CHAPTER VIII., THE YOUNGER ELEATICS

154. Relation to Predecessors

THE systems we have just been studying were all fundamentally pluralist, and they were so because Parmenides had shown that, if we take a corporeal monism seriously, we must ascribe to reality a number of predicates inconsistent with our experience of a world which everywhere displays multiplicity, motion, and change (§ 97). The four "roots" of Empedokles and the innumerable "seeds" of Anaxagoras were both of them conscious attempts to solve the problem Parmenides had raised (§§ 106, 127). There is no evidence, indeed, that the Pythagoreans were directly influenced by Parmenides, but it has been shown (§ 147) how the later form of their system was based on the theory of Empedokles. Now it was just this prevailing pluralism that Zeno criticised from the Eleatic standpoint; and his arguments were especially directed against Pythagoreanism. Melissos, too, criticises Pythagoreanism; but he tries to find a common ground with his adversaries by maintaining the old Ionian thesis that reality is infinite.

I. ZENO OF ELEA

155. Life of Zeno

According to Apollodoros,[1] Zeno flourished in Ol. LXXIX. (464-460 B.C.). This date is arrived at by making him forty years younger than Parmenides, which is in direct conflict with the testimony of Plato. We have seen already (§ 84) that the meeting of Parmenides and Zeno with the young Sokrates cannot well have occurred before 449 B.C., and Plato tells us that Zeno was at that time "nearly forty years old."[2] He must, then, have been born about 489 B.C., some twenty-five years after Parmenides. He was the son of Teleutagoras, and the statement of Apollodoros that he had been adopted by Parmenides is only a misunderstanding of an expression of Plato's Sophist.[3] He was, Plato further tells us,[4] tall and of a graceful appearance.

Like Parmenides, Zeno played a part in the politics of his native city. Strabo, no doubt on the authority of Timaios, ascribes to him some share of the credit for the good government of Elea, and says that he was a Pythagorean.[5] This statement can easily be explained. Parmenides, we have seen, was originally a Pythagorean, and the school of Elea was naturally regarded as a mere branch of the larger society. We hear also that Zeno conspired against a tyrant, whose name is differently given, and the story of his courage under torture is often repeated, though with varying details.[6]

156. Writings

Diogenes speaks of Zeno's "books," and Souidas gives some titles which probably come from the Alexandrian librarians through Hesychios of Miletos.[7] In the Parmenides Plato makes Zeno say that the work by which he is best known was written in his youth and published against his will.[8] As he is supposed to be forty years old at the time of the dialogue, this must mean that the book was written before 460 B.C., and it is very possible that he wrote others after it.[9] If he wrote a work against the "philosophers," as Souidas says, that must mean the Pythagoreans, who, as we have seen, made use of the term in a sense of their own.[10] The *Disputations* (Ἐρίδες) and the *Treatise on Nature* may, or may not, be the same as the book described in Plato's Parmenides.

It is not likely that Zeno wrote dialogues, though certain references in Aristotle have been supposed to imply this. In the *Physics*[11] we hear of an argument of Zeno's, that any part of a heap of millet makes a sound, and Simplicius illustrates this by quoting a passage from a dialogue between Zeno and Protagoras.[12] If our chronology is right, it is quite possible that they may have met; but it is most unlikely that Zeno should have made himself a personage in a dialogue of his own. That was a later fashion. In another place Aristotle refers to a passage where "the answerer and Zeno the questioner" occurred,[13] a reference which is most easily to be understood in the same way. Alkidamas seems to have written a dialogue in which Gorgias figured,[14] and the exposition of Zeno's arguments in dialogue form must always have been a tempting exercise.

Plato gives us a clear idea of what Zeno's youthful work was like. It contained more than one "discourse," and these discourses were subdivided into sections, each dealing with some one presupposition of his adversaries.[15] We owe the preservation of Zeno's arguments on the one and many to Simplicius.[16] Those relating to motion have been preserved by Aristotle;[17] but he has restated them in his own language.

157. Dialectic

Aristotle in his *Sophist*[18] called Zeno the inventor of dialectic, and that, no doubt, is substantially true, though the beginnings at least of this method of arguing were contemporary with the foundation of the Eleatic school. Plato[19] gives us a spirited account of the style and purpose of Zeno's book, which he puts into his own mouth:

In reality, this writing is a sort of reinforcement for the argument of Parmenides against those who try to turn it into ridicule on the ground that, if reality is one, the argument becomes involved in many absurdities and contradictions. This writing argues against those who uphold a Many, and gives them back as good and better than they gave; its aim is to show that their assumption of multiplicity will be involved in still more absurdities than the assumption of unity, if it is sufficiently worked out.

The method of Zeno was, in fact, to take one of his adversaries' fundamental postulates and deduce from it two contradictory conclusions.[20] This is what Aristotle meant by calling him the inventor of dialectic, which is just the art of arguing, not from true premisses, but from premisses admitted by the other side. The theory of Parmenides had led to conclusions which contradicted the evidence of the senses, and Zeno's object was not to bring fresh proofs of the theory itself, but simply to show that his opponents' view led to contradictions of a precisely similar nature.

158. Zeno and Pythagoreanism

That Zeno's dialectic was mainly directed against the Pythagoreans is certainly suggested by Plato's statement, that it was addressed to the adversaries of Parmenides, who held that things were "a many."[21] Zeller holds, indeed that it was merely the popular form of the belief that things are many that Zeno set himself to confute;[22] but it is surely not true that ordinary people believe things to be "a many" in the sense required. Plato tells us that the premisses of Zeno's arguments were the beliefs of the adversaries of Parmenides, and the postulate from which all his contradictions are derived is the view that space, and therefore body, is made up of a number of discrete units, which is just the Pythagorean doctrine. We know from Plato that Zeno's book was the work of his youth.[23] It follows that he must have written it in Italy, and the Pythagoreans are the only people who can have criticised the views of Parmenides there and at that date.[24]

It will be noted how much clearer the historical position of Zeno becomes if we follow Plato in assigning him to a later date than is usual. We have first Parmenides, then the Pluralists, and then the criticism of Zeno. This, at any rate, seems to have been the view Aristotle took of the historical development.[25]

159. What Is the Unit?

The polemic of Zeno is clearly directed in the first instance against a certain view of the unit. Eudemos, in his *Physics*,[26] quoted from him the saying that "if any one could tell him what the unit was, he would be able to say what things are." The commentary of Alexander on this, preserved by Simplicius, is quite satisfactory. "As Eudemos relates," he says, "Zeno the disciple of Parmenides tried to show that it was impossible that things could be a many, seeing that there was no unit in things, whereas 'many' means a number of units."[27] Here we have a clear reference to the Pythagorean view that everything may be reduced to a sum of units, which is what Zeno denied.

160. The Fragments

The fragments of Zeno himself also show that this was his line of argument. I give them according to the arrangement of Diels.

(1)

If what is had no magnitude, it would not even be . . . . But, if it is, each one must have a certain magnitude and a certain thickness, and must be at a certain distance from another, and the same may be said of what is in front of it; for it, too, will have magnitude, and something will be in front of it.[28] It is all the same to say this once and to say it always; for no such part of it will be the last, nor will one thing not be as compared with another.[29]

So, if things are a many, they must be both small and great, so small as not to have any magnitude at all, and so great as to be infinite. R. P. 134.

(2)

For if it were added to any other thing it would not make it any larger; for nothing can gain in magnitude by the addition of what has no magnitude, and thus it follows at once that what was added was nothing.[30] But if, when this is taken away from another thing, that thing is no less; and again, if, when it is added to another thing, that does not increase, it is plain that, what was added was nothing, and what was taken away was nothing. R. P. 132.

(3)

If things are a many, they must be just as many as they are, and neither more nor less. Now, if they are as many as they are, they will be finite in number.

If things are a many, they will be infinite in number; for there will always be other things between them, and others again between these. And so things are infinite in number. R. P. 133[31]

161. The Unit

If we hold that the unit has no magnitude--and this is required by what Aristotle calls the argument from dichotomy,[32]--then everything must be infinitely small. Nothing made up of units without magnitude can itself have any magnitude. On the other hand, if we insist that the units of which things are built up are something and not nothing, we must hold that everything is infinitely great. The line is infinitely divisible; and, according to this view, it will be made up of an infinite number of units, each of which has some magnitude.

That this argument refers to points is proved by an instructive passage from Aristotle's *Metaphysics*.[33] We read there--

If the unit is indivisible, it will, according to the proposition of Zeno, be nothing. That which neither makes anything larger by its addition to it, nor smaller by its subtraction from it, is not, he says, a real thing at all; for clearly what is real must be a magnitude. And, if it is a magnitude, it is corporeal; for that is corporeal which is in every dimension. The other things, *i.e.* the plane and the line, if added in one way will make things larger, added in another they will produce no effect; but the point and the unit cannot make things larger in any way.

From all this it seems impossible to draw any other conclusion than that the "one" against which Zeno argued was the "one" of which a number constitute a "many," and that is just the Pythagorean unit.

162. Space

Aristotle refers to an argument which seems to be directed against the Pythagorean doctrine of space,[34] and Simplicius quotes it in this form:[35]

If there is space, it will be in something; for all that is is in something, and what is in something is in space. So space will be in space, and this goes on *ad infinitum*, therefore there is no space. R. P. 135.

What Zeno is really arguing against here is the attempt to distinguish space from the body that occupies it. If we insist that body must be in space, then we must go on to ask what space itself is in. This is a "reinforcement" of the Parmenidean denial of the void. Possibly the argument that everything must be "in" something, or must have something beyond it, had been used against the Parmenidean theory of a finite sphere with nothing outside it.

163. Motion

Zeno's arguments on the subject of motion have been preserved by Aristotle himself. The system of Parmenides made all motion impossible, and his successors had been driven to abandon the monistic hypothesis in order to avoid this very consequence. Zeno does not bring any fresh proofs of the impossibility of motion; all he does is to show that a pluralist theory, such as the Pythagorean, is just as unable to explain it as was that of Parmenides. Looked at in this way, Zeno's arguments are no mere quibbles, but mark a great advance in the conception of quantity. They are as follows

(1) You cannot cross a race-course.[36] You cannot traverse an infinite number of points in a finite time. You must traverse the half of any given distance before you traverse the whole, and the half of that again before you can traverse it. This goes on *ad infinitum*, so that there are an infinite number of points in any given space, and you cannot touch an infinite number one by one in a finite time.[37]

(2) Achilles will never overtake the tortoise. He must first reach the place from which the tortoise started. By that time the tortoise will have got some way ahead. Achilles must then make up that, and again the tortoise will be ahead. He is always coming nearer, but he never makes up to it.[38]

The "hypothesis" of the second argument is the same as that of the first, namely, that the line is a series of points; but the reasoning is complicated by the introduction of another moving object. The difference, accordingly, is not a half every time, but diminishes in. a constant ratio. Again, the first argument shows that, on this hypothesis, no moving object can ever traverse any distance at all, however fast it may move; the second emphasises the fact that, however slowly it moves, it will traverse an infinite distance.[39]

(3) The arrow in flight is at rest. For, if everything is at rest when it occupies a space equal to itself, and what is in flight at any given moment always occupies a space equal to itself, it cannot move.[40]

Here a further complication is introduced. The moving object itself has length, and its successive positions are not points but lines. The first two arguments are intended to destroy the hypothesis that a line consists of an infinite number of indivisibles; this argument and the next deal with the hypothesis that it consists of a finite[41] number of indivisibles.

(4.) Half the time may be equal to double the time. Let us suppose three rows of bodies,[42] one of which (**A**) is at rest while the other two (**B**, **C**) are moving with equal velocity in opposite directions (Fig. 1). By the time they are all in the same part of the course, **B** will have passed twice as many of the bodies in **C** as in **A** (Fig. 2).

Therefore the time which it takes to pass **C** is twice as long as the time it takes to pass **A**. But the time which **B** and **C** take to reach the position of **A** is the same. Therefore double the time is equal to the half.[43]

According to Aristotle, the paralogism here depends on the assumption that an equal magnitude moving with equal velocity must move for an equal time, whether the magnitude with which it is equal is at rest or in motion. That is certainly so, but we are not to suppose that this assumption is Zeno's own. The fourth argument is, in fact, related to the third just as the second is to the first. The Achilles adds a second moving point to the single moving point of the first argument; this argument adds a second moving line to the single moving line of the arrow in flight. The lines, however, are represented as a series of units, which is just how the Pythagoreans represented them; and it is quite true that, if lines are a sum of discrete units, and time is similarly a series of discrete moments, there is no other measure of motion possible than the number of units which each unit passes.

This argument, like the others, is intended to bring out the absurd conclusions which follow from the assumption that all quantity is discrete, and what Zeno has really done is to establish the conception of continuous quantity by a *reductio ad absurdum* of the other hypothesis. If we remember that Parmenides had asserted the one to be continuous (fr. 8, 25), we shall see how accurate is the account of Zeno's method which Plato puts into the mouth of Sokrates.

II. MELISSOS OF SAMOS

164. Life of Melissus

In his Life of Perikles, Plutarch tells us, on the authority of Aristotle, that the philosopher Melissos, son of Ithagenes,was the Samian general who defeated the Athenian fleet in 441/0 B.C.;[44] and it was no doubt for this reason that Apollodoros fixed his *floruit* in Ol. LXXXIV. (444-41 B.C.).[45] Beyond this, we really know nothing about his life. He is said to have been, like Zeno, a disciple of

Parmenides;[46] but, as he was a Samian, it is possible that he was originally a member of the Ionic school, and we shall see that certain features of his doctrine tend to bear out this view. On the other hand, he was certainly convinced by the Eleatic dialectic, and renounced the Ionic doctrine in so far as it was inconsistent with that. We note here the effect of the increased facility of intercourse between East and West, which was secured by the supremacy of Athens.

165. The Fragments

The fragments which we have come from Simplicius, and are given, with the exception of the first, from the text of Diels.[47]

(1a) If nothing is, what can be said of it as of something real?[48]

(1) What was was ever, and ever shall be. For, if it had come into being, it needs must have been nothing before it came into being. Now, if it were nothing, in no wise could anything have arisen out of nothing. R. P. 142.

(2) Since, then, it has not come into being, and since it is, was ever, and ever shall be, it has no beginning or end, but is without limit. For, if it had come into being, it would have had a beginning (for it would have begun to come into being at some time or other) and an end (for it would have ceased to come into being at some time or other); but, if it neither began nor ended, and ever was and ever shall be, it has no beginning or end; for it is not possible for anything to be ever without all being. R. P. 143.

(3) Further, just as it ever is, so it must ever be infinite in magnitude. R. P. 143.

(4) But nothing which has a beginning or end is either eternal or infinite. R. P. 143.

(5) If it were not one, it would be bounded by something else. R. P. 144 a.

(6) For if it is (infinite), it must be one; for if it were two, it could not be infinite; for then they would be bounded by one another.[49].

(6a) (And, since it is one, it is alike throughout; for if it were unlike, it would be many and not one.[50])

(7) So then it is eternal and infinite and one and all alike. And it cannot perish nor become greater, nor does it suffer pain or grief. For, if any of these things happened to it, it would no longer be one. For if it is altered, then the real must needs not be all alike, but what was before must pass away,

and what was not must come into being. Now, if it changed by so much as a single hair in ten thousand years, it would all perish in the whole of time.

Further, it is not possible either that its order should be changed; for the order which it had before does not perish, nor does that which was not come into being. But, since nothing is either added to it or passes away or is altered, how can any real thing have had its order changed? For if anything became different, that would amount to a change in its order.

Nor does it suffer pain; for a thing in pain could not all be. For a thing in pain could not be ever, nor has it the same power as what is whole. Nor would it be alike, if it were in pain; for it is only from the addition or subtraction of something that it could feed pain, and then it would no longer be alike. Nor could what is whole feel pain; for then what was whole and what was real would pass away, and what was not would come into being. And the same argument applies to grief as to pain.

Nor is anything empty: For what is empty is nothing. What is nothing cannot be.

Nor does it move; for it has nowhere to betake itself to, but is full. For if there were aught empty, it would betake itself to the empty. But, since there is naught empty, it has nowhere to betake itself to.

And it cannot be dense and rare ; for it is not possible for what is rare to be as full as what is dense, but what is rare is at once emptier than what is dense.

This is the way in which we must distinguish between what is full and what is not full. If a thing has room for anything else, and takes it in, it is not full ; but if it has no room for anything and does not take it in, it is full.

Now, it must needs be full if there is naught empty, and if it is full, it does not move. R. P. 145.

(8) This argument, then, is the greatest proof that it is one alone; but the following are proofs of it also. If there were a many, these would have to be of the same kind as I say that the one is. For if there is earth and water, and air and iron, and gold and fire, and if one thing is living and another dead, and if things are black and white and all that men say they really are,--if that is so, and if we see and hear aright, each one of these must be such as we first decided, and they cannot be changed or altered, but each must be just as it is. But, as it is, we say that we see and hear and understand aright, and yet we believe that what is warm becomes cold, and what is cold warm; that what is hard turns soft, and what is soft hard; that what is living dies, and that things are born from what lives not; and that all those things are changed, and that what they were and what they are now are in no way alike. We think that

iron, which is hard, is rubbed away by contact with the finger;[51] and so with gold and stone and everything which we fancy to be strong, and that earth and stone are made out of water; so that it turns out that we neither see nor know realities. Now these things do not agree with one another. We said that there were many things that were eternal and had forms and strength of their own, and yet we fancy that they all suffer alteration, and that they change from what we see each time. It is clear, then, that we did not see aright after all, nor are we right in believing that all these things are many. They would not change if they were real, but each thing would be just what we believed it to be; for nothing is stronger than true reality. But if it has changed, what was has passed away, and what was not is come into being. So then, if there were many things, they would have to be just of the same nature as the one. R. P. 147.

(9) Now, if it were to exist, it must needs be one; but if it is one, it cannot have body; for, if it had body it would have parts, and would no longer be one. R. P. 146.[52]

(10) If what is real is divided, it moves; but if it moves, it cannot be. R. P. 144 a.[53]

166. Theory of Reality

It has been pointed out that Melissos was not perhaps originally a member of the Eleatic school; but he certainly adopted all the views of Parmenides as to the true nature of reality with one remarkable exception. He appears to have opened his treatise with a reassertion of the Parmenidean "Nothing is not" (fr. 1*a*), and the arguments by which he supported this view are those with which we are already familiar (fr. 1). Reality, as with Parmenides, is eternal, a point which Melissos expressed in a way of his own. He argued that since everything that has come into being has a beginning and an end, everything that has not come into being has no beginning or end. Aristotle is very hard on him for this simple conversion of a universal affirmative proposition;[54] but, of course, his belief was not founded on that. His whole conception of reality made it necessary for him to regard it as eternal.[55] It would be more serious if Aristotle were right in believing, as he seems to have done, that Melissos inferred that what is must be infinite in space, because it had neither beginning nor end in time.[56] As, however, we have the fragment which Aristotle interprets in this way (fr. 2), we are quite entitled to understand it for ourselves, and I cannot see anything to justify Aristotle's assumption that the expression "without limit" means without limit in space.[57]

167. Reality Spatially Infinite

Melissos did indeed differ from Parmenides in holding that reality was spatially as well as temporally infinite; but he gave an excellent reason for this belief, and had no need to support it by such an extraordinary argument. What he said was that, if it were limited, it would be limited by empty

space. This we know from Aristotle himself,[58] and it marks a real advance upon Parmenides. He had thought it possible to regard reality as a finite sphere, but it would have been difficult for him to work out this view in detail. He would have had to say there was nothing outside the sphere; but no one knew better than he that there is no such thing as nothing. Melissos saw that you cannot imagine a finite sphere without regarding it as surrounded by an infinite empty space;[59] and as, in common with the rest of the school, he denied the void (fr. 7), he was forced to say reality was spatially infinite (fr. 3). It is possible that he was influenced in this by his association with the Ionic school.

From the infinity of reality, it follows that it must be one; for, if it were not one, it would be bounded by something else (fr. 5). And, being one, it must be homogeneous throughout (fr. 6a), for that is what we mean by one. Reality, then, is a single, homogeneous, corporeal *plenum*, stretching out to infinity in space, and going backwards and forwards to infinity in time.

168. Opposition to Ionians

Eleaticism was always critical, and we are not without indications of the attitude taken up by Melissos towards contemporary systems. The flaw which he found in the Ionian theories was that they all assumed some want of homogeneity in the One, which was a real inconsistency. Further, they all allowed the possibility of change; but, if all things are one, change must be a form of coming into being and passing away. If you admit that a thing can change, you cannot maintain that it is eternal. Nor can the arrangement of the parts of reality alter, as Anaximander, for instance, had held; any such change necessarily involves a coming into being and passing away.

The next point made by Melissos is somewhat peculiar. Reality, he says, cannot feel sorrow or pain; for that is always due to the addition or subtraction of something, which is impossible. It is not easy to be sure what this refers to. Perhaps it is to the theory by which Anaxagoras explained perception.[60]

Motion in general[61] and rarefaction and condensation in particular are impossible; for both imply the existence of empty space. Divisibility is excluded for the same reason. These are the same arguments as Parmenides employed.

169. Opposition to Pythagoreans

In nearly all accounts of the system of Melissos, we find it stated that he denied the corporeality of what is real,--an opinion which is supported by a reference to fr. 9, which is certainly quoted by Simplicius to prove this very point.[62] If, however, our general view as to the character of early Greek philosophy is correct, the statement must seem incredible. And it will seem even more surprising when

we find that in the *Metaphysics* Aristotle says that, while the unity of Parmenides seemed to be ideal, that of Melissos was material.[63] Now the fragment, as it stands in the MSS. of Simplicius,[64] puts a purely hypothetical case, and would most naturally be understood as a disproof of the existence of something on the ground that, if it existed, it would have to be both corporeal and one. This cannot refer to the Eleatic One, in which Melissos himself believed; and, as the argument is almost verbally the same as one of Zeno's,[65] it is natural to suppose that it also was directed against the Pythagorean assumption of ultimate units. The only possible objection is that Simplicius, who twice quotes the fragment, certainly took it in the sense usually given to it.[66] But it was very natural for him to make this mistake. "The One" was an expression that had two senses in the middle of the fifth century B.C.; it meant either the whole of reality or the point as a spatial unit. To maintain it in the first sense, the Eleatics were obliged to disprove it in the second; and so it sometimes seemed that they were speaking of their own "One" when they really meant the other. We have seen that the very same difficulty was felt about Zeno's denial of the "one."[67]

170. Opposition to Anaxagoras

The most remarkable fragment of Melissos is, perhaps, the last (fr. 8). It seems to be directed against Anaxagoras; at least the language seems more applicable to him than any one else. Anaxagoras had admitted (§ 137, *fin.*) that, so far as our perceptions go, they do not agree with his theory, though he held this was due solely to their weakness. Melissos, taking advantage of this admission, urges that, if we give up the senses as the test of reality, we are not entitled to reject the Eleatic theory. With wonderful penetration he points out that if we are to say, with Anaxagoras, that things are a many, we are bound also to say that each one of them is such as the Eleatics declared the One to be. In other words, the only consistent pluralism is the atomic theory.

Melissos has been unduly depreciated owing to the criticisms of Aristotle; but these, we have seen, are based mainly on a somewhat pedantic objection to the false conversion in the early part of the argument. Melissos knew nothing about the rules of conversion; and he could easily have made his reasoning formally correct without modifying his system. His greatness consisted in this, that not only was he the real systematiser of Eleaticism, but he was also able to see, before the pluralists saw it themselves, the only way in which the theory that things are a many could be consistently worked out.[68] It is significant that Polybos, the nephew of Hippokrates, reproaches those "sophists" who taught there was only one primary substance with " putting the doctrine of Melissos on its feet."[69]

1. Diog. ix. 29 (R. P. 13o a). Apollodoros is not expressly referred to for Zeno's date; but, as he is quoted for his father's name (ix. 25; R. P. 130), there can be no doubt that he is also the source of the *floruit*.

2. Plato, *Parm.* 127 b (R. P. iii d). The visit of Zeno to Athens is confirmed by Plut. *Per.* 4. (R. P. 130 e), where we are told that Perikles "heard" him as well as Anaxagoras. It is also alluded to in *Alc.* 1. 119 a, where we are told that Pythodoros, son of Isolochos, and Kallias, son of Kalliades, each paid him 100 minae for instruction.

3. Plato, *Soph.* 241 d (R. P. 130 a).

4. Plato, *Parm.*, *loc. cit.*

5. Strabo, vi. p. 252 (R. P. 111 c).

6. Diog. ix. 26, 27, and the other passages referred to in R. P. 130 c. The original of the account given in the tenth book of Diodoros is doubtless Timaios.

7. Diog. ix. 26 (R. P. 130); Souidas *s.v.* (R. P. 130 d).

8. Plato, *Parm.* 128 d 6 (R. P. 130 d).

9. The most remarkable title given by Souidas is Ἐξήγησις τῶν Ἐμπεδοκλέους. Of course Zeno did not write a commentary on Empedokles, but Diels points out (*Berl. Sitzb.*, 1884, p. 359) that polemics against philosophers were sometimes called ἐξηγήσεις. Cf. the Ἡρακλείτου ἐξηγήσεις of Herakleides Pontikos and especially his Πρὸς τὸν Δημόκριτον ἐξηγήσεις (Diog. v. 88).

10. See above, p. 278, n. 1. It hardly seems likely that a later writer would make Zeno argue πρὸς τοὺς φιλοσόφους, and the title given to the book at Alexandria must be based on something contained in it.

11. Arist. *Phys*. H, 5. 250 a 20 (R. P. 131 a).

12. Simpl. *Phys.* p. 1108, 18 (R. P. 131). If this is what Aristotle refers to, it is hardly safe to attribute the κεγχρίτης λόγος to Zeno himself. The existence of this dialogue is another indication of Zeno's visit to Athens at an age when he could converse with Protagoras, which agrees very well with Plato's representation of the matter.

13. Arist. *Soph. El.* 170 b 22 (R. P. 130 b).

14. Chap. V. p. 199, *n.* 5.

15. Plato, *Parm.* 127 d. Plato speaks of the first ὑπόθεσις of the first λόγος, which shows that the book was really divided into separate sections. Proclus (*in loc.*) says there were forty of these λόγοι altogether.

16. Simplicius expressly says in one place (p. 140, 30; R. P. 133) that he is quoting κατὰ λέξιν. I see no reason to doubt this, as the Academy would certainly have a copy of the work. In that case, the use of the Attic dialect by Zeno is significant.

17. Arist. *Phys.* Z, 9. 239 b 9 *sqq.*

18. Cf. Diog. ix. 25 (R. P. 130).

19. Plato, *Parm.* 128 c (R. P. 130 d). If historians of philosophy had started from this careful statement of Plato's, instead of from Aristotle's loose references, they would not have failed to understand his arguments, as they all did before Tannery.

20. The technical terms used in Plato's Parmenides seem to be as old as Zeno himself. The ὑπόθεσις is the provisional assumption of the truth of a certain statement, and takes the form εἰ πολλά ἐστι or the like. The word does not mean the assumption of something as a foundation, but the setting before one's self of a statement as a problem to be solved (Ionic ὑποθέσθαι, Attic προθέσθαι). If the conclusions (τά συμβαίνοντα) which necessarily follow from the ὑπόθεσις are impossible, the ὑπόθεσις is "destroyed" (cf. Plato, *Rep.* 533 c 8, τὰς ὑποθέσεις ἀναιροῦσα). The author of the Περὶ ἀρχαίης ἰατρικῆς knows the word ὑπόθεσις in a similar sense.

21. The view that Zeno's arguments were directed against Pythagoreanism has been maintained in recent times by Tannery (*Science hellène*, pp. 249 *sqq.*), and Bäumker (*Das Problem der Materie*, pp. 60 *sqq.*).

22. Zeller. p. 589 (Eng. trans. p. 612).

23. Parm., *loc. cit.*

24. Empedokles has been suggested. He was about the same age as Zeno, indeed (§ 98), and he seems to criticise Parmenides (§ 106), but the arguments of Zeno have no special applicability to his theories. Anaxagoras is still less likely.

25. Arist. *Phys.* A, 3. 187 a 1 (R. P: 134 b). See below, § 173.

26. Simpl. *Phys.* p. 138, 32 (R. P. 134 a).

27. Simpl. *Phys.* p. 99, 13, ὡς γὰρ ἱστορεῖ, φησίν (Ἀλέξανδρος), Εὔδημος, Ζήνων ὁ Παρμενίδου γνώριμος ἐπειρᾶτο δεικνύναι ὅτι μὴ οἷόν τε τὰ ὄντα πολλὰ εἶναι τῷ μηδὲν εἶναι ἐν τοῖς οὖσιν ἕν, τὰ δὲ πολλὰ πλῆθος εἶναι ἑνάδων. This is the meaning of the statement that Zeno ἀνῄρει τὸ ἕν which is not Alexander's (as implied in R. P. 134 a), but goes back to no less an authority than Eudemos. It must be read in connexion with the words τὴν γὰρ στιγμὴν ὡς τὸ ἓν λέγει (Simpl. *Phys*. p. 99. 11).

28. I formerly rendered "the same may be said of what surpasses it in smallness; for it too will have magnitude, and something will surpass it in smallness." This is Tannery's rendering, but I now agree with Diels in thinking that ἀπέχειν refers to μέγεθος and προέχειν to πάχος. Zeno is showing that the Pythagorean point must have three dimensions.

29. Reading, with Diels and the MSS., οὔτε ἕτερον πρὸς ἕτερον οὐκ ἔσται.. Gomperz's conjecture (adopted in R. P.) seems to me arbitrary.

30. Zeller marks a lacuna here. Zeno must certainly have shown that the subtraction of a point does not make a thing less; but he may have done so before the beginning of our present fragment.

31. This is what Aristotle calls "the argument from dichotomy" (*Phys.* A, 3. 187 a 2 ; R. P. 134 b). If a line is made up of points, we ought to be able to answer the question, "How many points are there in a given line?" On the other hand you can always divide a line or any part of it into two halves; so that, if a line is made up of points, there will always be more of them than any number you assign.

32. See last note.

33. Arist. *Met.* B, 4. 1001 b 7.

34. Arist. *Phys.* Δ, 1. 209 a 23; 3. 210 b 22 (R. P. 135 a).

35. Simpl. *Phys*. p. 562, 3 (R. P. 135). The version of Eudemos is given in Simpl. *Phys*. p. 563, 26, ἀξιοῖ γὰρ πᾶν τὸ ὂν ποῦ εἶναι· εἰ δὲ ὁ τόπος τῶν ὄντων, ποῦ ἂν εἴη; οὐκοῦν ἐν ἄλλῳ τόπῳ κἀκεῖνος δὴ ἐν ἄλλῳ καὶ οὕτως εἰς τὸ πρόσω..

36. Arist. *Top.* Θ, 8. 160 b 8, Ζήνωνος (λόγος_, ὅτι οὐκ ἐνδέχεται κινεῖσθαί οὐδὲ τὸ στάδιον διελθεῖν..

37. Arist. *Phys.* Z, 9, 239 b ii (R. P. 136). Cf. Z, 2. 233 a 11; a 21 (R. P., 136 a).

38. Arist. *Phys.* Z, 9. 239 b 14 (R. P. 137).

39. As Mr. Jourdain puts it (*Mind*, 1916, p. 42), "the first argument shows that motion can never begin; the second argument shows that the slower moves as fast as the faster," on the hypothesis that a line is infinitely divisible into its constituent points.

40. *Phys*. Z, 9, 239 b 30 (R. P. 138); *ib.* 239 b 5 (R. P. 138 a). The latter passage is corrupt, though the meaning is plain. I have translated Zeller's version of it: εἰ γάρ, φησίν, ἠρεμεῖ πᾶν ὅταν ᾖ κατὰ τὸ ἴσον, ἔστι δ' ἀεὶ τὸ φερόμενον ἐν τῷ νῦν κατὰ τὸ ἴσον, ἀκίνητον κ.τ.λ.. Of course ἀεί means "at any time," not "always," and κατὰ τὸ ἴσον is, literally, "on a level with a space equal (to itself)." For other readings, see Zeller, p. 598 n. *3*; and Diels, *Vors*. 19 A 27.

41. See Jourdain (*loc. cit.*).

42. The word is ὄγκοι; cf. Chap. VII. p. 291, *n.* 3. The name is very appropriate for the Pythagorean units, which Zeno had shown to have length, breadth, and thickness (fr. 1).

43. Arist. *Phys*. Z, 9. 239 b 33 (R. P. 139). I have had to express the argument in my own way, as it is not fully given by any of the authorities. The figure is practically Alexander's (Simpl. *Phys.* p. 1016, 14), except that he represents the ὄγκοι by letters instead of dots. The conclusion is plainly stated by Aristotle (*loc. cit.*), συμβαίνειν οἴεται ἴσον εἶναι χρόνον τῷ διπλασίῳ τὸν ἥμισυν, and, however we explain the reasoning, it must be so represented as to lead to the conclusion that, as Mr. Jourdain puts it (*loc. cit.*), "a body travels twice as fast as it does."

44. Plut. *Per.* 26 (R. P. 141 b), from Aristotle's Σαμίων πολιτεία.

45. Diog. ix. 24 (R. P. 141). It is possible, of course, that Apollodoros meant the first and not the fourth year of the Olympiad. That is his usual era, the foundation of Thourioi. But, on the whole, it is more likely that he meant the fourth; for the date of the ναυαρχία would be given with precision. See Jacoby, p. 270.

46. Diog. ix. 24 (R. P. 141).

47. It is no longer necessary to discuss the passages which used to appear as frs. 1-5 of Melissos, as it has been proved by A. Pabst that they are merely a paraphrase of the genuine fragments (*De Melissi Samii fragmentis*, Bonn, 1889). Almost simultaneously I had independently come to the same conclusion (see the first edition, § 138). Zeller and Diels have both accepted Pabst's demonstration, and the supposed fragments have been relegated to the notes in the last edition of R. P. I still believe, however, that the fragment which I have numbered 1a is genuine. See next note.

48. This fragment is from the beginning of the paraphrase which was so long mistaken for the words of Melissos (*Simpl. Phys.* p. 103, 18; R. P. 142 a), and Diels has removed it along with the rest. I believe it to be genuine because Simplicius, who had access to the original, introduces it by the words ἄρχεται τοῦ συγγράμματος οὕτως, and because it is thoroughly Eleatic in character. It is quite natural that the first words of the book should be prefixed to the paraphrase.

49. This fragment is quoted by Simpl. *De caelo*, p. 557, 16 (R. P. 144). The insertion of the word "infinite" is justified by the paraphrase (R. P. 144 a) and by *M.X.G.* 974 a 11, πᾶν δὲ ἄπειρον ὂν ... ἓν ... εἶναι· εἰ γὰρ δύο ἢ πλείω εἴη, πέρατ' ἂν εἶναι ταῦτα πρὸς ἄλληλα.

50. I have ventured to insert this, though the actual words are nowhere quoted, and it is not in Diels. It is represented in the paraphrase (R. P. 145 a) and in *M.X.G.* 974 a 13 (R. P. 144 a).

51. Reading ὁμουρέων with Bergk. Diels keeps the MS. ὁμοῦ ῥεων; Zeller (p. 613, *n.* 1) conjectures ὑπ' ἰοῦ ῥέων.

52. I read εἰ μὲν οὖν εἴη with E F for the εἰ μὲν ὂν εἴη. The ἐὸν which still stands in R. P. is a piece of local colour due to the editors. Diels also now reads οὖν.

53. Diels now reads ἀλλὰ with E for the ἅμα of F, and attaches the word to the next sentence.

proposition.

54. Arist. *Phys.* A, 3. 186 a 7 (R. P. 143 a). The false conversion is also mentioned in *Soph. El.* 168 b 35 (R. P. *ib.*). So Eudemos *ap.* Simpl. Phys. p. 105, 24, οὐ γάρ, εἰ τὸ γενόμενον ἀρχὴν ἔχει, τὸ μὴ γενόμενον ἀρχὴν οὐκ ἔχει, μᾶλλον δὲ τὸ μὴ ἔχον ἀρχὴν οὐκ ἐγένετο..

55. The real reason is given in the paraphrase in Simpl. *Phys.* p. 103, 21 (R. P. 142 a), συγχωρεῖται γὰρ καὶ τοῦτο ὑπὸ τῶν φυσικῶν, though Melissos himself would not have put it in that way. He regarded himself as a φυσικός like the rest; but, from the time of Aristotle, it was a commonplace that the Eleatics were not φυσικοί, since they denied motion.

56. Cf. especially *Soph. El.* 168 b 39, ὡς ἄμφω ταὐτὰ ὄντα τῷ ἀρχὴν ἔχειν, τότε γεγονὸς καὶ τὸ πεπαρασμένον.. The same point is made in 167 b 13 and 181 a 27.

57. The words ἀλλ' ἄπειρόν ἐστι mean simply "but it is without limit," and this is simply a repetition of the statement that it has no beginning or end. The nature of the limit can only be determined by the context, and accordingly, when Melissos does introduce the subject of spatial infinity, he is careful to say τὸ μέγεθος ἄπειρον (fr. 3).

58. Arist. *Gen. Corr.* A, 8. 325 a 14, ἓν καὶ ἀκίνητον τὸ πᾶν εἶναί φασι καὶ ἄπειρον ἔνιοι· τὸ γὰρ πέρας περαίνειν ἂν πρὸς τὸ κενόν.. That this refers to Mehssos has been shown by Zeller (p. 612, *n.* 2).

59. Note the disagreement with Zeno (§ 162).

60. See p. 273. It is clear that Anaxagoras made considerable use of pain (πόνος), and it is possible that his doctrine, summed up in the words ἀεὶ πονεῖ τὸ ζῷον (Arist. *Eth. Nic.* H, 15. 1154b 7) had a wider application than appears from his remains. Aristotle (*De caelo*, B, 1. 284 a 15) makes a point of the οὐρανός being ἄπονος.

61. The view of Bäumker that Melissos admitted ἀντιπερίστασις or motion *in pleno* (*Jahrb. f. Kl. Phil.*, 1886, p. 541; *Das Problem der Materie*, p. 59) depends upon some words of Simplicius (*Phys.* p. 104, i3), οὐχ ὅτι μὴ δυνατὸν διὰ πλήρους κινεῖσθαι, ὡς ἐπὶ τῶν σωμάτων λέγομεν κτλ.. These words were formerly turned into Ionic and passed off as a fragment of Melissos. They are, however, part of Simplicius's own argument against Alexander, and have nothing to do with Melissos at all.

62. See, however, Bäumker, *Das Problem der Materie*, pp. 57 *sqq.*, who remarks that ἐόν (or ὄν) in fr. 9 must be the predicate, as it has no article. In his fifth edition (p. 611, *n.* 2) Zeller adopted the view here taken. He rightly observes that the hypothetical form εἰ μὲν ὂν εἴη speaks for it, and that the subject to εἴη must be ἕκαστον τῶν πολλῶν, as with Zeno.

63. *Met.* A, 5. 986 b 18 (R. P. 101).

64. Brandis changed the εἴη to ἔστι, but there is no warrant for this.

65. Cf. Zeno, fr. 1, especially the words εἰ δὲ ἔστιν, ἀνάγκη ἕκαστον μέγεθός τι ἔχειν καὶ πάχος..

66. Simpl. *Phys*. pp. 87, 6, and 110, 1.

67. See above, § 159, p. 315, *n.* 3.

68. Bäumker, *op. cit.* p. 58, *n.* 3: "That Melissos was a weakling is a *fable convenue* that people repeat after Aristotle, who was unable to appreciate the Eleatics in general, and in particular misunderstood Melissos not inconsiderably."

69. Περὶ φύσιος ἀνθρώπου, C. 1. ἀλλ' ἔμοιγε δοκέουσιν οἱ τοιοῦτοι ἄνθρωποι αὐτοὶ ἑωυτοὺς καταβάλλειν ἐν τοῖσιν ὀνόμασι τῶν λόγων αὐτῶν ὑπὸ ἀσυνεσίης, τὸν δὲ Μελίσσου λόγον ὀρθοῦν. The metaphors are taken from wrestling, and were current at this date (cf. the καταβάλλοντες of Protagoras). Plato implies a more generous appreciation of Melissos than Aristotle's. In *Theaet.* 180 e 2, he refers to the Eleatics as Μέλισσοί τε καὶ Παρμενίδαι, and in 183 e 4 he almost apologises for giving the pre-eminence to Parmenides.