systematic unification of all sciences and still more incompatible with an encyclopedic organization of all subjects for the purpose of teaching and research. In short, Jaeger feels justified in inferring the nature of the Academy from the philosophical attitude of the Platonic dialogues; and it is from these dialogues and from the philosophical interpretations of Aristotle that Howald, too, draws his extreme conclusion that the Academy was a mystic cult and not a school in our sense of the word.

From the tradition that Plato erected in his garden a shrine of the Muses it has been concluded that the Academy was legally incorporated as a ἑλαστὸς or religious fraternity and that the dinners, to which later writers refer, were symposia held at regular intervals in connection with this private cult; but this, even if true, tells nothing of Plato the teacher in his “school.” There is, of course, the famous fragment from a comedy of Epicrates,
which has been likened to a flash of lightning illuminating for a moment the scientific activity in the Academy. In this fragment someone asks what Plato, Speusippus, and Menedemus are doing nowadays, and in reply the interlocutor tells how in the gymnasium of Academia he saw a group of lads distinguishing and defining the kinds of animals and plants. In silence they were bending over a gourd. Suddenly and without straightening up one said: “It’s a round vegetable”; another: “It’s a grass”; a third: “It’s a shrub.” Whereupon a Sicilian physician, standing by, said: “Stuff and nonsense”; but the young men paid no attention to him, and Plato, unruffled by the impolite interruption, bade them try again, and they went on drawing their distinctions. Usener and his followers saw in this caricature evidence for Academic seminars in Botany and Zoölogy; but, as others have pointed out, the parody testifies at most to the notoriety of the method of division and classification practiced by members of the Academy. Speusippus is expressly mentioned in the fragment; his published work on Similar Things and such Platonic dialogues as the Sophist and Politicus would have been sufficient to cause the poet to imagine this scene and to enable his audience to enjoy it. Moreover, the description of the students all bending over the gourd is a patent imitation of a similar scene in the Clouds of Aristophanes. Few will believe that the Phrontisterion in the latter play is any evidence for a formal “school” kept by Socrates; and consequently Epicrates’ adaptation of a scene from the Phrontisterion can hardly be considered evidence for the kind of activity carried on in the Academy. Even if it is so considered, however, it only shows that young students were encouraged to practice framing precise definitions; no legitimate inference can be drawn from this about the study of natural science or about Plato’s exposition and inculcation of a philosophical doctrine.

Such other jests as are preserved from the contemporary comedy, when they do not refer to the personal appearance or bear-
ing of Plato and his associates, are also recognizably inspired by passages in the published dialogues. More informative is the report which Simplicius drew at second hand from the *History of Astronomy* written by Eudemus, the pupil of Aristotle. According to this account, Eudoxus worked out his hypothesis of homocentric spheres at the instigation of Plato, who set it as a problem for astronomers to determine what are the uniform and ordered motions the assumption of which will account for the apparent movements of the planets. Heraclides Ponticus, another member of the Academy, was probably responding to the same stimulus when he put forward his own theory that the fixed stars are stationary while the earth at the center rotates on its axis from west to east. The system of Eudoxus was adopted by Menaechmus, another member of the Academy, and, with the corrections of Callippus, by Aristotle also, who, however, transformed it into a physical system with reagent spheres. Heraclides sought to read his own system into the *Timaeus*; and Aristotle's reference to this interpretation has ever since been mistakenly thought to be Aristotle's own interpretation of the *Timaeus*, with consequences similar to those of his discrepant remarks concerning the ideas. Some scholars have tried by main force to get into the *Timaeus* an axial rotation of the earth, which clearly is not there, just as they have tried to find the hypothetical idea-numbers in the dialogues; others, seeing that such axial rotation is incompatible with everything that Plato wrote about astronomy, but thinking that Aristotle does ascribe this theory to him and taking it for granted that Aristotle could not be mistaken, have assumed that Plato must have espoused it in his oral teaching. Plato himself, however, adopted neither the solution of Heraclides nor that of Eudoxus; and there is some evidence that Speusippus held an astronomical theory different from all three, though not the so-called Philolaic system of an earth revolving about a central fire which many modern historians ascribe to him. No indication remains of the
stand which Xenocrates took in this matter, although he is reported to have written six books on *Astronomy*. It is clear, however, that one cannot speak of an Academic system of astronomy, in the sense of one which Plato taught and which the members of his school accepted as orthodox. If the account of Eudemus as reported by Simplicius is accurate, Plato’s role appears to have been not that of a “master” or even of a seminar director distributing subjects for research reports or prize essays, but that of an individual thinker whose insight and skill in the formulation of a problem enables him to offer general advice and methodical criticism to other individual thinkers who respect his wisdom and who may be dominated by his personality but who consider themselves at least as competent as they consider him in dealing with the details of special subjects.

His position in regard to mathematics seems to have been much the same. Philodemus says that mathematics made great progress under the direction of Plato, who formulated problems which the mathematicians zealously investigated. Proclus, too, in his famous summary, which appears to derive ultimately from the *History of Mathematics* written by Eudemus, credits Plato’s concern for mathematics with the great progress of these studies and particularly of geometry. Besides Theaetetus, Leodamas, and Philip of Opus, he names six specialists in mathematics who, he says, passed their time together in the Academy and pursued their investigations in common. It cannot be imagined that Plato taught any of these men mathematics, though he is said to have induced Philip to turn his attention to the subject, to have originated the theorems about the section, the number of which Eudoxus increased, and to have communicated to Leodamas the method of analysis. The last tradition Proclus repeats with obvious hesitation; and the truth probably is, as Tannery and Heiberg say, that Plato formulated as a systematic method what the mathematicians had long been applying. There is another tradition, started apparently by Erastostenes in his *Platon-
icus, that when the Delians came to Plato with the problem of doubling a cube he referred them to Eudoxus and Helicon; and, on the other hand, when Eudoxus and Menaechmus tried to solve the problem by means of mechanical instruments, he is said to have reproached them for corrupting the good of geometry by making it revert to sensible objects rather than strive for eternal and incorporeal figures. Plato's influence on these men, then, was that of an intelligent critic of method, not that of a technical mathematician with the skill to make great discoveries of his own; and it was by his criticism of method, by his formulation of the broader problems to which the mathematician should address himself, and, as the summary of Proclus says, by arousing in those who took up philosophy an interest in mathematics that he gave such a great impulse to the development of the science. His own interest, however, and his desire to arouse the interest of others are explained by the story of the criticism which he passed upon the attempt to solve a geometrical problem by a mechanical contrivance. It was not the practical solution of problems, not the virtuosity the exercise of which is a joy to the virtuoso and his audience, not the science of mathematics for its own sake which concerned him, but mathematics as a propaedeutic for philosophy, for he believed that the study of this science is the best means of training the mind for the abstract thinking by which alone the truly real objects, the ideas, can be attained, recalled, and comprehended. That is why he was so much concerned with method: the virtue and purpose which he saw in mathematics would be utterly lost and perverted if it were so practiced as to lead the mind down to particulars instead of up toward the incorporeal and unchanging realities.

One should, then, suppose that if students were taught anything in the Academy, they would certainly be taught mathematics—not in order that they might be made mathematical specialists, but that their minds might be trained and prepared for the dialectic; and this inference from the slight external
tradition is supported by the dialogues, especially by the seventh book of the Republic, where mathematics is prescribed for the education of the guardians because it complies with the general requirement that whatever study constrains the soul to contemplate Being is suitable and whatever causes it to turn its attention to Becoming is not. It is to this plan for educating the guardians of the ideal state that all interpreters appeal when they try to give a specific account of the curriculum in Plato's school. They recognize, of course, that it is a plan for an ideal education and as such could not have been completely realized in the Academy, but they do not face the implications involved even in supposing that it was the curriculum which Plato sought to approximate. In the first place, all the studies preliminary to the dialectic are mathematical: arithmetic, geometry, stereometry, mathematical astronomy, and mathematical harmonics. Of these five Plato himself indicates that the last two were as yet nonexistent, and we have seen that an orthodox Academic astronomy which could be "taught" to students was never achieved. Consequently, even if we suppose that Plato exaggerates when he says that stereometry has not yet been discovered, or that soon thereafter the subject was far enough advanced to be taught, or that Plato is here making Socrates at the dramatic date of the Republic prophesy the science which was to be born by the time the dialogue was written, still the preliminary curriculum of the Academy would consist only of plane and solid geometry and number-theory, for arithmetic in our sense of the word the students entering the school would already know. This may very well have been the case. At any rate, the dominance of geometry as a subject of instruction is attested by two different kinds of evidence. Theudius, a member of the Academy, made a new arrangement of the elements of geometry, not long after one had been composed by the mathematician Leon, who may have been associated with the Academy himself. Both the brief interval between the two editions and the fact that the second work is
praised especially for its improved arrangement and the greater generalization of many theorems suggest that Theudius was motivated by pedagogical considerations in accord with Plato's conception of the purpose of mathematical studies. On the other hand, it soon became traditional, especially for the detractors of Plato, to use "geometry" as a synonym for the instruction in the Academy; and even Aristotle, referring to the Republic in the tone of a disappointed graduate charging the college catalogue with fraudulent advertising, complains that mathematics has become philosophy for modern thinkers though they say that it should be studied for the sake of other things. Having entered the Academy in his eighteenth year and continuing his association with it until Plato died twenty years later, Aristotle had presumably gone through whatever formal course of study may have been prescribed. His logical vocabulary and the propositions which he so freely cites as examples show the influence of the mathematical training which he received there and enable us to form an impression of the extent of that training and the nature of the textbooks used. It is significant, therefore, that he betrays no knowledge of the higher mathematics which was developed by the specialists associated with the Academy; and hence we are constrained to infer that, while these men may have pursued their investigations in common, as the Proclus-summary reports, and while Plato may have discussed their problems and their methods with them, neither these discussions nor the results of their studies were any part of the formal curriculum.

What, then, of the dialectic to which all mathematical studies are merely propaedeutic? Would not Plato have begun to teach his pupils this subject the sooner, since they were not taught the full mathematical curriculum which he had prescribed as preliminary to dialectic in the education of the guardians? Here we are faced with the second and most important of the neglected implications in the plan of the Republic. According to that plan,
the pupils are to begin the study of dialectic at the age of thirty years and then only after having passed the strictest tests. This age is not determined by the quantity of the preliminary material which the student must master. On the contrary, Plato’s reason for setting it at thirty years is such that it would not be lowered even if the propaedeutic material were only half the amount he prescribes or if the pupil, because of mathematical genius, could assimilate that material in one-fifth of the time which he allows. Philosophy, he says, must not, as now she is, be treated as the light-o’-love of young men who sow their wild oats and then drop her and settle down to a respectable life of home and business. Yet this is the way of youths, who when first they get a taste of dialectic treat it as a sport and are forever confuting everything and everybody until they themselves fall into a violent and universal skepticism and finally make of themselves and philosophy a scandal in the eyes of all men. For this reason he would not allow his pupils to touch dialectic at all while they are young, but would reserve it for older men of stable and orderly character who have successfully undergone the training and passed the tests of the preliminary disciplines. These would for five years, from the age of thirty to thirty-five, devote themselves exclusively to the study of dialectic; and even during this period they would be concerned not so much with theoretical metaphysics as with the discipline of the reason by means of exercise in abstract thinking, for it is not until they have reached the age of fifty that they are allowed to devote themselves to the highest philosophy. If this section of the Republic is in any way applicable to Plato’s own activity in the Academy, it certainly forbids us to suppose that he there came before pupils under thirty years of age, who did not have and could not get the training which he believed to be a necessary preliminary even for the carefully selected students of his ideal state, and glibly lectured to them on the doctrine of ideas; in fact, it makes it seem highly improbable that he lectured on the doctrine or tried to teach it
formally at all. Nor is such an inference really inconsistent with that statement in the *Parmenides* which at the beginning of this lecture I suggested might seem to imply that Plato must have taught his students what he obviously considered a doctrine of fundamental importance. (See above, p. 60.) There Parmenides is made to say that to reject the ideas because of such difficulties as he has just urged against them would be to destroy the significance of discourse. The difficulties which he had raised, many of which incidentally Aristotle in his own criticism repeats, the youthful Socrates is represented as unable to resolve. Passages in dialogues both earlier and later than the *Parmenides*, however, prove that Plato knew at this time why he considered the objections invalid. Yet instead of putting into the mouth of Socrates the proper counterrefutation, he makes Parmenides tell the young man that, while his zeal is commendable, he has erred in attempting to discuss metaphysics before having sufficiently exercised himself in the necessary preliminary training of abstract thinking and debate. Such, then, would have been Plato’s answer if the young men in the Academy raised questions about the ideas of which they read in his published dialogues. Not lectures, not courses, not seminars on the theory of ideas; but the same answer which the plan of the *Republic* implies: first, more of the preliminary studies, the exercise of the mind, and the cultivation of the character; metaphysics is for the mature! It is well to recall that, when Plato died, Aristotle was only thirty-seven years old!

When one considers the restrictions which Plato in the *Republic* put upon the teaching of dialectic, it appears that the formal instruction in the actual Academy must have been limited to what in the ideal state were to have been propaedeutics, that is, as the external tradition indicates, to what the Greeks called geometry. Certainly there would have been no place in it for physics or natural science, which Plato characterized as plausible accounts of Becoming, suitable only as a recreation for
the dialectician who thus relaxes for a time his strenuous study of true Being." Yet one might suppose that while Plato was working on the *Timaeus* he would at least have been discussing informally with the older members of the Academy the physical theories which he was setting down in that dialogue and that later, when it had been finished, they would be able to bring to their reading of it an understanding based upon the supplementary explanations and opinions which he had given in private conversation and debate. Obviously, they did not think the dialogue unimportant. Bonitz's *Index* lists more than forty references to it in the extant works of Aristotle; and this mere count gives no adequate notion of the extent to which he was concerned with it, for the list is not complete and many of the "references" are in fact detailed analyses and criticisms of the theories which Plato there expounded. The significant point, however, is that the Platonic physical theories which Aristotle mentions or criticizes are exclusively the physical theories of the *Timaeus*, for the interpretation of which he had no further resources than has the modern interpreter, the bare text of the published dialogues.

In identifying the "space" of the *Timaeus* with "matter" he does, as I have observed (above, pp. 14-15), *once* refer to certain "unwritten opinions," but only to assert that the discrepancy of terminology between these and the *Timaeus* does not affect his interpretation and criticism; and at least once, arguing that in the *Timaeus* the description of the receptacle and the analysis of the corpuscles of earth, air, fire, and water into elementary planes are incompatible, he says that he cannot decide precisely what was intended because the *Timaeus* does not clearly state whether the receptacle is separate from the elements or not. It seems not to have struck anyone as strange that Aristotle could make such a statement, although he had been a member of the Academy continuously from the time the *Timaeus* was written until Plato's death. Yet, if he was uncertain about Plato's meaning, did it never occur to him to ask the master for an explana-
tion? Or did he ask and receive no answer? And, if so, why did Plato keep silent when he must have known that he was thus inviting misrepresentation of his opinions and misinterpretation of his theories? Whatever the reason may have been, however, the fact itself is certain, and its significance for the so-called “school” is momentous: Plato did not expound any physics or natural philosophy beyond that which he wrote in the *Timaeus*, and he did not give his students or associates any further exegesis of the doctrines which he set down in his dialogues.

This is not only the necessary inference from Aristotle’s confession of uncertainty concerning the intention of the *Timaeus*; it is also implied by the fact that Plato’s associates could and did disagree in their interpretations of many of his doctrines. Some of these debates can be reconstructed; for others the evidence remaining is too slight to show more than that they did take place; but those which have left distinguishable traces make it highly probable that there were many more, no sign of which remains.

In the last chapter of the first book of the *Physics*, Aristotle, while interpreting the receptacle of the *Timaeus* in the sense of a material substrate, nevertheless insists that this Platonic principle so conceived is still inadequate to account for genesis because it was thought of as being a single thing and the necessary factor of privation was consequently neglected. To prove that this receptacle was not an anticipation of his own notion of matter as a logical duality of substrate and privation he appeals to the passage in the *Timaeus* in which it is likened to a “mother”; this, he asserts, is evidence that it was a logical unit even if one makes it a “dyad” by calling it “great and small.” Aristotle’s admission of this last phrase is clearly a concession for the sake of argument; he is maintaining his interpretation of the receptacle and so justifying his criticism of it against someone who had contended that the criticism was invalid because the receptacle, being the great and small, is a “dyad,” not a unit, and
so does comprise the two separate phases which he had claimed as original in his own conception of matter. This method of dealing with an objection to Plato we have already found to be characteristic of Xenocrates; and Xenocrates, we know, did adopt the technical term “dyad” or “indefinite dyad” and tried to read it into the *Timaeus.* He is most probably, then, Aristotle’s adversary in the debate concerning the interpretation of the *Timaeus* of which this passage of the *Physics* is certain evidence.

There exists similar evidence of disagreement concerning Plato’s conception of the soul. Aristotle contends that the account of the constitution of the soul in the *Timaeus* shows that he meant it to be a magnitude. When he proceeds to criticize this conception, he asserts that either mind is without parts and so not a continuum at all, or it is continuous in a sense different from that of a magnitude. He had himself just contrasted to the unity of magnitude the unity of number; but since the latter is for him a unity of succession and since he holds that number is the contrary of continuous, the phrase “or continuous in a sense different from that of magnitude” is clearly a dialectical concession, made to clear the way for the present refutation of the soul as magnitude. Such a concession would have been necessary only if someone had contended that the soul is a continuum without being an extended magnitude and had pointed to “number” as an example of such unextended continuity. Now, we know that Xenocrates called the soul number, that is, self-moving number, and tried to interpret the *Timaeus* in this sense; moreover, he is reported to have called the soul “continuous number,” so that Aristotle’s concession almost certainly refers to Xenocrates and indicates that he imputed to Plato the identification of soul and number in the *Timaeus* in order to defend that passage against the interpretation of Aristotle. A definition offered by Speusippus is part of the same controversy; modern attempts to interpret it have failed because they have
always assumed that it must represent Speusippus' own opinion, whereas it is incompatible with his system and is simply meant to defend Plato against the criticism of Aristotle by interpreting the *Timaeus* to mean that soul is not a magnitude but the idea of the extended body in the same way as it is a form for Aristotle himself. Modern scholars, who keep insisting that the immediate pupils of Plato must have understood him better than anyone else possibly could, might with profit reflect upon this complete disagreement of his three most eminent associates and also upon the fact that Crantor, the pupil of Xenocrates, would not have agreed with them, for he did not hesitate to reject his teacher's interpretation of this passage of the *Timaeus* and to propose one of his own, even though he had not had the personal association with Plato to which Xenocrates might have appealed.

Even the meaning of the general form of the *Timaeus* was a subject of dispute among members of the Academy. Aristotle took quite literally the form of the dialogue and supposed it to mean that the universe had really been generated but would not be destroyed. Both Speusippus and Xenocrates objected to this interpretation, the latter certainly—and probably also the former—explaining that Plato had expressed his cosmology as an account of creation only for the sake of elucidation just as a geometer uses constructions without intending to imply that the geometrical figures are really generated. This interpretation Aristotle in turn tried to prove "untrue" by arguing that the analogy of geometrical construction is not applicable to the statement in the dialogue that the demiurge reduced precosmical chaos to order. In this controversy Heraclides Ponticus sided with Speusippus and Xenocrates, as did Crantor, the pupil of Xenocrates; and even Aristotle's pupil, Theophrastus, hesitated to adopt dogmatically his teacher's literal interpretation. That literal interpretation was certainly wrong, as I have already indicated; but what I wish to emphasize is not the merits of either
side to the controversy but the controversy itself and the fact that Plato's own associates or pupils could not cite any oral statement of his to settle the question of what he had really intended. I submit that this alone would be enough to disprove the current dogma of the higher critics that whenever Aristotle talks of Plato he is drawing upon the latter's lectures and discussions in the Academy whereas the dialogues upon which we so often depend are at best a stopgap, necessary to us only because we do not have the more direct sources of information accessible to the members of the school. Since Aristotle and his fellows in the Academy hotly debated the comparatively simple question whether or not the creation in the Timaeus was meant to be understood literally, it is obvious, first, that they were interested enough in it to ask Plato for the answer, and second, that they either refrained from asking or that he refused to reply. At any rate, it is certain that he neither told them what he had meant nor discussed with them the philosophical problem itself, but left them to interpret, each according to his own unaided ability, the text which he had written.

Such disagreements among Plato's associates concerning the interpretation of identifiable passages in his dialogues should make us wary of the lazy assumption that, when they seem to ascribe to him notions which are not verbally expressed in his writings, their source for these must have been his oral teaching or discussion. Especially when there are indications that such an ascription by one member of the Academy was contested by another, the only legitimate conclusion which can be drawn is that Plato himself did not teach or discuss the doctrine at all. Such is the case with the notorious question of mathematical. Aristotle asserts that for Plato the mathematical objects were a third class of separate entities intermediate between the sensible particulars and the ideas, these mathematical numbers and figures differing from sensibles and resembling ideas in that they are eternal and immobile but differing from ideas and
resembling sensibles in that there are many of each kind. All the attempts to find this intermediate class in the dialogues have failed; and it has been positively proved over and over again that Plato does not anywhere in his writings recognize mathematical numbers and figures as entities separate from sensibles on the one hand and from ideas on the other. Many scholars, therefore, have had recourse to the usual hypothesis that Plato must have taught this doctrine orally in the school and that this is the source of Aristotle's ascription. Insufficient attention, however, has been paid to the fact that Aristotle's own testimony is inconsistent. In the first place, he complains that nothing has been said about the mode of existence or the principles of these intermediates; in the second place, he objects that the "twoness," for example, of mathematical and sensible "twos" is said to be one and the same thing whereas the idea of two is something different; and finally he states in so many words that Plato recognized two kinds of number: intelligible numbers—that is, ideal numbers—on the one hand, and sensible—that is, concrete or denominative—numbers on the other. These ideas of numbers and numbered or numerable sensible objects exhaust the classification given in the Republic and the Philebus and recur in the Epinomis of Plato's pupil, Philip, which also knows nothing of a third, intermediate class; while Aristotle himself in his work On the Ideas, preserved to us only in fragmentary form and so all too often neglected by scholars, recorded two proofs used in the Academy which inferred from the nature of mathematics not that the mathematical objects are separate, intermediate entities, but that they are ideas. So Aristotle himself gives evidence against his own ascription to Plato of a separate class of mathematicalists; but, furthermore, this ascription was clearly opposed by some of his associates in the Academy. Xenocrates' identification of ideas and mathematical numbers is, to be sure, only negative evidence, although in view of his general method (see p. 44, above) this identification makes a probable
that he knew no statement of Plato’s which seemed to him to require that mathematical be considered entities intermediate between ideas and sensibles, especially since he did himself assume three kinds of existence: the sensible, within the heavens; the intelligible, beyond the heavens; and the heavens themselves, which he designated composite and opinable. An unnamed member of the Academy, however, flatly denied the existence of these mathematical in any sense whatsoever, asserting that the only number which had existence was the ideal numbers; and others contended that these mathematical, which Aristotle calls intermediate, exist, to be sure, but only as immanent in the sensible objects and not separate from them as do the ideas. The latter interpretation must have been influential, for Aristotle goes to some length to prove it wrong; and his chief refutation indicates the basis of his own interpretation, for he argues that, if the mathematical are immanent, there is no reason why the ideas may not be immanent too, so that consistency requires anyone who assumes that the latter are separate to make the mathematical separate as well. It is of importance to recall in this connection that Aristotle himself held a doctrine of mathematical intermediate between pure forms and sensibles, most of the forms and all the mathematical being immanent in the sensible objects and separable only by abstraction. Now, the notion that Plato too must have conceived the objects of mathematics to be somehow different from the ideas could very easily have been derived by interpretation from the doctrine of the dialogues. Since every ideal number is a unique term in the series of natural numbers, all of which are “inaddible units,” and since each ideal figure is also an indivisible and unique unit, it may well have seemed that the numbers which we add and subtract, multiply and divide cannot be these ideas and yet are not sensible objects either, and that the circles and triangles which the geometer talks of in the plural cannot be the ideal circle and triangle and yet must be something other than the
material objects, none of which is ever the perfect figure of which the geometrical theorem is true. Moreover, Plato's own terminology in the *Republic* could have been mistakenly interpreted as indicating that he considered mathematical objects to be "intermediate" entities of some kind, for, although he really makes it abundantly clear that the objects of the mathematician's thought are ideas, still he asserts that in mathematics these objects are not treated as ideas and he calls this mental process of the mathematician "something intermediate between opinion and reason." In any case, the inconsistency of Aristotle's own testimony and the discordant opinions of the different members of the Academy show definitely that Plato did not himself "teach" his pupils or associates a doctrine of mathematical objects at all and did not even resolve their disagreement about the meaning of what he had written on the subject by laying down an authoritative interpretation.

There was debate and disagreement of the same kind concerning the "extent of the ideas," the Academy dividing on such questions as whether or not there are ideas of artifacts or of evils or of negative terms. To analyze and appraise the scattered and complicated evidence for the various positions adopted in these debates would take too long and be too tedious for the present occasion; but the conclusion to which they all lead is the same so far as concerns the relation of Plato to the Academy, and I shall pass over them to outline just one controversy concerning the ideas for which there is evidence within the dialogues themselves.

Aristotle in the *Metaphysics* refers to an attempt by Eudoxus to explain the relation of ideas to particulars; and Alexander in his commentary on this passage has preserved from Aristotle's earlier work *On the Ideas* a more extensive outline of the proposal of Eudoxus and of the arguments against it which Aristotle had there given. Eudoxus suggested that the particulars exist by reason of the mixture of the ideas in them. It
appears that he had said nothing about the nature of ideas as such, but had merely explained their relation to particulars as being one of immanence and had thereby made of the ideas a self-contradictory conception, either unconsciously or at least without express recognition of the consequences and commensurate alteration of the theory to avoid them. Of the ten arguments against Eudoxus—all of which, in spite of recent attempts to prove the contrary, Alexander undoubtedly drew from Aristotle's lost work—nine turn upon this self-contradiction; and most of these Plato in his dialogue the *Parmenides* put into the mouth of Parmenides as objections to the theory of ideas. In short, the interpretation of Eudoxus is the object of at least part of Plato's criticism there, for it is a conception of the ideas as immanent which Parmenides is made to attack, so that there must have been such an interpretation current, and we have no reason to doubt Aristotle's ascription of it to Eudoxus. The youthful Socrates in the dialogue is represented as unable successfully to meet the objections of Parmenides and, instead of being instructed in the proper interpretation of the ideas, is advised to train himself in abstract thinking before venturing into metaphysics—a remark the significance of which for Plato's attitude toward discussions of the ideas in the Academy we have already considered. (See above, p. 68–69.) In a later dialogue, the *Sophist*, on the other hand, certain persons called "the friends of the ideas" are criticized by the conductor of the conversation, the Eleatic Stranger, who is undertaking to establish the existence of an idea of motion by the argument that mind is a reality implying life and soul and that the real existence of soul implies the real existence both of something moving and of motion itself. Plato thus shows that even though the physical motion of the phenomenal world be taken to signify lack of reality, as it is by "the friends of the ideas" whose conclusion concerning the unreality of motion he here opposes, still, if one admits the existence of mind, one thereby admits the reality of motion
which is other than physical motion, that is, the psychical self-motion, and which then implies the existence of an idea of motion, itself like all the ideas "immobile." Since these "friends of the ideas" would not deny the reality of motion if they recognized an idea of motion, they cannot represent or include Plato's own earlier doctrine, as is now frequently asserted, for such an idea is both implied and explicitly asserted in earlier dialogues. To argue that Plato in his earlier writings "separated" the ideas and made them immobile is nothing to the point, since he continues to do so hereafter also, and even here it is not the separateness and immobility of the ideas that he criticizes but just the denial of any reality of motion. Consequently, if "the friends of the ideas" are associates who had mistaken his doctrine, their mistake did not lie, as some scholars think, in taking the "apparent separation" of the earlier dialogues literally. As in the materialistic Titans who are contrasted to them, so in "the friends of the ideas" Plato dramatizes a tendency and in the latter he dramatizes the kind of "pluralistic Eleaticism" implied by Parmenides' acceptance of the ideas despite all difficulties in the dialogue Parmenides; but they are not merely a "literary fiction," for all that, and there is a specific motivation for his choice of the nomenclature "friends of the ideas." The arguments in the Parmenides which correspond to those used by Aristotle against Eudoxus attack his interpretation on the ground that it is incompatible with the impassivity and immobility of the imperishable and separate ideas. This correspondence itself shows that such arguments must have been common in the Academy; and many who used them probably failed to see that, although the ideas, being impassive and immobile, could not be involved in mixture and motion as they would be in Eudoxus' theory, this still did not preclude the reality of motion or ideal communication. They were consequently in danger of denying the intercommunion of ideas which Plato had hitherto assumed both in the Phaedo and in the
Republic, and of being forced to admit that the intelligible ideas cannot be known; and the cause of this was just their failure to remember that there is motion other than physical motion and that intercommunion is not physical mixture, so that the ideas can be impassive and immobile and can still have intercommunion with one another and be known by mind. In the Sophist, Plato says that "the friends of the ideas" cannot allow knowledge to be an action, because then the ideas would be moved by being affected. He does not mean to assert that the ideas are moved by being known, nor is this his proof of the reality of motion; he means that "the friends of the ideas," although they consider the ideas to be intelligible, are prevented from admitting knowledge to be an activity because they fail to see that the motion of mind is other than physical motion and so does not involve the alteration of its object. His own conception of the ideas was not affected by this apparent "problem" which Eudoxus' interpretation and its Academic criticism raised; but in this overzealous and uncritical rebuttal of the "motion" and "mixture" which Eudoxus imported into the theory of ideas is the source of that "pluralistic Eleaticism" which some members of the Academy, thinking themselves friends and defenders of the ideas, mistook for rigorously consistent Platonism. The Parmenides and the Sophist, then, contain a record of two opposing Academic interpretations of the theory of ideas, both of which Plato criticized in his writings but did not, like a schoolmaster, "correct" in his classroom.

All the evidence points unmistakably to the same conclusion: the Academy was not a school in which an orthodox metaphysical doctrine was taught, or an association the members of which were expected to subscribe to the theory of ideas. The latter point would be clearly enough established by the mere fact that Speusippus was designated Plato's successor, although he rejected the theory of ideas entirely. This choice of Speusippus has always troubled modern scholars who, convinced of
Aristotle’s superiority, think it necessary to apologize for what they consider Plato’s error of judgment in not selecting him. Such apologies are hardly necessary. In the first place, Speusippus was not the inconsiderable philosopher which only the disappearance of his writings has made him seem to modern scholars; a close study of the fragments which remain shows not only that he developed a highly original metaphysics of his own, but also that Aristotle was much more deeply obligated to him than is generally understood. In the second place, he was fifty-nine years old when Plato died, while Aristotle was only thirty-seven; and the choice of the successor appears entirely reasonable, once it is recognized that the metaphysical theories of the director were not in any way “official” and that the formal instruction in the Academy was restricted to mathematics, a subject in which Speusippus was deeply interested and in which Aristotle manifested neither enthusiasm nor ability. In any case, the designation of Speusippus certainly implies that neither Plato nor anyone else in the Academy considered the theory of ideas the formal doctrine of the association or one of the subjects in the regular curriculum. There were certainly associates of Plato who espoused the theory of ideas as they understood it; but it is a striking fact that it was adopted by none of those to whose names we can attach a philosophical doctrine, with the exception of Xenocrates, who, in reality, retained only the name and who, significantly, as third head of the Academy, was the first to attempt a systematization of Platonic physics and metaphysics as the official doctrine of the school. Even he, though he had been directly associated with Plato, had to proceed by interpretation of the dialogues—interpretation which often is demonstrably forced and incorrect and with which neither the other associates of Plato nor even his own students agreed.

This does not mean that Plato himself had no doctrine of ideas; his last written works, the Philebus, the Timaeus, and the
THE ACADEMY

Laws, prove that he did and that he took it very seriously. He knew, however, that it was a hard doctrine, "hard to accept and hard to reject," as he says in the Republic, "of which," as he says in the Parmenides, "it is marvelously difficult to convince anyone who raises objections." He did not try to impose it upon his students or associates from without by the constraint of persuasion or authority, for he knew that true knowledge must come from within the soul itself and that nothing learned under compulsion remains fixed in the mind. He is not tastelessly making of Parmenides his own prophet and harbinger when he puts into his mouth the statement that only a very remarkable man could resolve all the difficulties and teach another the doctrine of ideas. Instead, he is speaking out of his own experience of the misinterpretation and opposition which his writings have met at the hands of his own associates in the Academy.

Moreover, there are two things in which Plato is more interested than in the theory of ideas itself, for that theory is, after all, only his way of satisfying these two requirements: first, that there is such a thing as mind which can apprehend reality, and second, that this reality which is the object of knowledge has absolute and unqualified existence. Even Speusippus, although he rejected the ideas and reduced the essential nature of each thing to a complex of relations, felt it necessary to satisfy these requirements and so assumed that the mind apprehends directly the principles of all knowledge, the separate and independently existing numbers which are the pattern of all relation (see above, pp. 37-41); and Aristotle himself, despite his antagonism toward the ideas, conceded that mind has separate reality and—not to mention the supreme form on which all being and all knowledge depend—held that even the forms, which are the objects of human knowledge and which exist only in particular complexes, are more real than the particulars themselves. There is a passage in the Metaphysics in which Aristotle tries to turn
this attitude of Plato’s into a refutation of the theory of ideas. The demonstrations of the ideas, he argues, destroy what to those who posit them is more important than the very existence of the ideas, for the consequence of these demonstrations should be that the idea of two is not the first number, but number is prior to it, and prior to number is the relative, so that this, the relative, must be prior to the absolute. Interpreters from Alexander to Ross have taken it for granted that this argument has something to do with the “indefinite dyad” as a principle of idea-numbers; but that cannot be true, for the sentence is repeated in a passage from which Aristotle expressly says that he is excluding all consideration of the idea-numbers and their principles. ^We need not here weigh the validity of the argument, which really depends upon the exploitation of an ambiguity in Platonic terminology and Aristotle’s assumption that the more general idea must have ontological priority. The nature of his reasoning, however, is the following: since Plato contends that every common term implies a separate idea, there ought to be an idea of number which, as more general than any specific number, ought to be prior to the idea of two, which he calls the first number; and since number is a relative term there ought to be an idea of relativity which would be prior to the idea of number and so prior to all the ideas of specific numbers, in which case relativity must be prior to the absolute ideas. In short, the purpose of the argument is to show that, while Plato’s chief concern was to confute relativism by establishing an absolute reality, the doctrine of ideas, which he adopted for this end, when carried to its logical conclusion reduces reality to mere relation and so destroys what concerns him more than the ideas themselves.

To Plato, however, the theory seemed to be the only possible solution. “To draw a great distinction briefly,” he says in the *Timaeus*, ^if intelligence is different from true opinion, then there certainly exist absolute ideas, imperceptible to us and
intelligible only; but if, as some think, true opinion and intelligence do not differ at all, then one must assume that what we perceive through the body is the most stable reality.” His associates in the Academy could not bring themselves to accept this conclusion. Each of them tried to satisfy in his own way the purpose which the theory of ideas was meant to answer; and, while they all tried to do so without adopting the theory itself, none could fully and successfully avoid it. Nevertheless, mightily influenced by it as they were, each felt free to interpret it independently; and Plato imposed no restriction on that freedom by pronouncing ex cathedra an orthodox interpretation. After all, he probably felt—and who, having read the dialogues, would gainsay it?—that he had already there expressed his meaning as clearly as words, spoken or written, can ever mirror the eternal truth.
Notes

LECTURE I

Plato’s Lectures: A Hypothesis for an Enigma


NOTES TO LECTURE I

5 Burnet, op. cit., I, p. 222; Taylor, op. cit., p. 503.
6 Field, op. cit., p. 38 and n. 1 (after a conjecture of Post's).
7 Kurt Hubert, Sokrates, II (1914), p. 260.
8 Phaedrus 275 A-B.
12 Friedländer, op. cit., I, p. 102.
13 Phaedo 100 B, cf. 76 D-E.
15 Burnet, Platonism, p. 44; cf. idem, Greek Philosophy, I, p. 155, where it appears that the sentence which Burnet means is Timaeus 51 c.
16 Timaeus 51 B-52 C.
17 Esp. Laws 965 B-E.
19 Philebus 15 A-B, 16 C-E, 58 E-59 D.
23 Cf. Republic 596 A, Parmenides 132 A.
25 Cf. Timaeus 52 A-C.
26 Cf. ibid. 37 E-38 B.
NOTES TO LECTURE I

28 Phaedo 103c-105b; cf. Robin, Platon, pp. 109, 274.
29 Republic 476a; cf. Cherniss, I, n. 128 sub fin.
30 Sophist 254b-259e.
33 Metaphysics 1078b 9–32, 1086a 37–b 11.
34 Ibid. 1086a 31.
35 Ibid. 1078b 11–12.
38 Cf. references in Cherniss, I, n. 108.
40 Cf. Taylor, Varia Socratica, p. 70, and idem, Plato, p. 504; Burnet, Greek Philosophy, I, p. 313.
41 Gustav Teichmüller, Literarische Fehden im vierten Jahrhundert vor Chr. (Breslau, 1881), p. 229, note.
42 Paul Shorey, De Platonis Idearum Doctrina atque Mentis Humanae Notionibus Commentatio (München, 1884), pp. 34–39; idem, The Unity of Plato's Thought, pp. 82–85; idem, Classical Philology, XIX (1924), p. 382.
43 F. A. Trendelenburg, Platonis De Ideis et Numeris Doctrina ex Aristotele Illustrata (1826).
44 Trendelenburg (op. cit., p. 3) went further: “Aristotelem vero Platonis philosophiam recte intellegere et candide tradere aut nescivisse aut noluisse, nemo jure contendet.” Taylor (Plato, p. 503), however, says: “When it is a mere question of what Plato said, the testimony of Aristotle is surely unimpeachable; but when we go on to ask what Plato meant, the case is different.” Burnet had already said the same thing (Greek Philosophy, I, pp. 312–313).
46 Burnet, Greek Philosophy, I, pp. 178, 214; idem, Plato's Phaedo, pp. xlv–xlvi; idem, Platonism, p. 120; Taylor, Plato, pp. 10, 503; idem, A Commentary on Plato's Timaeus (Oxford, 1928), p. 136.
48 Such seems to be the implication of Jaeger's remark in Studien zur Entstehungsgeschichte der Metaphysik des Aristoteles (Berlin, 1912), p. 147.
49 Cf., e.g., Erich Frank, Plato und die sogenannten Pythagoreer. Ein Kapitel aus der Geschichte des griechischen Geistes (Halle, 1923), p. 94; Taylor, Plato, p. 10 (see above, n. 46).
NOTES TO LECTURE I

50 Phaedrus 275 c–278 b.  
51 Epistle VII, 341 c.  
53 Epistle VII, 341 c: ἰητον γὰρ οὐδαμῶς ἐστιν ὡς ἄλλα μαθῆμα.  
55 Themistius, Orationes XXI (245 c–246 A).  
56 This is taken as obvious by Wilamowitz (op. cit., I, p. 704), Field (op. cit., pp. 35–36), Emil Heitz (Die Verlorenen Schriften des Aristoteles, Leipzig, 1865, p. 210).  
58 Cf. Diogenes Laertiou, IV, 13 (the list of Xenocrates' works) and V, 87 (the list of Heraclides' works): Περὶ τάγαθον α'. Cf. Heitz, op. cit., p. 218.  
64 Taylor, Plato, p. 503.  
65 Natorp, op. cit., 2d ed., p. 435; Otto Kluge, Darstellung und Beurteilung der Einwendungen des Aristoteles gegen die Platonische Ideenlehre (Greifswald, 1905), p. 39, n. 1 (who, however, supposes the "unwritten doctrine" to be notes of Plato's own which had not been edited).  
67 De Anima 404 b 8–30; on the whole passage cf. Cherniss, I, App. IX.
NOTES TO LECTURE I

68 Cf. Cherniss, I, notes 77 and 95.
69 Cf. ibid., I, App. IX (p. 567) and n. 325.
70 Cf. Metaphysics 1036 b 13-15 and 1090 b 20-32; Cherniss, I, App. IX (pp. 567-570).
71 Physics 209 b 13-16.
72 Ibid. 209 b 11-16, 209 b 33-210 a 2.
74 Physics 209 b 35-210 a 1.
75 See the references above, n. 52 (esp. Jaeger, op. cit., p. 141).
77 E.g., Phaedo 101 b-c; cf. Cherniss, I, App. VI, p. 517.
78 Philebus 23 c-27 c.
80 Metaphysics 987 b 25-27.
81 Philebus 25 c-d.
82 Ibid. 27 a 11-12 (cf. ibid. 59 a). In Philebus 16 c ῥρ̄ω ἄελ λεγομένων εἶναι, of course, does not mean “eternal entities” as it is interpreted by those who wish to make it refer to the ideas (e.g., Chevalier, op. cit., p. 89, n. 5).
83 Philebus 15 a-b.
84 Ibid. 59 c.
85 Ibid. 16 d-e.
87 Timaeus 52 a-c.
88 Physics 192 a 6-8. On the whole passage 191 b 35-192 a 34 see Cherniss, I, pp. 84-96.
89 Physics 191 b 35-192 a 1.
90 Metaphysics 1088 b 35-1089 a 6.
91 Sophist 237 a.
92 Ibid. 241 d.
93 Ibid. 257 b-259 b.
94 Ibid. 238 c, 258 e.
95 Ibid. 258 c, 259 a-b.
96 Timaeus 52 a-c.
97 Metaphysics 988 a 11-14.
98 Simplicius, op. cit., p. 151, 12-19.
99 Stenzel, op. cit., 2d ed., p. 70. Stenzel erroneously ascribes the observa-
NOTES TO LECTURE I

tion to Alexander; the quotation from Alexander ends at line 8 on p. 151 (see reference in preceding note).


101 Ibid., p. 88, n. 1, where Physics 209 B 11-15 is quoted; lines 15-16 are omitted, and 209 B 33-210 A 2 is not mentioned. There is no mention of Physics 191 B 35-192 A 34, or Metaphysics 1088 B 35-1089 A 6, either.

102 On the whole subject of Aristotle’s evidence of the material principle of Plato and the Platonists cf. Cherniss, I, App. I.

103 Timaeus 52 A-c.


106 Cherniss, I, pp. 92-94.

107 Metaphysics 1084 A 10-17.

108 Ibid. 1073 A 14-22.

109 Ibid. 1070 A 18-19.

110 Robin, La Théorie platonicienne, pp. 454-458; idem, Platon, p. 147.

111 Robin, La Théorie platonicienne, pp. 4-9.


114 Metaphysics 990 A 34-991 B 9, 1078 B 32-1080 A 11.


116 Metaphysics 997 B 5-12.


118 Cf. Cherniss, I, n. 77.

119 Alexander, op. cit., p. 56, 33-35.


121 Metaphysics 992 A 20-24.

122 De Caelo 303 A 8-10.
LECTURE II

Speusippus, Xenocrates, and the Polemical Method of Aristotle

1 Aristotle, *Posterior Analytics* 83 A 33.
5 *Metaphysics* 1083 B 1-8.
7 Aristotle, frag. 9 (ed. Rose).
9 *Republic* 596 A.
10 *Phaedo* 101 B-C, cf. 96 E-97 B.
11 Cf. *ibid.* 100 B and 102 B.
12 *Ibid.* 78 D.
13 *Cratylus* 432 A-D.
14 On the rest of this paragraph see Cherniss, I, App. VI.
15 *Metaphysics* 1082 B 1-9; cf. 991 B 26: In what do “unlike” units differ, since they are without quality?
17 *Republic* 526 A.
20 Taylor is quite wrong in saying that “the Academic deduction of the integers does not give them in their natural order” (“Forms and Numbers: A
NOTES TO LECTURE II

Study in Platonic Metaphysics," *Philosophical Studies*, London, 1934, pp. 126-127). *Metaphysics* 1081 B 12-22, on which he bases this statement, has nothing to do with the *order* of generation, but argues that, granted the natural order—as the Platonists do grant it,—their *method* of generation is impossible. *Metaphysics* 1081 A 21-29 says that the numbers were derived in their natural order (cf. Ross, *Aristotle’s Metaphysics*, II, p. 435).


23 *Nicomachean Ethics* 1096 A 17-19.


25 *Republic* 597 c.

26 *Timaeus* 31 A.


31 Cf. the references in Cherniss, I, n. 45.

32 Ibid., pp. 54-58 and n. 46.

33 Speusippus, frag. 30 (ed. Lang).


35 Speusippus, frag. 30 (ed. Lang).


38 *Metaphysics* 1044 A 8; ὁς λέγων τίνως shows that this is an Academic doctrine, οἴνος ... στραγγή could be only Speusippus’ theory; μονάς τις means, of course, a “unit with position.”

39 Ibid. 1072 B 30-34, 1091 A 33-B 1, 1092 A 11-15.


NOTES TO LECTURE II

43 Philebus 59 C, cf. Timaeus 52 A.
44 Philebus 16 D–E.
45 Ibid. 16 B.
48 Ibid. 1090 A 4–7.
49 Ibid. 1086 A 2–5.
51 Metaphysics 1085 A 23–31. In line 26 τὸ ἕκτο is not the particular animal, as most commentators seem to suppose, but the specific animal, for it is related to the idea of animal as the separate numbers are related to the idea of one (lines 26–31).
52 Metaphysics 1039 A 24–B 19; cf. Cherniss, I, p. 43.
55 Metaphysics 1038 A 30–34.
57 Divisions of Aristotle, §§ 64 and 65 (Hermann Mutschmann, Divisiones quae vulgo dicuntur Aristotelaeae, Leipzig, 1906); cf. Cherniss, I, pp. 44–46.
58 Divisions of Aristotle, § 64.
59 Ibid., § 65.
60 Cherniss, I, p. 48.
61 Cf. Posterior Analytics 96 B 30–35.
63 Speusippus, frag. 4 (ed. Lang).
66 Xenocrates, frag. 54 (Richard Heinze, Xenocrates. Darstellung der Lehre und Sammlung der Fragmente, Leipzig, 1892); cf. Cherniss, I, n. 356.
67 Xenocrates, frag. 60 (ed. Heinze).
NOTES TO LECTURE II

71 Cf. Cherniss, I, pp. 412-413.
72 Cf. De Anima 409 A 15-18, where a modification of Physics 257 B 30-32 is actually used against Xenocrates.
73 Some come perilously near to doing so even now; cf. Cherniss, I, n. 366.
74 Timaeus 35 A-B; cf. Cherniss, I, pp. 407-411, with notes 337 and 339 and the references there to Grube (Classical Philology, XXVII [1932], pp. 80-82), and Cornford (Plato's Cosmology, pp. 59-61).
75 Xenocrates, frag. 68 (ed. Heinze) = Plutarch, De Animae Procreatione in Timaeo (ed. G. Bernardakis, Leipzig, 1895), 1012 D-F.
77 Plutarch, op. cit. 1013 D-E.
78 Cf. Heinze, Xenocrates. Darstellung, p. 66.
79 Xenocrates, frag. 68 (ed. Heinze).
80 Cf. Plutarch, op. cit. 1013 C-D.
81 Cf. Cherniss, I, App. IX (pp. 572-573).
82 Xenocrates, frag. 68 (ed. Heinze).
83 Metaphysics 1086 A 5-13 (in line 12 I read τὰ εἶδη καὶ τὰ μαθηματικά [εἰναι] εὐλαγος ἔξωρισειν), 1083 B 1-8 (here Plato is τοῖς ὡς εἶδη τὸν ἀριθμὸν λέγουσιν), 1076 A 19-21 (Plato posits two classes, τὰς Ιδέας καὶ τοὺς μαθηματικοὺς ἀριθμοὺς), 1090 B 20-1091 A 5 (Plato posits two kinds of number, τὸν τῶν εἴδων, [or τὸν εἴδητικών, cf. Ross, Aristotle's Metaphysics, II, p. 459 on 1086 A 4] and τὸν μαθηματικών, 1090 B 33, 35, 37), 1069 A 34-36 (τὰ εἴδη καὶ τὰ μαθηματικά), 1028 B 19-21 and 24-27 (Plato posits τὰ εἴδη καὶ τὰ μαθηματικά as two kinds of being, Xenocrates says that τὰ εἴδη καὶ τοὺς ἀριθμοὺς are the same thing).
86 J. Cook Wilson, op. cit., pp. 250-251; Robin, La Théorie platonicienne, pp. 439-441; see n. 6, above.
87 On the following cf. Cherniss, I, pp. 141-145.
88 De Caelo 302 B 10-303 B 8.
89 Ibid. 303 B 9-304 B 22.
90 Ibid. 303 A 14-16.
91 Cf. ibid. 275 B 29-276 A 6, 304 B II-21.
92 De Generatione 315 B 28-30 (cf. 314 A 8-10), 325 B 24-33, De Caelo 305 A 33-35.
93 De Caelo 303 B 30-304 A 7, 304 A 18-30 II.
94 Ibid. 303 B 22-30; cf. 303 A 14-16 (Atomists) and Physics 187 A 12-20 (Plato and the "monists").
NOTES TO LECTURE II

95 De Caelo 303 B 13-21.
96 Ibid. 304 A 9-18. For proof that Plato and Xenocrates are meant cf. Cherniss, I, pp. 142-145.
97 Cf. De Caelo 304 A 27, 29, 31-32; 304 B 1-2, 5.
100 Metaphysics 1016 B 18-21, 1021 A 12-14, 1052 B 15-24.
101 Ibid. 1054 A 4-13 (cf. Cherniss, I, pp. 322-324).
102 See p. 5 above, and note 24 to Lecture I.
103 Philebus 15 A-B, 16 D-E.
104 Sophist 35 A; see above, p. 47.
105 Sophist 257 A 5-6, 259 B.
106 Ibid. 255 E, 256 D 11-E 3.
107 Metaphysics 988 A 10-11 and B 1-6.
111 Metaphysics 1091 B 22-25, 1083 A 20-24, 1028 B 21-24, 1085 B 4-10 (Cherniss, I, p. 131).
113 Xenocrates, frag. 33 (ed. Heinze).
114 Metaphysics 1091 A 23-29.
115 Cf. Robin, La Théorie platonicienne, pp. 439 ff.; Ross, Aristotle's Metaphysics, I, p. lx: "it is probable that Aristotle's account (scil. of the generation of the numbers) is based on Xenocrates rather than on Plato."
119 Sophist 251 A-259 D.
120 Cf. Symposium 211 A-B.
121 Cf. Cherniss, I, n. 218; Cornford, Plato's Theory of Knowledge, pp. 256-257; 281, n. 2; 278-279.
123 Politicus 258 c, Sophist 235 B-c.
NOTES TO LECTURE II

124 Politicus 261 E–262 A.
125 Sophist 231 C–232 A.
126 Cf. Cherniss, I, n. 36.
127 Politicus 262 B.
128 Ibid. 265 A, 266 E.
130 Sophist 254 C.
132 Metaphysics 1001 A 4–24 (cf. Cherniss, I, n. 228), 1089 B 4–8, 1060 A 36–B 6 (where one is said to be less extensive than being!), 996 A 4–8, 1053 B 9–28 (especially observe lines 16–28).
134 Topics 127 A 26–34.
136 Cf. τὸ ὑπὸ τὸ ὑπὸ in Metaphysics 998 B 9–11.
137 Parmenides 141 E 9–12, 144 C–E, 153 D–E.
138 Ibid. 142 C 4–7, 142 D–E; Sophist 244 B–D; cf. Cherniss, I, n. 226, and Cornford, Plato’s Theory of Knowledge, pp. 220–221. See also the proof that the ideas of Being and Identity cannot be the same, Sophist 255 B 8 ff.
139 Nicomachean Ethics 1096 A 23–B 7; cf. Cherniss, I, n. 301.
140 Nicomachean Ethics 1096 A 23–27.
141 Metaphysics 988 B 6–16; cf. Cherniss, I, pp. 381–382 and n. 300.
142 Metaphysics 1091 A 36–B 3 and B 13–15; cf. Cherniss, I, n. 301. This has nothing to do with the statement of Republic 509 B that “the Good is beyond Being in dignity and meaning” (δυνάμει), which means only that “whereas you can always ask the reason for a thing’s existence and the answer will be that it exists for the sake of its goodness, you cannot ask for a reason for goodness; the good is an end in itself” (Cornford, Plato and Parmenides, London, 1939, p. 132).
144 Metaphysics 1091 B 22–25.
145 Ibid. 1086 A 5–11.
146 Cf. Ibid. 1080 B 5–9.
147 Ibid. 1081 A 12–17.
LECTURE III

The Academy: Orthodoxy, Heresy, or Philosophical Interpretation?

1 Parmenides 135 b-c.
2 Philebus 59 a-c.
3 Laws 965 b-c.
5 Robin, Platon, p. 12.
6 Field, Plato and His Contemporaries, p. 35.
7 Diogenes Laertius, III, 46; IV, 2; cf. Athenaeus, XII, 546 d.
9 Ernst Howald, Die platonische Akademie und die moderne Universitas Litterarum. Eine Akademische Rede (Zürich, 1921).
11 Epicrates, frag. 11 (Kock, Comicorum Atticorum Fragmenta, II, p. 287).
12 Usener, op. cit., p. 83.
14 Jaeger, Aristoteles, p. 18, n. 1; Friedländer, Platon, I, p. 110.
15 Cf. Lang, De Speusippi Academici Scriptis, p. 20.
16 Aristophanes, Clouds, 191 ff.
20 Cf. Zeller, op. cit., Band II, Abt. 1, p. 982, n. 1, and Theon of Smyrna,

22 De Caelo 293 B 30-32; on the whole question cf. Cherniss, I, App. VIII, pp. 545-564.


24 Diogenes Laertius, IV, 13 (No. 71 in the list as printed by Heinze, Xenokrates. Darstellungen, p. 158).


29 Proclus, op. cit., p. 67, 1-20. Whether Neocles and his pupil Leon (ibid., p. 66, 18-67, 1) and Hermotimus of Colophon (ibid., p. 67, 20-23) are meant to be regarded as connected with the Academy or not is unclear.

30 Proclus, op. cit., p. 68, 1.

31 Ibid., p. 67, 6-7.

32 Ibid., p. 211, 18-23; Diogenes Laertius, III, 24.

33 Proclus, op. cit., p. 211, 21: καὶ ὁ Πλάτων ὡς φασίν ...


35 Richard Robinson, Mind, N.S., XLV (1936), p. 469: “When I gave the conventional account of Greek analysis to a mathematical friend he replied that, while he did not see why they called it ‘analysis,’ he himself practiced it every day.” On the method cf. Robinson, ibid., pp. 464-473, Cherniss, I, n. 51, and Tannery, op. cit., pp. 41-44.


37 Plutarch, Quaestiones Conviviales 718 E-F; Marcellus, 14, 11.
NOTES TO LECTURE III

38 Proclus, op. cit., p. 66, 13–14: καὶ πανταχοῦ τὸ περὶ αὐτὰ διαί τῶν ψιλο-
σοφίας ἀντεχομένων ἐπειρών.


41 Republic 530 C (πολλαπλάσιον τοῦ ἐργοῦ ἢ ὡς νῦν ἀστρονομεῖται προστάτεις), and for mathematical harmonics 531 C.


43 So Burnet, Platonism, pp. 101 f.

44 Proclus, op. cit., pp. 66, 19–67, 1 and 67, 12–16; for Leon see above, n. 29.

45 Cf. Plutarch, Dion, 14: ἐν Ἀκαδημίᾳ τὸ σωφρόμενον ἁγαθὸν γητειν καὶ διὰ γεωμετρίας εὐδαμον γενέσθαι (cf. Plato, Epistle III, 319 c); Athenaeus, XI, 508 E. On the later ascription to Plato of the inscription μὴ δείς ἀγεωμέτρη-


48 Republic 537 D, 539 A.

49 Ibid. 498 A. For the meaning of πλησιάσαντες αὐτοῦ τῇ χαλεπωτάτῳ ἀκαλ-
λάττονται cf. the more vulgar expression of the same notion by Aristophanes in Frogs 94–95: ἄφοβα δάκτυλον ... ἄπαξ προσοφρήσαντα τῇ τραγῳδίᾳ.

50 Republic 539 B–D, cf. Philebus 15 D–16 A.

51 Republic 539 D–E.

52 Cf. Shorey, Plato, The Republic, II, p. 228, n. b, and Diès, Platon, p. 178: “Ils s’assoupliront en pratiquant les diverses méthodes du raisonnement philosophique ... pour s’exercer à mieux comprendre et mieux défendre la vérité.”


55 Cf. references in the preceding note.


57 Timaeus 59 C–D.


De Generatione 329 A 8–24; cf. Cherniss, I, nn. 88 and 89.


Timaeus 50 D.


Xenocrates, frag. 68 (ed. Heinze); cf. pp. 45–47, above.

For this report of Meletius and the passage of Nemesius from which it derives (Nemesius, De Nat. Hom., § 44, cf. Heinze, Xenokrates. Darstellung, p. 66 and frag. 63) see Cherniss, I, p. 401.


Cf. note 65 to Lecture II.


De Caelo 279 B 32–280 A 11.


Ibid. 987 B 16–18, cf. 1002 B 14–16.


Metaphysics 991 B 29–30 (Ross’s text), 1090 B 34–35.


Ibid. 990 A 29–32.

Republic 525 D, Philebus 56 D–57 D, Epinomis 990 C 5–8.
NOTES TO LECTURE III

86 Xenocrates, frag. 5 (ed. Heinze).
87 Metaphysics 1080b 21–22.
89 Cf. Ross, Aristotle’s Physics, p. 548 (on Physics 204a 34–b 4), and idem, Aristotle’s Metaphysics, II, p. 197 (on Metaphysics 1035a 20).
90 Republic 511a–e, and see above, n. 79, esp. the reference to Wilson.
92 Metaphysics 991a 14–18.
94 Sophist 246b–c, 248a–e; on the following cf. Cherniss, I, n. 376.
95 Sophist 248e–249b.
96 Cf., besides the references in note 94 above, Sophist 249c–d and 252a.
100 Sophist 249b 8–c 5 (cf. also Simplicius, In Aristotelis Physica Commentaria, pp. 405, 24–406, 16), ibid. 256b 6–9; Timaeus 27d–28a, 37d–38c, 52a; Philebus 59a–c, 61d–e. For “separation” cf. Cherniss, I, pp. 206–211.
102 Sophist 246a–247e.
105 Phaedo 103c–105b, Republic 476a; cf. Cherniss, I, n. 128.
106 Sophist 248d–e.
107 So rightly Cornford, Plato’s Theory of Knowledge, p. 245.
110 Philebus 58a–59d, Timaeus 51b–52c, Laws 965b–c.
111 Republic 532d.
112 Parmenides 135a–b.
113 Cf. Republic 536e.
114 Parmenides 135b.
115 Metaphysics 990b 17–22; on the following cf. Cherniss, I, pp. 300–305.
117 Timaeus 51d–e.