

PSEUDO-ARISTOTLE  
DE MUNDO



## INTRODUCTION

### ANALYSIS

THE treatise opens with a short introductory chapter, commending to Alexander the study of "the cosmos and the greatest things in the cosmos," and continues with a description of the various parts of the cosmos, working from the region of the aether on the outside of the sphere to the earth at the centre. Chapter 2 describes the shape, the arrangement and the material of the heavens, and indicates very briefly the nature of the "fiery element" and the air that lie inside the outer sphere of aether. Chapter 3 describes the geography of the sea and the earth; the author naturally concentrates on the "inhabited world," though he maintains that there are other inhabited worlds also, beyond the seas. Chapter 4 is a very summary account of the "most notable phenomena in and about the inhabited world"; a section on meteorology, including an elaborate catalogue of winds, is followed by a description of the things that happen on or in the earth or sea—volcanic eruptions, earthquakes, tidal waves, etc.

The last sentence of Chapter 4 introduces the main theme of the work: there are many changes in the sublunary world, but the system as a whole remains constant, and is subject neither to generation nor to

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destruction. In Chapter 5 the language is heightened in what is virtually a hymn to the eternal cosmos. Chapters 6 and 7 tell of the cause that ensures its eternity—the god who rules everything with his all-pervading power. This god is described in Chapter 6 by means of a series of similes, which show how a remote and transeendent god can maintain the order and arrangement of the cosmos without personal intervention ; Chapter 7 lists a number of names by which God is known and shows how they arise from various aspects of his function.

### PHILOSOPHY AND RELIGION

Before examining the problem of the authorship and date of the *De Mundo*, we must consider its purpose and its philosophical position. It is an open letter, written with the most careful attention to style and language, summarizing persuasively the results of a study of the cosmos. The open letter was a common form of literary expression, particularly for protreptic discourses ; the outstanding examples are Isocrates' *Ad Nicoclem* and Aristotle's lost *Protrepticus*, addressed to Themison, the prince of Cyprus. The *De Mundo* shows many similarities to these protreptic addresses in style ; but the author's purpose, emphasized several times, is to provide a summary of his subject, and in this he approaches the pattern of Epicurus's letters or the popular " Introductions " (*εἰσαγωγαί*) of the Hellenistic period.

The author's attitude of mind is given in a word in the first chapter : " let us theologize (*θεολογῶμεν*) about all these things." A.-J. Festugière has shown <sup>a</sup>

<sup>a</sup> *Le Dieu cosmique*, pp. 341 ff.

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how typical this is of that “*koine spirituelle*” which grew in the late Hellenistic age and flowered in the Roman Empire ; nature is explored, not as the object of scientific enquiry, but as the expression of the cosmic deity, and the results are presented straightforwardly as dogma.

The theology and cosmology of the *De Mundo* is, in general, Peripatetic, but the author borrows his details from many schools. Parallel passages and possible sources have been analysed in great detail by W. Capelle, W. L. Lorimer and Joseph P. Maguire,<sup>a</sup> and there is no need to repeat their analysis. Capelle traced many of the details to Posidonius, and this view was for many years generally accepted. Maguire, however, found no reason to believe that anything came from Posidonius except some of the meteorology, and showed that the closest parallels are in the Neo-Pythagorean writers ; he established at least that we cannot attribute a doctrine to Posidonius simply because it occurs in the *De Mundo*, but it would be surprising if a work written after the time of Posidonius were not considerably influenced by him. The paramount difficulty is that the author was an eclectic, living in an age when eclecticism was the fashion and there was a great deal of common ground between different schools ; it is therefore sometimes impossible to say which authors, or even which schools, were chosen as sources.

The scientific chapters of the *De Mundo* are typical of many “introductions” and summaries, and very likely are themselves derived from similar elementary handbooks rather than from the detailed expositions of original authors. The doctrine of the cosmic deity,

<sup>a</sup> See Bibliographical Note, below.

which is the climax of the book, developed gradually in the history of Greek religion. Its chief exponents were the Stoics, and no doubt the *De Mundo* is influenced by Stoic religious thought. But the author rejects an important part of the Stoic doctrine: his god is not immanent in the world, interpenetrating all things, but remote, unmoved and impassive. He maintains the order of the cosmos by means of an undefined "power," which relieves him of the dishonourable necessity of personal intervention.

Clearly we have here a development, however remote, of Aristotle's Unmoved Mover. At first sight the god of the *De Mundo* seems far removed from the god of *Physics* viii and *Metaphysics* Λ, who is inferred as the necessary result of a theory of motion, whose only activity is thought which has itself as its object, and who moves "as the object of love." Aristotle himself, however, seems to have spoken with a rather different voice in his published works. In the *De Philosophia* he said that the orderly movement of the heavenly bodies was one of the reasons for man's belief in gods. Cicero reports an elaborate passage from Aristotle to this effect<sup>a</sup>: suppose there were men who had lived all their lives in caves under the earth and were then released; "when they saw, suddenly, the earth and seas and sky, when they learnt the vastness of the clouds and the force of the winds, when they beheld the sun and learnt its great size and beauty and the efficacy of its work, that it spreads its light over all the sky and makes day, and when night darkened the lands and then they saw the whole sky adorned with a pattern of stars, and the changes in the moon's light

<sup>a</sup> Cic. *De Nat. Deor.* ii. 37 = Arist. fr. 12 Rose.

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as it waxes and wanes, and the rising and setting of them all, and their courses planned and immutable for all eternity—when they saw this, they would think at once that there are gods and that these mighty works are the works of gods.” This is close to the spirit of the *De Mundo*.

In one other important respect the author sides with the Peripatetics and Neo-Pythagoreans against the Stoics. Most of the Stoics believed that the element of fire was more powerful than the other elements, and that it periodically enveloped the cosmos in a universal conflagration (ἐκπύρωσις). Pseudo-Aristotle is emphatic in his rejection of this doctrine: the elements are equally balanced and there is no universal conflagration, nor any other kind of cosmic destruction. The eternity of the cosmos was maintained by Aristotle in the lost *De Philosophia*,<sup>a</sup> and in the *De Caelo*.<sup>b</sup> In Hellenistic times it was believed by the Stoic Panaetius, but his successor Posidonius apparently reverted again to ἐκπύρωσις. There are two Hellenistic treatises extant which argue that the cosmos is eternal—*De Universi Natura*, falsely attributed to the Pythagorean Ocellus of Lucania, and Philo (or Pseudo-Philo), *De Aeternitate Mundi*.

### AUTHOR AND DATE

It is almost universally agreed that this treatise is not a genuine work of Aristotle. The style and various details of doctrine all make it unthinkable that it was written either by Aristotle himself or during his lifetime; but no such certainty is possible about the identity of the author or the date of composition.

<sup>a</sup> Cf. fr. 22 Rose.

<sup>b</sup> Bk. I. 10-12.

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The first problem to be decided is whether the treatise was attributed to Aristotle by the author or by someone else. The probability is that it was a deliberate forgery. Attempts have been made to show that the Alexander to whom the work is addressed is someone other than Alexander the Great: but it is difficult to find another Alexander who might be called "the best of princes."<sup>a</sup> Probably the author followed the example of an earlier forger, the author of the *Rhetoric to Alexander*, in the hope that his work might be taken as a respectful tribute from the master to his most famous pupil.

The late Hellenistic author Demetrius<sup>b</sup> says that Aristotle's letters to Alexander were more like treatises (*συγγράμματα*) than real letters. A man called Artemon, who is mentioned by Demetrius, arranged the letters then supposed to be by Aristotle into eight books. We can conclude from this that at the time of Demetrius, who was roughly contemporary with Pseudo-Aristotle, there was in circulation a collection of Aristotle's letters, which included letters to Alexander which were in the form of "treatises." It would seem therefore that the author of the *De Mundo* had ample precedent for the form of his work, whether the *De Mundo* was known to Demetrius or not.

The habit of attributing one's writings to an older and greater author in the same tradition was par-

<sup>a</sup> Max Pohlenz (*Die Stoa*, 1948, pp. 361-362) returns to a suggestion of Bernays that the addressee is Tiberius Alexander, nephew of Philo and governor of Egypt soon after A.D. 63.

<sup>b</sup> *On Style* iv. 234. Demetrius wrote some time after 100 B.C. (see J. F. Lockwood, in *C.R.* lii (1938), p. 59) and probably before A.D. 100.

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ticularly common among the Pythagoreans of the Hellenistic age ; the author of the *De Mundo* owes much to these Neo-Pythagoreans, and he certainly reproduces enough genuinely Aristotelian thought to make it reasonable that he should wish to usurp Aristotle's name.

This is an important point. Those who have proved that the work is a forgery have sometimes overlooked that it is a forgery of *Aristotle*, and that in this fact we might find a little help in dating the treatise. For if the author is imitating Aristotle at all, it is surely the Aristotle of the *Protrepticus* and *De Philosophia*, the Aristotle whose "flumen orationis aureum" was praised by Cicero,<sup>a</sup> rather than the Aristotle of the school-treatises which survive to-day. The school-treatises were either lost or disregarded after the death of Theophrastus, and did not begin to occupy the attention of the learned world again until the appearance of Andronicus's edition in the late first century B.C.<sup>b</sup>

These considerations will be variously interpreted. Those who believe that knowledge of Aristotle's work was *absolutely* confined to the published writings until Andronicus's edition, will say that the author of the *De Mundo* shows knowledge of doctrines (e.g. of the Unmoved Mover, if this was not contained in the *De Philosophia*, and various meteorological details) which were known only after Andronicus. But it is likely that much of Aristotle's doctrine was known throughout the period, at least in his own school,

<sup>a</sup> *Acad. Pr.* ii. 38. 119.

<sup>b</sup> The date usually given for this is c. 40 B.C. I. Düring (*Notes on the History of the Transmission of Aristotle's Writings*, Göteborg, 1950) thinks this is the earliest possible date, and would prefer 40-20 B.C.

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even though it did not appear in the published works. I am inclined to believe that the author of the *De Mundo* could have known all the Aristotelian matter that he reproduces *before* the publication of Andronicus's edition, and that the style and manner of the work indicate a date before this edition made Aristotle's school-treatises more widely known.

Other evidence for the date is confused and difficult. It is certain that Apuleius *De Mundo* is a translation of the Greek, but it is not quite certain that this is genuinely by Apuleius. If it is, we have a *terminus ante quem* of c. A.D. 140. The work seems to have been known to Maximus of Tyre and must therefore be before A.D. 180–190. From other reports, references and imitations in later authors nothing firmer than this can be deduced.

To reach a *terminus post quem* by an analysis of the sources is equally difficult, since it is usually hard to say who was the first to express a particular doctrine. Nevertheless some of the meteorology appears to depend on Posidonius and his pupil Aselepiodotus, and we might therefore give c. 50 B.C. as the *terminus*. There is no agreement about the date of the Neo-Pythagorean sources. Attempts have been made to argue from the silence of Cicero, Seneca and Pliny, but arguments from silence do not carry much weight.

The date has been given by various scholars as follows : Zeller, 1st cent. A.D. ; Diels, in the reign of Augustus ; Wilamowitz, in the Julio-Claudian dynasty ; Capelle, the first half of the 2nd cent. A.D. ; Lorimer, probably A.D. 40–140 ; Maguire and Festugière, the first few decades of the 1st cent. A.D. In my view there is some slight reason for saying that

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it was written before or not long after Andronicus's edition, and virtually no reason for choosing any other time within the limits already mentioned.<sup>a</sup>

### BIBLIOGRAPHICAL NOTE

The *editio princeps* (1497) was based on a single ms., and this remained the common text until Bekker added the results of collation of four more mss. in the Berlin *Aristotle* (1831). Parts of the treatise were edited by Wilamowitz and Wendland and printed in Wilamowitz's *Griechisches Lesebuch*, Text II (1906), pp. 188-199.

W. L. Lorimer took into account the readings of over seventy mss., the quotations in Stobaeus and others, the Latin version of Apuleius, the Armenian and Syriac versions, and two mediaeval Latin versions. He published his results in three books: *The Text Tradition of Ps.-Aristotle "De Mundo"* (St. Andrews University Publications, xviii, 1924); *Some Notes on the Text of Ps.-Aristotle "De Mundo"* (St. Andrews University Publications, xxi, 1925); and *Aristotelis De Mundo* (Paris, 1933). The last of these contains the Greek text with a very detailed *apparatus criticus* and a German translation by E. König of the Syriac version (chaps. v-vii only).

On the sources, the most important works are: W. Capelle, "Die Schrift von der Welt," *Neue Jahrb. f. d. klass. Alt.* xv (1905), pp. 529-568; and Joseph P. Maguire, "The Sources of Ps.-Aristotle 'De Mundo,'" *Yale Classical Studies*, vi (1939).

The important article by Hans Strohm, "Studien

<sup>a</sup> Prof. E. H. Warmington has pointed out to me that the geography of ch. 3 confirms an early date.

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zur Schrift von der Welt," *Mus. Helv.* ix (1952), pp. 137-175, did not reach me until this book was in proof. Strohm agrees with me in minimizing the influence of Posidonius and in marking the connexions with early Aristotle.

The late Prof. E. S. Forster translated the *De Mundo* for the Oxford translation of Aristotle (1914). A.-J. Festugière translates most of it into French, and adds important comments, in *La Révélation d'Hermès Trismégiste*, vol. ii, *Le Dieu cosmique* (Paris, 1949).

I am indebted to all these, and particularly (as all students of the *De Mundo* must be) to W. L. Lorimer.

### TEXT

The text is based on Bekker's edition in the Berlin *Aristotle*; I have indicated deviations from Bekker, except those that seem trivial.

The four mss. used by Bekker are designated as follows :

- O = Vat. 316.
- P = Vat. 1339.
- Q = Marc. 200.
- R = Paris. 1102.

Where necessary I have added references to mss. collated by Lorimer, as follows :

- B = Hieros. Patr. 108.
- C = Laur. 87, 14.
- D = Paris. 1302.
- E = Vat. Urb. 125.
- F = Laur. 87, 16.
- G = Vat. 1025.
- W = Paris. 1038.
- Z = Paris. 2381.

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Stob.=Stobaeus. Ap. indicates reading confirmed by the Latin of Apuleius, *De Mundo*.

Nearly all the deviations from Bekker follow Lorimer; to avoid complicating the notes unduly, where I have followed Lorimer against Bekker and the mss. are fairly equally divided, I have used the abbreviations "Bekk." and "Lor." without listing the mss. "Lor. (*Notes*)" refers to the second and "Lor. (*De Mundo*)" to the third of Lorimer's works cited in the Bibliographical Note above.

I wish to record my indebtedness to Professor T. B. L. Webster for reading my work in typescript; I am very grateful for his criticisms and suggestions.

D. J. F.

# ΑΡΙΣΤΟΤΕΛΟΥΣ ΠΕΡΙ ΚΟΣΜΟΥ

391 a 1 1. Πολλάκις μὲν ἔμοιγε θεῖόν τι καὶ δαιμόνιον ὄντως χρῆμα, ὦ Ἀλέξανδρε, ἢ φιλοσοφία ἔδοξεν εἶναι, μάλιστα δὲ ἐν οἷς μόνῃ διαραμένη πρὸς τῆν τῶν ὄλων θεῶν ἐσπούδασε γνῶναι τὴν ἐν αὐτοῖς  
5 ἀλήθειαν, καὶ τῶν ἄλλων ταύτης ἀποστάντων διὰ τὸ ὕψος καὶ τὸ μέγεθος, αὕτη τὸ πρᾶγμα οὐκ ἔδεισεν οὐδ' αὐτὴν τῶν καλλίστων ἀπηξίωσεν, ἀλλὰ καὶ συγγενεστάτην ἑαυτῇ καὶ μάλιστα πρέπουσαν ἐνόμισεν εἶναι τὴν ἐκείνων μάθησιν. ἐπειδὴ γὰρ οὐχ οἷόν τε ἦν τῷ σώματι εἰς τὸν οὐράνιον ἀφικέσθαι τόπον καὶ τὴν γῆν ἐκλιπόντα τὸν οὐρά-  
10 νιον ἐκείνον χῶρον κατοπεύσαι, καθάπερ οἱ ἀνόητοί ποτε ἐπενόουν Ἀλωάδαι, ἢ γοῦν ψυχὴ διὰ φιλοσοφίας, λαβοῦσα ἡγεμόνα τὸν νοῦν, ἐπεραιώθη καὶ ἐξεδήμησεν, ἀκοπιάτον τινα ὁδὸν εὐρούσα, καὶ τὰ πλεῖστον ἀλλήλων ἀφεστῶτα τοῖς τόποις τῆ  
15 διανοία συνεφρόνησε, ῥαδίως, οἶμαι, τὰ συγγενῆ γνωρίσασα, καὶ θεῖω ψυχῆς ὄμματι τὰ θεῖα κατα-

<sup>a</sup> See Introduction, p. 338.

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1. I HAVE often thought, Alexander,<sup>a</sup> that philosophy is a divine and really god-like activity, particularly in those instances when it alone has exalted itself to the contemplation of the universe and sought to discover the truth that is in it ; the other sciences shunned this field of inquiry because of its sublimity and extensiveness ; philosophy has not feared the task or thought itself unworthy of the noblest things, but has judged that the study of these is by nature most closely related to it and most fitting. It was not possible by means of the body to reach the heavenly region or to leave the earth and explore that heavenly place, in the manner once attempted by the foolish Aloadae <sup>b</sup> : so the soul, by means of philosophy, taking the mind as its guide, has crossed the frontier, and made the journey out of its own land by a path that does not tire the traveller. It has embraced in thought the things that are most widely separated from each other in place ; for it had no difficulty, I think, in recognizing things that were related to it, and with “ the soul’s divine eye ” <sup>c</sup> it

<sup>b</sup> Otus and Ephialtes, the mythical Giants, who tried to reach heaven by piling Pelion on Ossa.

<sup>c</sup> Probably a quotation : *cf.* the eye of the soul in Plato, *Rep.* 533 D.

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λαβούσα, τοῖς τε ἀνθρώποις προφητεύουσα. τοῦτο δὲ ἔπαθε, καθ' ὅσον οἶόν τε ἦν, πᾶσιν ἀφθόνως μεταδοῦναι βουλευθεῖσα τῶν παρ' αὐτῇ τιμίων. διὸ καὶ τοὺς μετὰ σπουδῆς διαγράψαντας ἡμῖν ἐνὸς τόπου φύσιν ἢ μιᾶς σχῆμα πόλεως ἢ ποταμοῦ μέγεθος ἢ ὄρους κάλλος, οἷά τινες ἤδη πεποιήκασι, φράζοντες οἱ μὲν τὴν Ὀσσαν, οἱ δὲ τὴν Νύσσαν,<sup>1</sup> οἱ δὲ τὸ Κωρύκιον ἄντρον, οἱ δὲ ὅτιοῦν ἔτυχε τῶν ἐπὶ μέρους, οἰκτίσειεν ἂν τις τῆς μικροψυχίας, τὰ τυχόντα ἐκπεπληγμένους καὶ μέγα φρονούντας ἐπὶ θεωρία μικρᾷ. τοῦτο δὲ πάσχουσι διὰ τὸ ἀθέατοι τῶν κρειπτόνων εἶναι, κόσμου λέγω καὶ τῶν ἐν κόσμῳ μεγίστων· οὐδέποτε γὰρ ἂν τούτοις γνησίως ἐπιστήσαντες ἐθαύμαζόν τι τῶν ἄλλων, ἀλλὰ πάντα αὐτοῖς τὰ ἄλλα μικρὰ κατεφαίνετο ἂν καὶ οὐδενὸς ἄξια πρὸς τὴν τούτων ὑπεροχὴν.

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Λέγωμεν δὴ ἡμεῖς καί, καθ' ὅσον ἐφικτόν, θεολογῶμεν περὶ τούτων συμπάντων, ὡς ἕκαστον ἔχει φύσεως καὶ θέσεως καὶ κινήσεως. πρέπειν δέ γε οἶμαι καὶ σοί, ὄντι ἡγεμόνων ἀρίστῳ, τὴν τῶν μεγίστων ἱστορίαν μετιέναι, φιλοσοφία τε μηδὲν μικρὸν ἐπινοεῖν, ἀλλὰ τοῖς τοιούτοις δώροις δεξιούσθαι τοὺς ἀρίστους.

2. Κόσμος μὲν οὖν ἐστὶ σύστημα ἐξ οὐρανοῦ καὶ γῆς καὶ τῶν ἐν τούτοις περιεχομένων φύσεων. λέγεται δὲ καὶ ἐτέρως κόσμος ἢ τῶν ὄλων τάξις τε καὶ διακόσμησις, ὑπὸ θεοῦ<sup>2</sup> τε καὶ διὰ θεὸν<sup>3</sup> φυλατ-

<sup>1</sup> Νύσσαν Lor. : Νύσαν Bekk.

<sup>2</sup> θεοῦ codd. Stob. Lor. : θεῶν codd. al. Bekk.

<sup>3</sup> θεὸν codd. Lor. : θεῶν codd. al. Stob. Bekk.

<sup>a</sup> Cf. Pausanias x. 32. 2.

<sup>b</sup> Cf. Introduction, p. 334.

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grasped things divine, and interpreted them for mankind. This came about because it wished to impart to all unsparingly, as far as possible, a share of its own privileges. So those who have earnestly described to us the nature of a single place, or the plan of a single city, or the size of a river, or the beauty of a mountain, as some have done before now—some of them tell us of Ossa, some of Nyssa, others of the Corycian cave,<sup>a</sup> or whatever other detail it happens to be—all these might well be pitied for their meanness of spirit, since they are overawed by commonplaces and pride themselves on insignificant observations. The reason is that they are blind to the nobler things—I mean the cosmos and the greatest features of the cosmos. For if they once genuinely gave their attention to these things, they would never wonder at any other; everything else would appear small and worthless to them, in comparison with the matchless superiority of these.

Let us, then, take up the subject, and so far as they are attainable let us theologize<sup>b</sup> about all the greatest features of the cosmos, discussing the nature, position and motion of each. It is right, I think, that even you, the best of princes, should undertake the study of the greatest things, and that philosophy should have no humble intentions, but should greet the most excellent men with worthy gifts.

2. *Cosmos*, then, means a system composed of heaven and earth and the elements contained in them.<sup>c</sup> In another sense, *cosmos* is used to signify the orderly arrangement of the universe, which is preserved by God and through God. The centre of

<sup>a</sup> So also Chrysippus *ap.* Arius Didymus fr. 31 (Diels, *Dox. Graec.* pp. 465-466), and Posidonius *ap.* Diog. Laert. vii. 138.

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τομένη. ταύτης δὲ τὸ μὲν μέσον, ἀκίνητόν τε καὶ  
 ἑδραῖον ὄν, ἢ φερέσβιος εἵληχε γῆ, παντοδαπῶν  
 ζώων ἑστία τε οὔσα καὶ μήτηρ. τὸ δὲ ὑπερθεν  
 15 αὐτῆς, πᾶν τε καὶ πάντη πεπερατωμένον εἰς<sup>1</sup> τὸ  
 ἄνωτάτω, θεῶν οἰκητήριον, οὐρανὸς ὠνόμασται.  
 πλήρης δὲ ὢν σωμάτων θείων, ἃ δὴ καλεῖν ἄστρα  
 εἰώθαμεν, κινούμενος κίνησιν αἰδίου, μιᾷ περιαγωγῇ  
 καὶ κύκλῳ συναναχορεύει πᾶσι τούτοις ἀπαύστως  
 δι' αἰῶνος. τοῦ δὲ σύμπαντος οὐρανοῦ τε καὶ  
 20 κόσμου σφαιροειδοῦς ὄντος καὶ κινουμένου, καθ-  
 ἄπερ εἶπον, ἐνδελεχῶς, δύο ἀκίνητα ἐξ ἀνάγκης  
 ἔστι σημεῖα, καταντικρὺ ἀλλήλων, καθάπερ τῆς ἐν  
 τὸρνῳ κυκλοφορουμένης σφαίρας, στερεὰ μένοντα  
 καὶ συνέχοντα τὴν σφαῖραν, περὶ ἃ ὁ πᾶς ὄγκος  
 25 κύκλῳ στρέφεται<sup>2</sup>. καλοῦνται δὲ οὗτοι πόλοι· δι'  
 ὧν εἰ νοήσαιμεν ἐπεζευγμένην εὐθείαν, ἣν τινες  
 392 a ἄξονα καλοῦσι, διάμετρος ἔσται τοῦ κόσμου, μέσον<sup>3</sup>  
 μὲν ἔχουσα τὴν γῆν, τοὺς δὲ δύο πόλους πέρατα.  
 τῶν δὲ ἀκινήτων πόλων τούτων ὁ μὲν αἰεὶ φανερός  
 ἔστιν ὑπὲρ κορυφῆν ὧν κατὰ τὸ βόρειον κλίμα,  
 ἄρκτικὸς καλούμενος, ὁ δὲ ὑπὸ γῆν αἰεὶ κατακέ-  
 5 κρυπται, κατὰ τὸ νότιον, ἀνταρκτικὸς καλούμενος.

Οὐρανοῦ δὲ καὶ ἄστρον οὐσίαν μὲν αἰθέρα καλοῦ-

<sup>1</sup> εἰς codd. Lor. : ἤ P Bekk.

<sup>2</sup> πᾶς ὄγκος κύκλῳ στρέφεται Stob. Lor. : πᾶς κόσμος κινεῖται.  
 ὁ μὲν οὖν κόσμος ἐν κύκλῳ περιστρέφεται codd. Bekk.

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the cosmos, which is unmoved and fixed, is occupied by "life-bearing earth,"<sup>a</sup> the home and mother of living beings of all kinds. The region above it, a single whole with a finite upper limit everywhere, the dwelling of the gods, is called *heaven*. It is full of divine bodies which we call *stars*; it moves eternally, and revolves in solemn choral dance<sup>b</sup> with all the stars in the same circular orbit unceasingly for all time. The whole of the heaven, the whole cosmos,<sup>c</sup> is spherical, and moves continuously, as I have said; but there are necessarily two points which are unmoved, opposite one another, just as in the case of a ball being turned in a lathe; they remain fixed, holding the sphere in position, and the whole mass revolves in a circle round them; these points are called *poles*. If we think of a straight line joining these two together (some call this the *axis*), it will be a diameter of the cosmos, having the earth at its centre and the two poles at its extremities. One of these two stationary poles is always visible, above our heads in the North: it is called the *Arctic*<sup>d</sup> pole. The other is always hidden under the earth, in the South: it is called the *Antarctic* pole.

The substance of the heaven and the stars we call

<sup>a</sup> Cf. Hesiod, *Theog.* 693.

<sup>b</sup> Ps.-Aristotle seems to recall Euripides, *Ion* 1079 ὅτε καὶ Διὸς ἀστερωπὸς ἀνεχόρευσε αἰθήρ, χορεύει δὲ σελάνα. Cf. also Soph. *Ant.* 1146 f. He develops the same image below, 399 a 14.

<sup>c</sup> Ps.-Aristotle here uses *κόσμος* in a third sense, as a synonym for *οὐρανός*. This sense is quite common from Plato onwards.

<sup>d</sup> The terms Arctic and Antarctic do not appear in extant literature before Hipparchus (2nd cent. B.C.).

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<sup>3</sup> μέσον TWZ L.or. : μέσσην codd. cet. Bekk.

μεν, οὐχ, ὡς τινες, διὰ τὸ πυρώδη οὖσαν αἴθεσθαι,  
 πλημμυλοῦντες περὶ τὴν πλείστον πυρὸς ἀπηλλαγ-  
 μένην δύναμιν, ἀλλὰ διὰ τὸ αἰεὶ θεῖν κυκλοφορου-  
 μένην, στοιχείον οὖσαν ἕτερον τῶν τεττάρων,  
 ἀκήρατόν τε καὶ θεῖον. τῶν γε μὴν ἐμπεριεχομένων  
 10 ἄστρον τὰ μὲν ἀπλανῆ τῷ σύμπαντι οὐρανῷ συμ-  
 περιστρέφεται, τὰς αὐτὰς ἔχοντα ἔδρας, ὧν μέσος  
 ὁ ζωοφόρος καλούμενος κύκλος ἐγκάρσιος διὰ τῶν  
 τροπικῶν διέζωσται, κατὰ μέρος διηρημένος εἰς  
 δώδεκα ζωδίων χώρας, τὰ δέ, πλανητὰ ὄντα, οὔτε  
 15 τοῖς προτέροις ὁμοταχῶς κινεῖσθαι πέφυκεν οὔτε  
 ἀλλήλοις, ἀλλ' ἐν ἑτέροις καὶ ἑτέροις κύκλοις, ὥστε  
 αὐτῶν τὸ<sup>1</sup> μὲν προσγειότερον εἶναι, τὸ<sup>1</sup> δὲ ἀνώτερον.  
 τὸ μὲν οὖν τῶν ἀπλανῶν πλήθός ἐστιν ἀνεξεύρετον  
 ἀνθρώποις, καίπερ ἐπὶ μιᾶς κινουμένων ἐπιφανείας  
 τῆς τοῦ σύμπαντος οὐρανοῦ· τὸ δὲ τῶν πλανήτων,  
 20 εἰς ἑπτὰ μέρη κεφαλαιούμενον, ἐν τοσοῦτοις ἐστὶ  
 κύκλοις ἐφεξῆς κειμένους, ὥστε αἰεὶ τὸν ἀνωτέρω  
 μείζω τοῦ ὑποκάτω εἶναι, τοὺς τε ἑπτὰ ἐν ἀλλή-  
 λοις ἐμπεριέχεσθαι, πάντας γε μὴν ὑπὸ τῆς τῶν  
 ἀπλανῶν σφαίρας περιειληφθαι. συνεχῆ δὲ ἔχει αἰεὶ  
 τὴν θέσιν ταύτη ὁ τοῦ Φαίνοντος ἄμα καὶ Κρόνου  
 25 καλούμενος κύκλος, ἐφεξῆς δὲ ὁ τοῦ Φαέθοντος  
 καὶ<sup>2</sup> Διὸς λεγόμενος, εἰθ' ὁ Πυρόεις, Ἡρακλέους  
 τε καὶ Ἄρεος προσαγορευόμενος, ἐξῆς δὲ ὁ Σπίλ-  
 βων, ὃν ἱερὸν Ἑρμοῦ καλοῦσιν ἔνιοι, τινὲς δὲ

<sup>1</sup> τὸ . . . τὸ Lor. : τὸν . . . τὸν Bekk.

<sup>2</sup> καὶ Lor. : ὁ καὶ BD : om. cett.

## ON THE COSMOS, 2

*aether*,<sup>a</sup> not, as some think, because it is fiery in nature and so burns (they fall into error about its function, which is quite different from that of fire), but because it always moves in its circular orbit ; it is an element different from the four elements,<sup>b</sup> pure and divine. Now, of the stars which are encompassed in it, some are *fixed* and move in concert with the whole heaven always keeping the same position in it ; in the middle of these the *circle of the zodiac*, as it is called, set obliquely through the tropics, passes round like a girdle, divided into the twelve regions of the zodiac. The others, the *planets*, move, according to their nature, at speeds different from the fixed stars and from each other, each in a different circle, in such a way that one is nearer the earth, another higher in the heavens. The number of the fixed stars is not to be known by men, although they all move on one visible surface, namely that of the whole heaven : but the class of planets contains seven units, arranged in the same number of circles in a series, so that the higher is always greater than the lower, and all the seven, though contained one within another, are nevertheless encompassed by the sphere of the fixed stars. The circle which is always in the position next to this sphere is that which is called the circle of Phaenon (the Bright one) or Cronus (Saturn) ; then comes the circle of Phaëthon (the Shiner) or Zeus (Jupiter) ; next Pyroëis (the Fiery one), named after Heracles or Ares (Mars) ; next Stilbon (the Glittering one) which some dedicate to Hermes (Mercury), some element : the Stoics identified it with fire. He rejects the derivation of the word from *αἰθεσθαι* (to burn) and relates it to *ἀεὶ θεῖν* (move always), as Plato and Aristotle did (*cf.* Plato, *Crat.* 410 B, Aristotle, *De Caelo* 270 b 22).

<sup>b</sup> Earth, air, fire and water.

392 a

Ἀπόλλωνος· μεθ' ὃν ὁ τοῦ Φωσφόρου, ὃν Ἀφροδίτης, οἱ δὲ Ἡρας προσαγορεύουσιν, εἶτα ὁ ἥλιου, καὶ τελευταῖος ὁ τῆς σελήνης μέχρι γῆς ὀρίζεται.  
 30 ὁ δὲ αἰθήρ τά τε θεῖα ἐμπεριέχει σώματα καὶ τὴν τῆς κινήσεως τάξιν.

Μετὰ δὲ τὴν αἰθέριον καὶ θεῖαν φύσιν, ἧντινα τεταγμένην ἀποφαίνομεν, ἔτι δὲ ἄτρεπτον καὶ ἀντεροίωτον καὶ ἀπαθῆ, συνεχῆς ἐστὶν ἢ δι' ὅλων παθητῆ τε καὶ τρεπτῆ, καί, τὸ σύμπαν εἰπεῖν,  
 35 φθαρτῆ τε καὶ ἐπίκηρος. ταύτης δὲ αὐτῆς πρώτη  
 392 b μὲν ἐστὶν ἡ λεπτομερῆς καὶ φλογώδης οὐσία, ὑπὸ τῆς αἰθερίου φύσεως πυρουμένη διὰ τὸ μέγεθος αὐτῆς καὶ τὴν ὀξύτητα τῆς κινήσεως· ἐν δὲ τῇ πυρώδει καὶ ἀτάκτῳ λεγομένη τά τε σέλα διάττει καὶ φλόγες ἀκοντίζονται καὶ δοκίδες τε καὶ βόθυνοι  
 5 καὶ κομηταὶ λεγόμενοι στηρίζονται καὶ σβέννυνται πολλάκις.

Ἐξῆς δὲ ταύτης ὁ αἰὴρ ὑποκέχεται, ζοφώδης ὢν καὶ παγετώδης τὴν φύσιν· ὑπὸ δὲ κινήσεως<sup>1</sup> λαμπόμενος ἅμα καὶ διακαιόμενος λαμπρός<sup>2</sup> τε γίνεται καὶ ἀλεινός. ἐν δὲ τούτῳ, τῆς παθητῆς ὄντι καὶ αὐτῷ δυνάμεως καὶ παντοδαπῶς ἀλ-  
 10 λουιουμένῳ, νέφη τε συνίσταται καὶ ὄμβροι καταράσσουσι, χιόνες τε καὶ πάχνη καὶ χάλαζαι πνοαί τε ἀνέμων καὶ τυφώνων, ἔτι τε βρονταὶ καὶ

<sup>1</sup> ἐκείνης BCWZ Stob. Ap. Lor. : κινήσεως codd. cet. Bekk.

<sup>2</sup> λαμπρός Lor. : λαμπρότερός Bekk.

<sup>a</sup> This is the "Pythagorean" order of the planets, adopted by Aristotle, Eudoxus, Eratosthenes, and probably the early Stoics. The other order commonly given by ancient writers, the "Chaldean," puts Venus and Mercury below the sun; this order was adopted by Panaetius, and probably also by

to Apollo ; after this is the circle of Phosphorus (the Light-bearer), which some call after Aphroditê (Venus) and others after Hera ; then the circle of the sun <sup>a</sup> ; and the last, the circle of the moon, is bounded by the terrestrial sphere.<sup>b</sup> The aether, then, contains the divine bodies and their ordered orbits.

After the aetherial and divine element, which is arranged in a fixed order, as we have declared, and is also unchangeable, unalterable and impassive, there comes next the element that is through the whole of its extent liable to change and alteration, and is, in short, destructible and perishable. The first part of this is the fine and fiery substance that is set aflame by the aether because of the latter's great size and the swiftness of its motion. In this *fiery and disorderly element*, as it is called, meteors and flames shoot across, and often *planks* and *pits* and *comets*, as they are called, stand motionless and then expire.<sup>c</sup>

Next under this is spread the air, opaque and icy by nature, but when it is brightened and heated by movement, it becomes bright and warm.<sup>d</sup> In the air, which itself also has the power to change, and alters in every kind of way, clouds are formed and rain falls in torrents ; there is snow, frost and hail, and gales and whirlwinds ; thunder and lightning,

Posidonius. Lorimer writes (*Notes*, p. 51) that there were few upholders of the "Pythagorean" order after 200 B.C., though it appears in an unknown astronomer in Rhodes of about 100 B.C. (*I.G.Ins.* i. 913).

<sup>b</sup>  $\gamma\eta$  here must refer to the whole "sublunary" sphere, not to the earth proper.

<sup>c</sup> This is inconsistent with 395 a 29 ff. where these phenomena are put in the air.

<sup>d</sup> The coldness of the air is a Stoic doctrine ; Aristotle said it was warm and capable of being inflamed by motion (*Meteor.* 341 a 18).

ἀστραπαὶ καὶ πτώσεις κεραυνῶν μυρίων τε γνόφων  
 συμπληγάδες.

3. Ἐξῆς δὲ τῆς ἀερίου φύσεως γῆ καὶ θάλασσα  
 15 ἐρήρειται, φυτοῖς βρύουσα καὶ ζώοις πηγαῖς τε καὶ  
 ποταμοῖς, τοῖς μὲν ἀνὰ γῆν ἐλιττομένοις, τοῖς δὲ  
 ἀνερευγομένοις εἰς θάλασσαν. πεποίκιλται δὲ καὶ  
 χλόαις μυρίαὶς ὄρεσί τε ὑψηλοῖς καὶ βαθυξύλοις  
 δρυμοῖς καὶ πόλεσιν, ἃς τὸ σοφὸν ζῶον, ὁ ἄνθρωπος,  
 20 ἰδρύσατο, νήσοις τε ἐναλίοις καὶ ἠπείροις. τὴν μὲν  
 οὖν οἰκουμένην ὁ πολὺς λόγος εἰς τε νήσους καὶ  
 ἠπείρους διεῖλεν, ἀγνοῶν ὅτι καὶ ἡ σύμπασα μία  
 νήσός ἐστιν, ὑπὸ τῆς Ἀτλαντικῆς καλουμένης θα-  
 λάσσης περιρρομένη. πολλὰς δὲ καὶ ἄλλας εἰκὸς  
 τῆσδε ἀντιπύρθμους ἄπωθεν κεῖσθαι, τὰς μὲν μεί-  
 25 ζους αὐτῆς, τὰς δὲ ἐλάττους, ἡμῖν δὲ πάσας πλὴν  
 τῆσδε ἀοράτους· ὅπερ γὰρ αἱ παρ' ἡμῖν νῆσοι  
 πρὸς ταυτὶ τὰ πελάγη πεπόνθασι, τοῦτο ἦδε ἡ  
 οἰκουμένη πρὸς τὴν Ἀτλαντικὴν θάλασσαν πολλαί  
 τε ἕτεραι πρὸς σύμπασαν τὴν θάλασσαν· καὶ γὰρ  
 αὐταὶ μεγάλαι τινὲς εἰσι νῆσοι μεγάλοις περικλυ-  
 30 ζόμεναι πελάγεσιν. ἡ δὲ σύμπασα τοῦ ὑγροῦ  
 φύσις ἐπιπολάζουσα, κατὰ τινὰς τῆς γῆς σπίλους  
 τὰς καλουμένας ἀναπεφαγκυῖα<sup>1</sup> οἰκουμένας, ἐξῆς  
 ἂν εἴη τῆς ἀερίου μάλιστα φύσεως. μετὰ δὲ ταύτην  
 ἐν τοῖς βυθοῖς κατὰ τὸ μεσαίτατον τοῦ κόσμου  
 35 κεν, ἀκίνητος καὶ ἀσάλευτος· καὶ τοῦτ' ἔστι τοῦ

<sup>1</sup> ἀναπεφαγκυῖα conī. Usener Lor.: ἀναπεφυκυῖα codd.: Bekk.

<sup>a</sup> Aristotle apparently thought nothing but sea lay from Gibraltar westwards to India (*Meteor.* 362 b 28). Strabo (i. 4. 6=65 c) notices the possibility of other inhabited worlds in his discussion of Eratosthenes.

## ON THE COSMOS, 2-3

too, and falling thunderbolts, and the clash of innumerable storm-clouds.

3. Next to the element of air comes the fixed mass of earth and sea, full of plants and animals, and streams and rivers, some winding about the surface of the earth, others discharging themselves into the sea. This region is adorned with innumerable green plants, high mountains, deep-shaded woodland, and cities established by the wise creature, man; and with islands in the sea, and continents. The *inhabited world* is divided by the usual account into islands and continents, since it is not recognized that the whole of it is really one island, surrounded by the sea which is called *Atlantic*. Far away from this one, on the opposite side of the intervening seas, there are probably many other inhabited worlds,<sup>a</sup> some greater than this, some smaller, though none is visible to us except this one; for the islands we know stand in the same relation to our seas as the whole inhabited world to the Atlantic Ocean, and many other inhabited worlds to the whole ocean; for these are great islands washed round by great seas. The whole mass of the wet element lies on the surface of the earth, allowing the so-called inhabited worlds to show through where there are projections of the earth; it is this element that would properly<sup>b</sup> be next in order to the air. After this, set in the depths at the centre of the cosmos, densely packed and compressed, is the whole mass of the earth, unmoved and unshaken. And this is the whole of that part of the

<sup>b</sup> Taking *μάλιστα* with the verb; it is probably postponed for rhythmic effect. The meaning is that water is in theory next to air, but earth sometimes protrudes through the water. *σπίλους* (properly "stains" or "marks") in the previous line seems to be used in the sense of *σπιλάδας* ("projections").

392 b

κόσμου τὸ πᾶν ὃ καλοῦμεν κάτω. πέντε δὴ στοι-  
 393 a χεῖα ταῦτα ἐν πέντε χώραις σφαιρικῶς ἐγκείμενα,  
 περιεχομένης αἰὲ τῆς ἐλάττονος τῇ μείζονι—λέγω  
 δὲ γῆς μὲν ἐν ὕδατι, ὕδατος δὲ ἐν ἀέρι, ἀέρος δὲ  
 ἐν πυρί, πυρὸς δὲ ἐν αἰθέρι— τὸν ὅλον κόσμον συν-  
 εστήσατο, καὶ τὸ μὲν ἄνω πᾶν θεῶν ἀπέδειξεν  
 5 οἰκητήριον, τὸ κάτω δὲ ἐφημέρων ζώων. αὐτοῦ  
 γε μὴν τούτου τὸ μὲν ὑγρὸν ἔστιν, ὃ καλεῖν ποτα-  
 μούς καὶ νάματα καὶ θαλάσσας εἰθίσμεθα, τὸ δὲ  
 ξηρὸν, ὃ γῆν τε καὶ ἠπείρους καὶ νήσους ὀνομά-  
 ζομεν.

Τῶν δὲ νήσων αἱ μὲν εἰσι μεγάλαι, καθάπερ ἡ  
 10 σύμπασα ἤδε οἰκουμένη λέλεκται πολλαί τε ἕτεραι  
 μεγάλοις περιρρεόμεναι πελάγεσιν, αἱ δὲ ἐλάττους,  
 φανεραὶ τε ἡμῖν καὶ ἐντὸς οὔσαι. καὶ τούτων αἱ  
 μὲν ἀξιόλογοι, Σικελία καὶ Σαρδῶ καὶ Κύρνος  
 Κρήτη τε καὶ Εὐβοία καὶ Κύπρος καὶ Λέσβος, αἱ  
 15 δὲ ὑποδεέστεραι, ὧν αἱ μὲν Σποράδες, αἱ δὲ Κυ-  
 κλάδες, αἱ δὲ ἄλλως ὀνομάζονται.

Πέλαγος δὲ τὸ μὲν ἔξω τῆς οἰκουμένης Ἀτλαν-  
 τικόν τε καὶ Ὀκεανὸς καλεῖται, περιρρέων ἡμᾶς.  
 ἐν δὲ τῷ πρὸς δύσεις στενοπόρῳ διανεωγῶς<sup>1</sup>  
 στόματι, κατὰ τὰς Ἡρακλείους λεγομένας στήλας  
 20 τὸν εἴσουρον εἰς τὴν ἔσω θάλασσαν ὡς ἂν εἰς λιμένα  
 ποιεῖται, κατὰ μικρὸν δὲ ἐπιπλατυνόμενος ἀνα-  
 χεῖται, μεγάλους περιλαμβάνων κόλπους ἀλλήλοις  
 συναφεῖς, πῆ μὲν κατὰ στενοπόρους ἀνχένας ἀν-  
 εστομωμένος, πῆ δὲ πάλιν πλατυνόμενος. πρῶτον  
 μὲν οὖν λέγεται ἐγκεκολπῶσθαι ἐν δεξιᾷ εἰσπλέοντι  
 25 τὰς Ἡρακλείους στήλας, διχῶς, εἰς τὰς καλου-  
 μένας Σύρτεις, ὧν τὴν μὲν Μεγάλην, τὴν δὲ Μικράν,  
 καλοῦσιν· ἐπὶ θάτερα δὲ οὐκέτι ὁμοίως ἀποκολπού-

cosmos that we call the lower part. So these five elements, occupying five spherical regions, the larger sphere always embracing the smaller—earth in water, water in air, air in fire, fire in aether—make up the whole cosmos ; the upper part as a whole is distinguished as the abode of the gods, and the lower part as that of mortal creatures. Of the latter, some is wet, and this part we call *rivers* and *springs* and *seas* ; the rest is dry, and this part we name *land* and *continents* and *islands*.

There are various kinds of island : some are large, like this whole inhabited world of ours, as I have said, and many others which are surrounded by great oceans ; others are smaller, visible to us and within the Mediterranean. Some of these are quite considerable—Sicily, Sardinia, Corsica, Crete, Euboea, Cyprus and Lesbos ; some are smaller, like the Sporades, the Cyclades, and others with various names.

The ocean that is outside the inhabited world is called the *Atlantic*, or *Ocean*, and surrounds us. To the West of the inhabited world, this ocean makes a passage through a narrow strait called the *Pillars of Heracles*, and so makes an entry into the interior sea, as if into a harbour ; gradually it broadens and spreads out, embracing large bays joined up to each other, here contracting into narrow necks of water, there broadening out again. They say that the first of these bays that the sea forms, to starboard, if you sail in through the Pillars of Heracles, are two, called the Syrtes, of which one is called the Major, the other the Minor ; on the other side it does not form gulfs

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<sup>1</sup> διανεωγὸς Lor. : διανεωγὸς Bekk.

393 a

μενος τρία ποιεῖ πελάγη, τό τε Σαρδόνιον καὶ τὸ  
Γαλατικὸν καλούμενον καὶ Ἄδριαν, ἐξῆς δὲ τούτων  
ἐγκάρσιον τὸ Σικελικόν, μετὰ δὲ τοῦτο τὸ Κρητικόν,

30 συνεχές δὲ αὐτοῦ, τῇ μὲν τὸ Αἰγύπτιον τε καὶ  
Παμφύλιον καὶ Σύριον, τῇ δὲ τὸ Αἰγαῖόν τε καὶ  
Μυρτώων. ἀντιπαρῆκει δὲ τοῖς εἰρημένοις πολυ-  
μερέστατος ὢν ὁ Πόντος, οὗ τὸ μὲν μυχαίτατον

393 b

Μαιῶτις καλεῖται, τὸ δὲ ἔξω πρὸς τὸν Ἑλλήσ-  
ποντον συναεστόμωται τῇ καλουμένῃ Προποντίδι.

Πρὸς γε μὴν ταῖς ἀνασχέσεσι τοῦ ἡλίου πάλιν  
εἰσρέων ὁ Ὠκεανός, τὸν Ἰνδικόν τε καὶ Περσικόν  
διανοίξας κόλπον, ἀναφαίνει συνεχῇ τὴν Ἐρυθρὰν  
5 θάλασσαν διειληφώς. ἐπὶ θάτερον δὲ κέρας κατὰ  
στενόν τε καὶ ἐπιμήκη διήκων αὐχένα, πάλιν  
ἀνευρύνεται, τὴν Ὑρκανίαν τε καὶ Κασπίαν ὀρίζων·  
τὸ δὲ ὑπὲρ ταύτην βαθὺν ἔχει τὸν ὑπὲρ τὴν Μαιῶτιν  
λίμνην τόπον. εἶτα κατ' ὀλίγον ὑπὲρ τοὺς Σκύθας  
τε καὶ Κελτικὴν σφίγγει τὴν οἰκουμένην πρὸς  
10 τε τὸν Γαλατικὸν κόλπον καὶ τὰς προειρημένας  
Ἑρακλείους στήλας, ὧν ἔξω περιρρέει τὴν γῆν ὁ

<sup>a</sup> The Ocean makes three separate incursions into the inhabited world—the Mediterranean, the Indian Ocean and the Caspian (see n. c below). Festugière (*op. cit.* p. 465) thinks these Eastern seas are spoken of as prolongations of the Mediterranean; but πάλιν εἰσρέων here is parallel to τὸν εἰσροῦν . . . ποιεῖται at 393 a 19.

<sup>b</sup> Are these two gulfs or one? If two, they are respectively the Gulf of Cutch (or the Gulf of Cambay) and the Persian Gulf; if one, probably the Persian Gulf is meant. The Greek could be interpreted either way.

<sup>c</sup> By Ἐρυθρά (red) the author probably means what was

## ON THE COSMOS, 3

at first in the same way, but makes three seas, the Sardinian, Galatian and Adriatic ; next to these, and across the line of them, is the Sicilian sea ; after this, the Cretan ; and continuing this on one side are the Egyptian and Pamphylian and Syrian seas, on the other the Aegean and Myrtoan. Lying opposite these that I have described, in another direction, is the Pontus, and this has very many parts : the innermost part is called Maeotis, and the outermost part, towards the Hellespont, is joined by a strait to the sea called Propontis.

In the East, the Ocean again penetrates <the inhabited world><sup>a</sup> ; it opens out the gulf of India and Persia<sup>b</sup> and without a break reveals the Red Sea,<sup>c</sup> embracing these as parts of itself. Towards the other promontory <of Asia>,<sup>d</sup> passing through a long narrow strait and then broadening out again, it makes the Hyrcanian or Caspian sea<sup>e</sup> ; beyond this, it occupies a deep hollow beyond Lake Maeotis. Then little by little, beyond the land of the Scythians and Celts, it confines the inhabited world as it passes towards the Galatian Gulf and the Pillars of Heracles, already described, on the farther side of which the Ocean

generally called the Erythraean Sea, which might include our Red Sea (called the Arabian Gulf at 393 b 28).

<sup>a</sup> Lorimer (*Notes*, p. 80, n. 3) quotes Mela i. 2 (9) to confirm this interpretation. In Mela, the two promontories are the land between the Nile and the Red Sea, and that between the Tanaïs and the Caspian.

<sup>e</sup> Or " bounding the Hyrcanian and Caspian country " (Forster). But *θάλασσαν* is easier to understand here than *γῆν* : admittedly *ὀρίζων* has an odd sense (perhaps " marking out " ), but the author is running short of synonyms for " forming " seas. At all events, he means the Caspian Sea, which was thought of as a gulf of the Northern Ocean from the time of Alexander to Ptolemy.

᾽Ωκεανός. ἐν τούτῳ γε μὴν νῆσοι μέγιστα<sup>1</sup> τυγ-  
 χάνουσιν οὔσαι δύο, Βρεττανικαὶ<sup>2</sup> λεγόμεναι, ᾽Αλβί-  
 ων<sup>3</sup> καὶ ᾽Ιέρνη, τῶν προϊστορημένων μείζους, ὑπὲρ  
 τοὺς Κελτοὺς κείμεναι. τούτων δὲ οὐκ ἐλάττους  
 15 ἢ τε Ταπροβάνη πέραν ᾽Ινδῶν, λοξή πρὸς τὴν  
 οἰκουμένην, καὶ ἡ Φεβὸλ καλουμένη, κατὰ τὸν  
 ᾽Αραβικὸν κειμένη κόλπον. οὐκ ὀλίγαι δὲ μικραὶ  
 περὶ τὰς Βρεττανικὰς καὶ τὴν ᾽Ιβηρίαν κύκλω  
 περιεστεφάνωνται τὴν οἰκουμένην ταύτην, ἣν δὴ  
 νῆσον εἰρήκαμεν ἥς πλάτος μὲν ἐστὶ κατὰ τὸ βαθύ-  
 20 τατον τῆς ἡπείρου βραχὺ ἀποδέον τετρακισμυρίων  
 σταδίων, ὡς φασιν οἱ εὖ γεωγραφήσαντες, μῆκος  
 δὲ περὶ ἑπτακισμυρίουσ μάλιστα. διαιρεῖται δὲ  
 εἰς τε Εὐρώπην καὶ ᾽Ασίαν καὶ Λιβύην.

Εὐρώπη μὲν οὖν ἐστὶν ἥς ὄροι κύκλω στῆλαι  
 τε Ἑρακλέους καὶ μυχοὶ Πόντου θάλαττά τε Ἵρ-  
 25 κανία, καθ' ἣν στενότατος ἰσθμὸς εἰς τὸν Πόντον  
 διήκει· τινὲς δὲ ἀντὶ<sup>4</sup> τοῦ ἰσθμοῦ Τάναϊν ποταμὸν  
 εἰρήκασιν. ᾽Ασία δὲ ἐστὶ τὸ ἀπὸ τοῦ εἰρημένου  
 ἰσθμοῦ τοῦ τε Πόντου καὶ τῆς Ἵρκανίας θαλάσσης  
 μέχρι θατέρου ἰσθμοῦ, ὃς μεταξὺ κείται τοῦ τε  
 ᾽Αραβικοῦ κόλπου καὶ τῆς ἔσω θαλάσσης, περι-

<sup>1</sup> post μέγιστα add. τε Bekk.

<sup>2</sup> Βρεττανικαὶ Lor. : Βρεταννικαὶ Bekk.

<sup>3</sup> ᾽Αλβίων Lor. : ᾽Αλβιον Bekk.

<sup>4</sup> ἀντὶ Stob. Lor. : ἀπὸ codd. Bekk.

<sup>a</sup> Very mysterious. It might well be Socotra, as Bochart suggests (*Arist. Erdkunde*, p. 93); Capelle (*op. cit.* p. 539) suggests Madagascar; Müllenhoff (*Deutsche Altertums-kunde*, pp. 322 f.), quoted with approval by Lorimer (*Notes*, p. 37, n. 1), suggests it is the island in Lake Tana (*Psebo* in Strabo) in Abyssinia, magnified and transplanted.

flows round the earth. There are two very large islands in it, called the British Isles, Albion and Ierne ; they are larger than those already mentioned, and lie beyond the land of the Celts. No smaller than these are Taprobane (Ceylon) beyond the Indians, which lies obliquely to the inhabited world, and the island known as Phebol,<sup>a</sup> by the Arabian Gulf. There is quite a number of other small islands round the British Isles and Spain, set in a ring round this inhabited world, which as we have said is itself an island ; its breadth, at the deepest point of the continent, is a little short of 40,000 stades, in the opinion of good geographers,<sup>b</sup> and its length is approximately 70,000 stades. It is divided into Europe, Asia and Libya.

Europe is the area which is bounded in a circle by the Pillars of Heracles and the inner parts of the Pontus and the Hyrcanian Sea, where a very narrow <sup>c</sup> isthmus passes between it and the Pontus ; but some have said the river Tanaïs, instead of this isthmus.<sup>d</sup> Asia is the region from this isthmus of the Pontus and the Hyrcanian Sea to another isthmus, which lies between the Arabian Gulf and the Mediterranean ;

<sup>b</sup> Posidonius put the length of the *οἰκουμένη* at 70,000 stades, but no one reports his figure for the width ; since he thought the Ocean was quite close to Maeotis in the North, his figure would presumably be under 30,000 stades " in agreement with the view then current " (Thomson, *History of Ancient Geography*, p. 213). Eratosthenes estimated the length at 70,800 stades (with the addition of 7,000 for bulges and possible islands), and the width at 38,000.

<sup>c</sup> Strabo reports (xi. i. 5 = 491 c) that Clitarchus and others made this isthmus absurdly narrow, while Posidonius thought it was 1500 stades.

<sup>d</sup> These variant opinions are noted by Eratosthenes *ap.* Strabo i. 4. 7 (65 c).

393 b

- 30 εχόμενος ὑπό τε ταύτης καὶ τοῦ περίξ Ὀκεανοῦ·  
 τινές δέ<sup>1</sup> ἀπὸ Τανάϊδος μέχρι Νείλου στομάτων  
 τὸν τῆς Ἀσίας τίθενται ὄρον. Λιβύη δὲ τὸ ἀπὸ  
 τοῦ Ἀραβικοῦ ἰσθμοῦ ἕως Ἡρακλέους στηλῶν.  
 394 a οἱ δὲ ἀπὸ τοῦ Νείλου φασὶν ἕως ἐκείνων. τὴν δὲ  
 Αἴγυπτον, ὑπὸ τῶν τοῦ Νείλου στομάτων περιρροο-  
 μένην, οἱ μὲν τῇ Ἀσίᾳ, οἱ δὲ τῇ Λιβύῃ προσ-  
 άπτουσι, καὶ τὰς νήσους οἱ μὲν ἐξαιρέτους ποιοῦσιν,  
 οἱ δὲ προσνέμουσι ταῖς γείτοσιν αἰεὶ μοίραις.
- 5 Γῆς μὲν δὴ καὶ θαλάττης φύσιν καὶ θέσιν, ἦντινα  
 καλεῖν εἰώθαμεν οἰκουμένην, τοιάνδε τινὰ ἱστορή-  
 καμεν.

4. Περὶ δὲ τῶν ἀξιολογωτάτων ἐν αὐτῇ καὶ περὶ  
 αὐτὴν παθῶν νῦν λέγωμεν, αὐτὰ τὰ ἀναγκαῖα κεφα-  
 λαιούμενοι.

Δύο γὰρ δὴ τινες ἀπ' αὐτῆς ἀναθυμιάσεις ἀνα-  
 10 φέρονται συνεχῶς εἰς τὸν ὑπὲρ ἡμᾶς ἀέρα, λεπτο-  
 μερεῖς καὶ ἀόρατοι παντάπασι, εἰ [τι]<sup>2</sup> μὴ κατὰ  
 τὰς ἐώας ἔστιν αἰ [τε] διὰ<sup>3</sup> ποταμῶν τε καὶ ναμά-  
 των ἀναφερόμεναι θεωροῦνται. τούτων δὲ ἡ μὲν  
 ἐστὶ ξηρὰ καὶ καπνώδης, ἀπὸ τῆς γῆς ἀπορρέουσα,  
 ἡ δὲ νοτερὰ καὶ ἀτμώδης, ἀπὸ τῆς ὑγρᾶς ἀναθυ-  
 15 μιωμένη φύσεως. γίνονται δὲ ἀπὸ μὲν ταύτης  
 ὀμίχλαι καὶ δρόσοι καὶ πάγων ἰδέαι νέφη τε καὶ  
 ὄμβροι καὶ χιόνες καὶ χάλαζαι, ἀπὸ δὲ τῆς ξηρᾶς  
 ἀνεμοί τε καὶ πνευμάτων διαφοραὶ βρονταὶ τε καὶ  
 ἀστραπαὶ καὶ πρηστήρες καὶ κεραυνοὶ καὶ τὰ ἄλλα

<sup>1</sup> post δὲ add. τὸ CGZ Bekk.<sup>2</sup> τι secl. Lor.

## ON THE COSMOS, 3-4

it is surrounded by the Mediterranean and the encircling stream of the Ocean ; but some say that Asia stretches from the Tanaïs to the mouths of the Nile. Libya lies between the Arabian isthmus and the Pillars of Heracles (but some say from the Nile to the Pillars). Egypt, which is encompassed by the mouths of the Nile, is attached by some to Asia, and by others to Libya, and some make the islands separate, others attribute them to their nearest region of mainland.

We have now given some account of the nature and situation of the land and sea which we call " the inhabited world."

4. Now let us turn to the most notable phenomena in and about the inhabited world, summarizing only the most essential points.

There are two exhalations <sup>a</sup> from it, which pass continually into the air above us, composed of small particles and entirely invisible, except that in the early mornings some can be observed rising along rivers and streams. One of these is dry and like smoke, since it emanates from the earth ; the other is damp and vaporous, since it is exhaled from the wet element. From the latter come mists, dews, the various kinds of frost, clouds, rain, snow and hail ; from the dry exhalation come the winds and various breezes, thunder and lightning, fiery bolts (*πρηστῆρες*) <sup>b</sup> and thunderbolts and all the other things of the same

<sup>a</sup> For the two exhalations and their products *cf.* Aristot. *Meteor.* i. 4-12. Much of this chapter derives, ultimately, from Aristotle ; the proximate sources are discussed by Maguire (*op. cit.* pp. 128-133). <sup>b</sup> *Cf.* 395 a 10 and note.

<sup>3</sup> *aî* [τρε] διὰ scripsi : *aî* τε διὰ vel *aî* τε ἐκ codd. : ὅτε ἀπὸ Lor. (*De Mundo*) : *aî* [τρε] ἀπὸ Lor. (*Notes*).

394 a

ἄ δὴ τούτοις ἐστὶ σύμφυλα. ἔστι δὲ ὁμίχλη μὲν  
 20 ἀτμώδης ἀναθυμιάσις ἄγονος ὕδατος, ἀέρος μὲν  
 παχυτέρα, νέφους δὲ ἀραιότερα· γίνεται δὲ ἤτοι ἐξ  
 ἀρχῆς νέφους ἢ ἐξ ὑπολείμματος. ἀντίπαλος δὲ  
 αὐτῇ λέγεται τε καὶ ἔστιν αἰθρία, οὐδὲν ἄλλο οὔσα  
 πλὴν ἀήρ ἀνέφελος καὶ ἀνόμιχλος. δρόσος δὲ ἔστιν  
 25 ὑγρὸν ἐξ αἰθρίας κατὰ σύστασιν λεπτήν φερόμενον,  
 κρύσταλλος δὲ ἀθρόον ὕδωρ ἐξ αἰθρίας πεπηγός,  
 πάχνη δὲ δρόσος πεπηγυῖα, δροσοπάχνη δὲ ἡμι-  
 παγῆς δρόσος. νέφος δὲ ἔστι πάχος ἀτμώδες  
 συνεστραμμένον, γόνιμον ὕδατος· ὄμβρος δὲ γίνεται  
 μὲν κατ' ἐκπνευσμὸν νέφους εὖ μάλα πεπαχυσμένου,  
 διαφορὰς δὲ ἴσχει τοσάσδε ὄσας καὶ ἡ τοῦ νέφους  
 30 θλίψις· ἡπία μὲν γὰρ οὔσα μαλακὰς ψακάδας δια-  
 σπείρει, σφοδρὰ δὲ ἀδροτέρας· καὶ τοῦτο καλοῦμεν  
 ὑετόν, ὄμβρου μείζω καὶ συνεχῆ συστρέμματα ἐπὶ  
 γῆς φερόμενον.<sup>1</sup> χιῶν δὲ γίνεται κατὰ νεφῶν πε-  
 πυκνωμένων ἀπόθραυσιν πρὸ τῆς εἰς ὕδωρ μετα-  
 35 βολῆς ἀνακοπέντων· ἐργάζεται δὲ ἡ μὲν κοπή τὸ  
 ἀφρῶδες καὶ ἔκλευκον, ἡ δὲ σύμπηξις τοῦ ἐνότος  
 ὑγροῦ τὴν ψυχρότητα οὐπω χυθέντος οὐδὲ ἡραιω-  
 394 b μένου. σφοδρὰ δὲ αὕτη καὶ ἀθρόα καταφερομένη  
 νιφετὸς ὠνόμασται. χάλαζα δὲ γίνεται νιφετοῦ  
 συστραφέντος καὶ βρῖθος ἐκ πιλήματος εἰς κατα-  
 φορὰν ταχυτέραν λαβόντος· παρὰ δὲ τὰ μεγέθη τῶν  
 ἀπορρηγνυμένων θραυσμάτων οἱ τε ὄγκοι μείζους  
 5 αἱ τε φοραὶ γίνονται βιαιότεραι. ταῦτα μὲν οὖν  
 ἐκ τῆς ὑγρᾶς ἀναθυμιάσεως πέφυκε συμπίπτειν.

Ἐκ δὲ τῆς ξηρᾶς ὑπὸ ψύχους μὲν ὠσθείσης ὥστε  
 ρεῖν ἄνεμος ἐγένετο· οὐδὲν γάρ ἐστιν οὔτος πλὴν

class. Mist is a vaporous exhalation which does not produce water, denser than air but less dense than cloud ; it comes into being either from a cloud in the first stage of formation or from the remnant of a cloud. The condition contrary to this is rightly called a *clear sky*, for it is simply air, with no cloud or mist. Dew is moisture that falls out of a clear sky in a light condensation ; ice is solidified water, frozen in a clear sky : hoar-frost is frozen dew, and dew-frost is half-frozen dew. Cloud is a dense, vaporous formation, productive of water : rain comes from the compression of a well-compacted cloud, and varies in character according to the pressure on the cloud : if the pressure is light it scatters gentle drops of rain, but if it is heavy the drops are fuller : and we call this latter condition a *downpour*, for it is larger than a shower of rain and pours continuous drops of rain upon the earth. Snow occurs when well-condensed clouds break up and split before the formation of water : the split causes the foamy and brilliantly white condition of the snow, and its coldness is caused by the coagulation of the moisture contained in it, which has not had time to be either fused or rarefied. If there is a thick and heavy fall of snow, we call it a *snow-storm*. Hail occurs when a snow-storm is solidified and gathers weight because of its increased density so as to fall more rapidly ; the hailstones increase in size and their movement increases in violence according to the size of the fragments that are broken off the cloud. These then are the natural products of the wet exhalation.

From the dry exhalation, when it is forced to flow by the cold, wind is produced : for this is nothing but

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<sup>1</sup> φερόμενον Λογ. : φερόμενα Βεκκ.

ἀὴρ πολὺς ῥέων καὶ ἀθρόος· ὅστις ἅμα καὶ πνεῦμα  
 10 λέγεται. λέγεται δὲ καὶ ἑτέρως πνεῦμα ἢ τε ἐν  
 φυτοῖς καὶ ζώοις καὶ διὰ πάντων διήκουσα ἔμφυχός  
 τε καὶ γόνιμος οὐσία, περὶ ἧς νῦν λέγειν οὐκ ἀναγ-  
 καῖον. τὰ δὲ ἐν ἀέρι πνέοντα πνεύματα καλοῦμεν  
 ἀνέμους, αὔρας δὲ τὰς ἐξ ὑγροῦ φερομένας ἐκπνοάς.  
 τῶν δὲ ἀνέμων οἱ μὲν ἐκ νενοτισμένης γῆς πνέοντες  
 15 ἀπόγειοι λέγονται, οἱ δὲ ἐκ κόλπων διεξάττοντες  
 ἐγκολπίαι· τούτοις δὲ ἀνάλογόν τι ἔχουσιν οἱ ἐκ  
 ποταμῶν καὶ λιμνῶν. οἱ δὲ κατὰ ῥῆξιν νέφους  
 γινόμενοι καὶ ἀνάλυσιν τοῦ πάχους πρὸς ἑαυτοὺς  
 ποιούμενοι ἐκνεφίαι καλοῦνται· μεθ' ὕδατος δὲ  
 ἀθρόως ῥαγέντες<sup>1</sup> ἐξυδρίαι λέγονται. καὶ οἱ μὲν  
 20 ἀπὸ ἀνατολῆς συνεχεῖς εὖροι κέκληνται, βορέαι δὲ  
 οἱ ἀπὸ ἄρκτου, ζέφυροι δὲ οἱ ἀπὸ δύσεως, νότοι  
 δὲ οἱ ἀπὸ μεσημβρίας. τῶν γε μὴν εὖρων καικίας  
 μὲν λέγεται ὁ ἀπὸ τοῦ περὶ τὰς θερινὰς ἀνατολὰς  
 τόπου πνέων ἄνεμος, ἀπηλιώτης δὲ ὁ ἀπὸ τοῦ περὶ  
 τὰς ἰσημερινάς, εὖρος δὲ ὁ ἀπὸ τοῦ περὶ τὰς χει-  
 25 μερινάς. καὶ τῶν ἐναντίων ζεφύρων ἀργέστης μὲν  
 ὁ ἀπὸ τῆς θερινῆς δύσεως, ὃν τινες καλοῦσιν ὀλυμ-  
 πίαν, οἱ δὲ ἰάπυγα· ζέφυρος δὲ ὁ ἀπὸ τῆς ἰση-  
 μερινῆς, λῖψ δὲ ὁ ἀπὸ τῆς χειμερινῆς. καὶ τῶν  
 βορεῶν ἰδίως ὁ μὲν ἐξῆς τῷ καικία καλεῖται βορέας,  
 ἀπαρκτίας δὲ ὁ ἐφεξῆς ἀπὸ τοῦ πόλου κατὰ τὸ  
 30 μεσημβρινὸν πνέων, θρασκίας δὲ ὁ ἐξῆς πνέων τῷ

<sup>1</sup> ῥαγέντες B Lor. : ῥαγέντος codd. cet. Bekk.

<sup>a</sup> This is a common Greek way of describing points of the compass. They divided each quarter by three; so their  
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air moving in quantity and in a mass. It is also called *breath*. In another sense "breath" means that substance found in plants and animals and pervading everything, that brings life and generation; but about that there is no need to speak now. The breath that breathes in the air we call *wind*, and the breath that comes from moisture we call *breeze*. Of the winds, some blow from the earth when it is wet and are called *land-winds*; some arise from gulfs of the sea and are called *gulf-winds*. There is a similarity between these winds and those which come from rivers and lakes. Those which arise at the breaking up of a cloud and resolve its density against themselves are called *cloud-winds*: those which burst out all at once accompanied by water are called *rain-winds*. Eurus is the name of the winds that blow steadily from the East, Boreas is the name of the North winds, Zephyrus of the West winds, and Notus of the South winds. One of the Euri is called Caecias: this is the one that blows from from the direction of the summer sunrise.<sup>a</sup> Apeliotes is the one that comes from the direction of the equinoctial sunrise, and Eurus proper the one that comes from the direction of the winter sunrise. Of the Zephyri, which blow in the opposite direction, Argestes comes from the direction of the summer sunset; some call this Olympias, and some Iapyx. Zephyrus proper comes from the direction of the equinoctial sunset, Lips from the direction of the winter sunset. Of the winds called Boreas, the one properly so-called is next to Caecias; next to it is Aparctias, which blows from the North pole to the South; Thrascias is the one

minor points cannot be translated simply into modern terms. Equinoctial sunrise and sunset can be taken as E. and W.

394 b

ἀργέστη, ὃν ἔνιοι κερκίαν<sup>1</sup> καλοῦσιν. καὶ τῶν νότων ὁ μὲν ἀπὸ τοῦ ἀφανοῦς πόλου φερόμενος ἀντίπαλος τῷ ἀπαρκτία καλεῖται νότος, εὐρόνοτος δὲ ὁ μεταξὺ νότου καὶ εὐρου· τὸν δὲ ἐπὶ θάτερα μεταξὺ λιβὸς καὶ νότου οἱ μὲν λιβόνοτον, οἱ δὲ

35 λιβοφοίνικα, καλοῦσιν.

Τῶν δὲ ἀνέμων οἱ μὲν εἰσιν εὐθύπνοοι, ὅποσοι διεκπνέουσι πρόσω κατ' εὐθείαν, οἱ δὲ ἀνακαμψί-  
 395 a πνοοι, καθάπερ ὁ καικίας λεγόμενος, καὶ οἱ μὲν χειμῶνος, ὥσπερ οἱ νότοι, δυναστεύοντες, οἱ δὲ θέρους, ὡς οἱ ἐτησῖαι λεγόμενοι, μῖξιν ἔχοντες τῶν τε ἀπὸ τῆς ἄρκτου φερομένων καὶ ζεφύρων· οἱ δὲ ὄρνιθῖαι καλούμενοι, ἔαρινοὶ τινες ὄντες ἄνεμοι,  
 5 βορέαι εἰσὶ τῷ γένει.

Τῶν γε μὴν βιαίων πνευμάτων καταγιγῆς μὲν ἐστὶ πνεῦμα ἄνωθεν τύπτον ἐξαίφνης, θύελλα δὲ πνεῦμα βιαῖον καὶ ἄφνω προσαλλόμενον, λαῖλαψ δὲ καὶ στρόβιλος πνεῦμα εἰλούμενον κάτωθεν ἄνω, ἀναφύσημα δὲ γῆς πνεῦμα ἄνω φερόμενον κατὰ τὴν  
 10 ἐκ βυθοῦ τινος ἢ ρήγματος ἀνάδοσιν· ὅταν δὲ εἰλούμενον πολὺ φέρηται, πρηστήρ χθονίος ἐστίν. εἰληθὲν δὲ πνεῦμα ἐν νέφει παχεῖ τε καὶ νοτερῷ, καὶ ἐξωσθὲν δι' αὐτοῦ, βιαίως ρηγνύον τὰ συνεχῆ πηλήματα τοῦ νέφους, βρόμον καὶ πάταγον μέγαν ἀπειργάσατο, βροντὴν λεγόμενον, ὥσπερ ἐν ὕδατι

<sup>1</sup> κερκίαν Forster : καικίαν codd. Bekk.

<sup>a</sup> Phenomena connected with wind and those connected with thunder and lightning are not clearly distinguished in Greek, and translation is difficult. Here πρηστήρ seems to

next Argestes, though some call this Circias. Of the winds called Notus, the one that comes from the invisible pole, opposite to Aparctias, is properly called Notus, and Euronotus is the one between Notus and Eurus. The one on the other side, between Notus and Lips, is sometimes called Libonotus, sometimes Libophoenix.

The current of some winds is direct—that is, they blow straight ahead; the current of others varies in direction, as in the case of Caecias. Some of them prevail in the winter, like the Noti; some prevail in the summer, like those called Etesian winds, which are a mixture of North winds and Zephyri. Those which are called Ornithian winds, which occur in the spring, belong to the class Boreas.

Of the violent types of wind, a squall is a wind that strikes suddenly from above; a gust is a violent wind that suddenly jumps up at you; a whirlwind, or cyclone, is a wind that whirls upwards in a spiral. A blast of wind from the earth is a gust caused by the expulsion of wind from some pit or chasm; when it moves with a fierce whirling motion, it is an earth-hurricane (*πρηστήρ*).<sup>a</sup> When the wind whirls round in a thick cloud full of water and is pushed out through it and forcibly breaks up the closely packed material of the cloud, it makes a great din and crash, which is called *thunder*—as air does when it is passed violently

mean some kind of whirlwind, but in 394 a 18 and 395 a 24 it is a sort of thunderbolt. Aristotle says (*Meteor.* 371 a 15): “When it (*i.e.* the cloud pulled down by a descending whirlwind) is inflamed as it is pulled downwards . . . it is called a *πρηστήρ*; for it inflames (*συνεκπίμπρησι*) the neighbouring air and colours it with its fire.” The name implies a connexion with fire and perhaps here the *πρηστήρ* comes up from a fiery chasm (*cf.* 395 b 20).

395 a

15 πνεῦμα σφοδρῶς ἐλαυνόμενον. κατὰ δὲ τὴν τοῦ  
 νέφους ἔκρηξιν πυρωθὲν τὸ πνεῦμα καὶ λάμψαν  
 ἀστραπή λέγεται· ὁ δὲ πρότερον τῆς βροντῆς  
 προσέπεσεν, ὕστερον γενόμενον, ἐπεὶ τὸ ἀκουστὸν  
 ὑπὸ τοῦ ὄρατοῦ πέφυκε φθάνεσθαι, τοῦ μὲν καὶ  
 πόρρωθεν ὀρωμένου, τοῦ δὲ ἐπειδὴν ἐμπελάσῃ τῇ  
 20 ἀκοῇ, καὶ μάλιστα ὅταν τὸ μὲν τάχιστον ἢ τῶν  
 ὄντων, λέγω δὲ τὸ πυρῶδες, τὸ δὲ ἦττον ταχύ,  
 ἀερῶδες ὄν, ἐν τῇ πλήξει πρὸς ἀκοὴν ἀφικνούμενον.  
 τὸ δὲ ἀστράψαν ἀναπυρωθὲν, βιαίως ἄχρι τῆς γῆς  
 διεκθέον, κεραυνὸς καλεῖται, ἐὰν δὲ ἡμίπυρον ἦ,  
 σφοδρὸν δὲ ἄλλως καὶ ἀθρόον, πρηστήρ, ἐὰν δὲ  
 25 ἄπυρον παντελῶς, τυφών· ἕκαστον δὲ τούτων κατα-  
 σκῆψαν εἰς τὴν γῆν σκηπτὸς ὀνομάζεται. τῶν δὲ  
 κεραυνῶν οἱ μὲν αἰθαλῶδεις ψολόεντες λέγονται,  
 οἱ δὲ ταχέως διάττοντες ἀργῆτες, ἐλικίαὶ δὲ οἱ  
 γραμμοειδῶς φερόμενοι, σκηπτοὶ δὲ ὅσοι κατα-  
 σκῆπτουσιν εἰς τι.

Συλλήβδην δὲ τῶν ἐν ἀέρι φαντασμάτων τὰ μὲν  
 30 ἐστὶ κατ' ἔμφασιν, τὰ δὲ καθ' ὑπόστασιν—κατ'  
 ἔμφασιν μὲν ἴριδες καὶ ράβδοι καὶ τὰ τοιαῦτα, καθ'  
 ὑπόστασιν δὲ σέλα τε καὶ διάττοντες καὶ κομήται  
 καὶ τὰ τούτοις παραπλήσια. ἴρις μὲν οὖν ἐστὶν  
 ἔμφασις ἡλίου τμήματος ἢ σελήνης, ἐν νέφει νοτε-  
 ρῶ καὶ κοίλῳ καὶ συνεχεῖ πρὸς φαντασίαν, ὡς ἐν  
 35 κατόπτρῳ, θεωρουμένη κατὰ κύκλου περιφέρειαν.  
 ράβδος δὲ ἐστὶν ἴριδος ἔμφασις εὐθεία. ἄλλως δὲ  
 395 b ἐστὶν ἔμφασις λαμπρότητος ἄστρου περιήυγος·

<sup>a</sup> See p. 368, n. a.

<sup>b</sup> τυφών is often a typhoon or hurricane (cf. 400 a 29), but here it is connected with lightning. In mythology Typhon

## ON THE COSMOS, 4

through water. Because of the breaking up of the cloud the wind is set on fire, and flashes : this is called *lightning*. This lightning falls upon our senses before the thunder, though it occurs later, because what is heard is by nature slower than what is seen : for the latter is seen a great way off, the former only when it approaches the ears ; particularly when one is that swiftest thing of all, the element of Fire, while the other is less swift, since it is of the nature of air and impinges upon the hearing by physical contact. When the flashing bolt is aflame and hurtles violently to the ground it is called a *thunderbolt* ; if it is half alight, but in other respects strong and dense, it is called a *fiery bolt* <sup>a</sup> ; if it is altogether fireless it is called a *smoking bolt* <sup>b</sup> ; but each one of these when it falls upon the ground is called a *falling-bolt*. Lightning <sup>c</sup> is called *smoky* when it looks dark, like smoke ; *vivid*, when it moves very rapidly ; and *forked*, when it moves along jagged lines ; but when it falls on to something it is called a *falling-bolt*.

Briefly, the phenomena of the air are divided into those which are mere appearances and those which are realities : the appearances are rainbows and streaks in the sky and so on ; the realities are lights and shooting stars and comets and other such things. A rainbow is the appearance in reflection of a portion of the sun or moon, seen, like an image in a mirror, in a cloud that is wet and hollow and presents an unbroken surface, and shaped like an arc of a circle. A streak is a straight rainbow. A halo is an appearance of brightness shedding its light round a star ;

is the son of Typhos, the giant, who causes the eruption of Etna ; hence the connexion with fire.

<sup>c</sup> κεραννός is used for " lightning " and " thunderbolt."

διαφέρει δὲ ἴριδος ὅτι ἢ μὲν ἴρις ἐξ ἐναντίας φαίνεται ἡλίου καὶ σελήνης, ἢ δὲ ἄλλως κύκλω παντὸς ἄστρου. σέλας δὲ ἐστὶ πυρὸς ἀθροῦ ἕξαισις ἐν ἀέρι. τῶν δὲ σελάων ἃ μὲν ἀκοντίζεται, ἃ δὲ  
 5 στηρίζεται. ὁ μὲν οὖν ἕξακοντισμός ἐστι πυρὸς γένεσις ἐκ παρατρίψεως ἐν ἀέρι φερομένου ταχέως καὶ φαντασίαν μήκους ἐμφαίνοντος διὰ τὸ τάχος, ὁ δὲ στηριγμός ἐστι χωρὶς φορᾶς προμήκης ἕκτασις καὶ οἶον ἄστρου ῥύσις· πλατυνομένη δὲ κατὰ θάτερον κομήτης καλεῖται. πολλάκις δὲ τῶν  
 10 σελάων τὰ μὲν ἐπιμένει πλείονα χρόνον, τὰ δὲ παραχρήμα σβέννυται. πολλὰ δὲ καὶ ἄλλαι φαντασμάτων ἰδέαι θεωροῦνται, λαμπάδες τε καλούμεναι καὶ δοκίδες καὶ πίθοι καὶ βόθνυοι, κατὰ τὴν πρὸς ταῦτα ὁμοιότητα ὧδε προσαγορευθεῖσαι. καὶ τὰ μὲν τούτων ἐσπέρια, τὰ δὲ ἑῶα, τὰ δὲ ἀμφιφαῆ  
 15 θεωρεῖται, σπανίως δὲ βόρεια καὶ νότια. πάντα δὲ ἀβέβαια· οὐδέποτε γάρ τι τούτων αἰεὶ φανερόν ἰστόρηται κατεστηριγμένον. τὰ μὲν τοίνυν ἀέρια τοιαῦτα.

Ἐμπεριέχει δὲ καὶ ἡ γῆ πολλὰς ἐν αὐτῇ, καθάπερ ὕδατος, οὕτως καὶ πνεύματος καὶ πυρὸς πηγᾶς.  
 20 τούτων δὲ αἱ μὲν ὑπὸ γῆν εἰσὶν ἀόρατοι, πολλὰ δὲ ἀναπνοὰς ἔχουσι καὶ ἀναφυσήσεις, ὥσπερ Λιπάρα τε καὶ Αἴτην καὶ τὰ ἐν Αἰόλου νήσοις· αἱ δὲ καὶ ῥέουσι πολλάκις ποταμοῦ δίκην, καὶ μύδρους ἀναρριπτοῦσι διαπύρους. ἔναι δὲ ὑπὸ γῆν οὔσαι πλησίον πηγαίων ὑδάτων θερμαίνουσι ταῦτα, καὶ τὰ  
 25 μὲν χλιαρὰ τῶν ναμάτων ἀνιᾶσι, τὰ δὲ ὑπέρζεστα, τὰ δὲ εὖ ἔχοντα κράσεως.

it differs from a rainbow in that the rainbow appears opposite the sun or moon, but the halo is in a circle round the whole of the star. A light is the kindling of a mass of fire in the air. Some lights shoot like javelins, others are set in one position in the sky. The shooting is a generation of fire by friction in the air; the fire moves rapidly, giving the impression of length because of its rapidity. The latter, the stationary light, is extended and lengthy but keeps the same position, as if it were an elongated star; if it spreads out towards one end it is called a *comet*. Often there is a variation in the duration of the light, some lasting a long time, some being extinguished at once. There are also many phenomena of different kinds to be seen, called *torches* and *planks* and *jars* and *pits*, taking their names from their likeness to these objects. Some of these can be seen in the West and some in the East, and some in both; they rarely appear in the North and South. All of them are unstable; for none of them has ever been described as always visible in the same place. So much, then, for the things of the air.

The earth contains in itself many sources, not only of water, but also of wind and fire. Some of these are subterranean and invisible, but many have vents and blow-holes, like Lipara and Etna and the volcanoes in the Aeolian islands. These often flow like rivers and throw up fiery, red-hot lumps. Some of the subterranean sources, which are near springs of water, impart heat to these: some of the streams they make merely lukewarm, some boiling, and some moderately and pleasantly hot.

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<sup>1</sup> αἰ δῆ codd. Lor. : αἰ δὲ Bekk.

Ὅμοίως δὲ καὶ τῶν πνευμάτων πολλὰ πολλαχοῦ  
 γῆς στόμια ἀνέωκται· ὧν τὰ μὲν ἐνθουσιᾶν ποιεῖ  
 τοὺς ἐμπελάζοντας, τὰ δὲ ἀτροφεῖν, τὰ δὲ χρη-  
 σμωδεῖν, ὡσπερ τὰ ἐν Δελφοῖς καὶ Λεβαδείᾳ, τὰ  
 30 δὲ καὶ παντάπασιν ἀναιρεῖ, καθάπερ τὸ ἐν Φρυ-  
 γίᾳ. πολλάκις δὲ καὶ συγγενὲς πνεῦμα εὐκρατον  
 ἐν γῇ παρεξωσθὲν εἰς μυχίους σήραγγας αὐτῆς,  
 ἔξεδρον γενόμενον ἐκ τῶν οἰκείων τόπων, πολλὰ  
 μέρη συνεκράδανεν. πολλάκις δὲ πολὺ γενόμενον  
 ἔξωθεν ἐγκατειλήθη τοῖς ταύτης κοιλώμασι καὶ  
 35 ἀποκλεισθὲν ἐξόδου μετὰ βίας αὐτὴν συνετίναξε,  
 ζητοῦν ἐξοδὸν ἑαυτῷ, καὶ ἀπειργάσατο πάθος  
 396 a τοῦτο ὃ καλεῖν εἰώθαμεν σεισμόν. τῶν δὲ σεισμῶν  
 οἱ μὲν εἰς πλάγια σείοντες κατ' ὀξείας γωνίας ἐπι-  
 κλίνται καλοῦνται, οἱ δὲ ἄνω ρίπτοῦντες καὶ κάτω  
 κατ' ὀρθὰς γωνίας βράσται, οἱ δὲ συνιζήσεις ποι-  
 οῦντες εἰς τὰ κοῖλα ἰζηματία<sup>1</sup>. οἱ δὲ χάσματα ἀνοί-  
 5 γοντες καὶ τὴν γῆν ἀναρρηγνύντες ῥῆκται καλοῦνται.  
 τούτων δὲ οἱ μὲν καὶ πνεῦμα προσαναβάλλουσιν,  
 οἱ δὲ πέτρας, οἱ δὲ πηλόν, οἱ δὲ πηγὰς φαίνουσι τὰς  
 πρότερον οὐκ οὔσας. τινὲς δὲ ἀνατρέπουσι<sup>2</sup> κατὰ  
 μίαν πρόωσιν, οὓς καλοῦσιν ὤστας. οἱ δὲ ἀνταπο-  
 πάλλοντες<sup>3</sup> καὶ ταῖς εἰς ἑκάτερον ἐγκλίσεισι καὶ  
 10 ἀποπάλλεσι διορθοῦντες αἰεὶ τὸ σειόμενον παλματία  
 λέγονται, τρόμῳ πάθος ὅμοιον ἀπεργαζόμενοι. γί-  
 νονται δὲ καὶ μυκηταὶ σειμοί, σείοντες τὴν γῆν  
 μετὰ βρόμου. πολλάκις δὲ καὶ χωρὶς σεισμοῦ  
 γίνεται μύκημα γῆς, ὅταν τὸ πνεῦμα σείειν μὲν μὴ  
 αὐτάρκες ᾗ, ἐνειλούμενον δὲ ἐν αὐτῇ κόπτηται μετὰ

<sup>1</sup> ἰζηματία V. Lor. (cf. Johann. Lyd. *De Ost.* 54) : χωματία Stob. : χασματία codd. cet. Bekk.

Similarly, too, there are in many places on the earth's surface open vents for the winds, which have various effects on those who approach them, causing ecstatic inspiration, or wasting sickness, or in some cases prophecy, like those at Delphi and Lebadeia, or even complete destruction, like the one in Phrygia. Often, too, a moderate earth-born wind, forced into deep, hollow caves in the earth and becoming dislodged from its home, causes shocks in many places. Often when a large quantity from outside is confined within the hollows of the earth and cut off from exit, it shakes the earth violently, seeking an exit for itself, and produces the effect that we call an *earthquake*. Earthquakes which shake the earth obliquely at a very acute angle we call *horizontal*; those which blast upwards and downwards perpendicularly are called *heaving* earthquakes; those which cause a settlement of the earth into hollows are called *sinking* earthquakes; and those which open up chasms and split the earth are called *splitting* earthquakes. Some of them stir up a wind, or rocks, or mud; and some reveal springs that were not there before. Some, called *thrusting* earthquakes, overturn things with a single heave. Others cause recoil this way and that, and in the process of lurching to one side and rebounding again the things that are shaken are held upright: these are called *oscillating* earthquakes, and their effect is a sort of trembling. There are also *roaring* earthquakes, which shake the earth with a great din. There is often, also, a roaring of the earth without an earthquake, when the wind is not sufficient to shake the earth but lashes about enveloped in the

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<sup>2</sup> ἀνατρέπουσι Lor. : ἀνατρέποντες Bekk.

<sup>3</sup> ἀναποπάλλοντες Lor. : ἀναπάλλοντες Bekk.

396 a

15 ῥοθίου βίας. συσσωματοποιεῖται δὲ τὰ εἰσιόντα πνεύματα καὶ ὑπὸ τῶν ἐν τῇ γῇ ὑγρῶν κεκρυμμένων.

Τὰ δὲ ἀνάλογον συμπίπτει τούτοις καὶ ἐν θαλάσῃ· χάσματά τε γὰρ γίνεται θαλάσσης καὶ ἀναχωρήματα πολλάκις καὶ κυμάτων ἐπιδρομαί, ποτὲ  
20 μὲν ἀντανακοπήν ἔχουσαι, ποτὲ δὲ πρόωσιν μόνον, ὥσπερ ἱστορεῖται περὶ Ἑλίκην τε καὶ Βοῦραν. πολλάκις δὲ καὶ ἀναφυσῆματα γίνεται πυρὸς ἐν τῇ θαλάσῃ καὶ πηγῶν ἀναβλύσεις καὶ ποταμῶν ἐκβολαὶ καὶ δένδρων ἐκφύσεις ῥοαί τε καὶ δῖναι ταῖς τῶν πνευμάτων ἀνάλογον, αἱ μὲν ἐν μέσοις πε-  
25 λάγεσιν, αἱ δὲ κατὰ τοὺς εὐρίπους τε καὶ πορθμούς. πολλάι τε ἀμπώτεις λέγονται καὶ κυμάτων ἄρσεις συμπεριοδεύειν αἰετῇ σελήνῃ κατὰ τινὰς ὠρισμένους καιρούς.

Ὡς δὲ τὸ πᾶν εἰπεῖν, τῶν στοιχείων ἐγκεκραμένων ἀλλήλοις ἐν ἀέρι τε καὶ γῇ καὶ θαλάσῃ  
30 κατὰ τὸ εἶκός αἱ τῶν παθῶν ὁμοιότητες συνίστανται, τοῖς μὲν ἐπὶ μέρους φθορὰς καὶ γενέσεις φέρουσαι, τὸ δὲ σύμπαν ἀνώλεθρόν τε καὶ ἀγένητον φυλάττουσαι.

5. Καίτοι γέ τις ἐθαύμασε πῶς ποτε, εἰ ἐκ τῶν ἐναντίων ἀρχῶν συνέστηκεν ὁ κόσμος, λέγω δὲ  
35 ξηρῶν τε καὶ ὑγρῶν, ψυχρῶν τε καὶ θερμῶν, οὐ  
396 b πάλαι διέφθαρται καὶ ἀπόλωλεν, ὡς κἂν εἰ πόλιν τινὲς θαυμάζοιεν, ὅπως διαμένει συνεστηκυῖα ἐκ τῶν ἐναντιωτάτων<sup>1</sup> ἔθνων, πενήτων λέγω καὶ πλουσίων, νέων γερόντων, ἀσθενῶν ἰσχυρῶν, πονηρῶν χρηστῶν. ἀγνοοῦσι δὲ ὅτι τοῦτ' ἦν πολιτι-

<sup>1</sup> ἐναντιωτάτων codd. pler. L. or. : ἐναντίων codd. cct. Bekk.

earth with tumultuous force. The blasts of wind that enter the earth are recondensed also by the moisture that is hidden in the earth.<sup>a</sup>

There are also analogous happenings in the sea: chasms occur in the sea, and its waves often withdraw; and there are incursions of waves, sometimes with a recoil, sometimes with a forward rush only, as they say was the case at Helice and Bura.<sup>b</sup> Often too there are exhalations of fire in the sea and eruptions of fountains, and rivers are shot forth, and trees grow, and there are currents and vortices like those of the winds, some in the middle of the oceans, some in the narrows and straits. There are many tides and tidal waves too, which are said to occur in concert with the moon at certain definite times.

To sum up, since the elements are mingled one with another, it is natural that phenomena in the air and land and sea should show these similarities, which involve destruction and generation for the individual parts of nature, but preserve the whole free from corruption and generation.

5. Some people, however, have wondered how the cosmos, if it is composed of the "opposite" principles (I mean dry and wet, cold and hot), has not long ago been destroyed and perished; it is as if men should wonder how a city survives, composed as it is of the most opposite classes (I mean poor and rich, young and old, weak and strong, bad and good). They do not recognize that the most wonderful thing of all about

<sup>a</sup> *i.e.*, wind entering the earth may (a) cause an earthquake, (b) cause a roar only, or (c) be recondensed and so cause neither.

<sup>b</sup> Cf. Strabo viii. 7. 2 (384 c), i. 3. 10 (54 c), Aristot. *Meteor.* 343 b 1, etc., on the destruction of these two cities in Achaia. The date was 373/2 B.C.

5 κῆς ὁμοιοίας τὸ θαυμασιώτατον, λέγω δὲ τὸ<sup>1</sup> ἐκ  
 πολλῶν μίαν καὶ ὁμοίαν ἐξ ἀνομοίων ἀποτελεῖν<sup>1</sup>  
 διάθεσιν, ὑποδεχομένην<sup>2</sup> πᾶσαν καὶ φύσιν καὶ τύχην.  
 ἴσως δὲ καὶ τῶν ἐναντίων ἢ φύσις γλίχεται καὶ ἐκ  
 τούτων ἀποτελεῖ τὸ σύμφωνον, οὐκ ἐκ τῶν ὁμοίων,  
 ὥσπερ ἀμέλει τὸ ἄρρεν συνήγαγε πρὸς τὸ θῆλυ καὶ  
 10 οὐχ ἑκάτερον πρὸς τὸ ὁμόφυλον, καὶ τὴν πρώτην  
 ὁμόνοιαν διὰ τῶν ἐναντίων σηῆψεν, οὐ διὰ τῶν  
 ὁμοίων. ἔοικε δὲ καὶ ἡ τέχνη τὴν φύσιν μιμουμένη  
 τοῦτο ποιεῖν. ζωγραφία μὲν γὰρ λευκῶν τε καὶ  
 μελάνων, ὠχρῶν τε καὶ ἐρυθρῶν, χρωμάτων ἐγ-  
 κερασαμένη φύσεις τὰς εἰκόνας τοῖς προηγου-  
 15 μένοις ἀπετέλεσε συμφώνους, μουσικὴ δὲ ὀξεῖς  
 ἄμα καὶ βαρεῖς, μακροῦς τε καὶ βραχεῖς φθόγγους  
 μίξασα ἐν διαφόροις φωναῖς μίαν ἀπετέλεσεν ἁρμο-  
 νίαν, γραμματικὴ δὲ ἐκ φωνηέντων καὶ ἀφώνων  
 γραμμάτων κρᾶσιν ποιησαμένη τὴν ὅλην τέχνην  
 ἀπ' αὐτῶν συνεστήσατο. ταῦτὸ δὲ τοῦτο ἦν καὶ  
 20 τὸ παρὰ τῷ σκοτεινῷ λεγόμενον Ἑρακλείτῳ·  
 “συνάψιμες ὅλα καὶ οὐχ ὅλα, συμφερόμενον διαφερό-  
 μενον, συνᾶδον διαᾶδον· καὶ ἐκ πάντων ἐν καὶ ἐξ  
 ἐνὸς πάντα.”<sup>3</sup> οὕτως οὖν καὶ τὴν τῶν ὅλων σύ-  
 στασιν, οὐρανοῦ λέγω καὶ γῆς τοῦ τε σύμπαντος  
 25 κόσμου, διὰ τῆς τῶν ἐναντιωτάτων κρᾶσεως ἀρχῶν

<sup>1</sup> τὸ . . . ἀποτελεῖν Lor. : ὅτι . . . ἀποτελεῖ Bekk.

<sup>2</sup> ὑποδεχομένην Lor. : ὑποδεχομένη Bekk.

<sup>3</sup> sic Diels (*Vorsokr.*<sup>6</sup> 22 B 10) : v. Lor. ad loc.

<sup>a</sup> The idea that art imitates nature occurs in Aristotle's *Protrepticus* (see Jaeger, *Aristotle*, pp. 74 f.), and in *Phys.* B 199 a 15, *Meteor.* 381 b 5, *De Part. Anim.* 639 b 15 ff. But in Aristotle the point of comparison concerns teleology, not 378

## ON THE COSMOS, 5

the harmonious working of a city-community is this : that out of plurality and diversity it achieves a homogeneous unity capable of admitting every variation of nature and degree. But perhaps nature actually has a liking for opposites ; perhaps it is from them that she creates harmony, and not from similar things, in just the same way as she has joined the male to the female, and not each of them to another of the same sex, thus making the first harmonious community not of similar but of opposite things. It seems, too, that art does this, in imitation of nature <sup>a</sup> : for painting mixes its whites and blacks, its yellows and reds, to create images that are concordant with their originals ; music mixes high and low notes, and longs and shorts, and makes a single tune of different sounds ; by making a mixture of vowels and consonants, grammar composes out of them the whole of its art. This is precisely what Heracleitus the Dark <sup>b</sup> meant when he said " Junctions are wholes and not-wholes, concord and discord, consonance and dissonance. One out of All ; All out of One." So in the same way the complex of the Universe, I mean heaven and earth and the whole cosmos, by means of the mixture of the most opposite elements has been

the harmony of opposites. The four colours mentioned by Pseudo-Aristotle are the colours of the restricted palette used by the Four Colour Painters, of whom the earliest recorded is Polygnotus and the latest Aëtion in the age of Alexander the Great. Cf. Pliny, *N.H.* xxxv. 50, and A. Rumpf, *JHS* lxxvii (1947), p. 16. It has been suggested that Empedocles' comparison of painting and creation (Diels, *Vorsokr.*<sup>6</sup> 31 B 23) was inspired by Four Colour Painting.

<sup>b</sup> It is not likely that the author read Heracleitus in the original, or that the whole context is to be attached too closely to Heracleitus. Maguire (*op. cit.* pp. 134 ff.) finds the closest parallels to this passage in the Neo-Pythagoreans.

396 b

μία διεκόσμησεν ἄρμονία· ξηρὸν γὰρ ὑγρῶ, θερμὸν  
 δὲ ψυχρῶ, βαρεῖ τε κοῦφον μιγέν, καὶ ὀρθὸν περι-  
 φερεῖ, γῆν τε πᾶσαν καὶ θάλασσαν αἰθέρα τε καὶ  
 ἥλιον καὶ σελήνην καὶ τὸν ὄλον οὐρανὸν διεκόσμησε  
 μία ἢ διὰ πάντων διήκουσα δύναμις, ἐκ τῶν ἀμίκ-  
 30 των καὶ ἑτεροίων, ἀέρος τε καὶ γῆς καὶ πυρὸς καὶ  
 ὕδατος, τὸν σύμπαντα κόσμον δημιουργήσασα καὶ  
 μιᾷ διαλαβοῦσα σφαίρας ἐπιφανεία τὰς τε ἐναντιω-  
 τάτας ἐν αὐτῷ φύσεις ἀλλήλαις ἀναγκάσασα ὁμο-  
 λογηῆσαι καὶ ἐκ τούτων μηχανησαμένη τῷ παντὶ  
 σωτηρίαν. αἰτία δὲ ταύτης μὲν ἢ τῶν στοιχείων  
 35 ὁμολογία, τῆς δὲ ὁμολογίας ἢ ἰσομοιρία καὶ τὸ  
 397 a μηδὲν αὐτῶν πλεόν ἕτερον ἑτέρου δύνασθαι· τὴν  
 γὰρ ἴσην ἀντίστασιν ἔχει τὰ βαρέα πρὸς τὰ κοῦφα  
 καὶ τὰ θερμὰ πρὸς θάτερα,<sup>1</sup> τῆς φύσεως ἐπὶ τῶν  
 μειζόνων διδασκούσης ὅτι τὸ ἴσον σωστικόν πῶς  
 ἐστὶν ὁμοιότης, ἢ δὲ ὁμόνοια τοῦ πάντων γενετήρος  
 5 καὶ περικαλλεστάτου κόσμου. τίς γὰρ ἂν εἴη φύσις  
 τοῦδε κρείττων; ἦν γὰρ ἂν εἴπη<sup>2</sup> τις, μέρος ἐστὶν  
 αὐτοῦ. τό τε καλὸν πᾶν ἐπώνυμόν ἐστι τούτου καὶ  
 τὸ τεταγμένον, ἀπὸ τοῦ κόσμου λεγόμενον κεκο-  
 σμηῆσθαι. τί<sup>3</sup> δὲ τῶν ἐπὶ μέρους δύναται ἂν ἐξισω-  
 θῆναι τῇ κατ' οὐρανὸν τάξει τε καὶ φορᾷ τῶν  
 10 ἄστρον ἡλίου τε καὶ σελήνης, κινουμένων ἐν ἀκρι-  
 βεστάτοις μέτροις ἐξ αἰῶνος εἰς ἕτερον αἰῶνα; τίς  
 δὲ γένοιτ' ἂν ἀψεύδεια τοιάδε, ἦντινα φυλάττουσιν  
 αἱ καλά καὶ γόνιμοι τῶν ὄλων ὦραι, θέρη τε καὶ  
 χειμῶνας ἐπάγουσαι τεταγμένως ἡμέρας τε καὶ

<sup>1</sup> θάτερα ETZ Lor. : τὰ θάτερα codd. cet. Bekk.

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organized by a single harmony : dry mixed with wet, hot with cold, light with heavy, straight with curved—the whole of earth and sea, the aether, the sun, the moon and the whole heaven have been set in order by the single power which interpenetrates all things : from things unmixed and diverse, air and earth and fire and water, it has fashioned the whole cosmos and embraced it all in the surface of a single sphere, forcing the most opposite elements in the cosmos to come to terms, and from them achieving preservation for the whole. The cause of its preservation is the agreement of the elements, and the cause of the agreement is the principle of equal shares and the fact that no one of them has more power than each of the others : for the heavy is in equipoise with the light, and the hot with its opposite. In these greater matters nature teaches us that equality is the preserver of concord, and concord is the preserver of the cosmos, which is the parent of all things and the most beautiful of all. For what being could be better than this ? Anything that might be suggested is a part of it. And everything that is beautiful takes its name from this, and all that is well-arranged ; for it is called “ well-ordered ” (*κεκοσμησθαι*) after this “ universal order ” (*κόσμος*). What particular detail could be compared to the arrangement of the heavens and the movement of the stars and the sun and moon, moving as they do from one age to another in the most accurate measures of time ? What constancy could rival that maintained by the hours and seasons, the beautiful creators of all things, that bring summers and winters in due order, and days and nights to make

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<sup>2</sup> *εἴπη* EP Lor. : *εἴποι* codd. cet. Bekk.

<sup>3</sup> *τί* Lor. : *τίς* Bekk.

397 a

νύκτας εἰς μηνὸς ἀποτέλεσμα καὶ ἐνιαυτοῦ; καὶ  
 15 μὴν μεγέθει μὲν οὗτος<sup>1</sup> πανυπέρτατος, κινήσει δὲ  
 ὀξύτατος, λαμπρότητι δὲ εὐαυγέστατος, δυνάμει δὲ  
 ἀγήρως τε καὶ ἄφθαρτος. οὗτος ἐναλίωιν ζώων  
 καὶ πεζῶν καὶ ἀερίων φύσεις ἐχώρισε καὶ βίους  
 ἐμέτρησε ταῖς ἑαυτοῦ κινήσεσιν. ἐκ τούτου πάντα  
 ἐμπνεῖ τε καὶ ψυχὴν ἴσχει τὰ ζῶα. τούτου καὶ αἱ  
 20 παράδοξοι νεοχημώσεις τεταγμένως ἀποτελοῦνται,  
 συναραττόντων μὲν ἀνέμων παντοίων, πιπτόντων  
 δὲ ἐξ οὐρανοῦ κεραυνῶν, ῥηγνυμένων δὲ χειμώνων  
 ἐξαισιῶν. διὰ δὲ τούτων τὸ νοτερόν ἐκπιεζόμενον  
 τό τε πυρῶδες διαπνεόμενον εἰς ὁμόνοιαν ἄγει τὸ  
 πᾶν καὶ καθίστησιν. ἢ τε γῆ φυτοῖς κομῶσα παντο-  
 25 δαποῖς νάμασί τε περιβλύζουσα καὶ περιοχουμένη  
 ζώοις, κατὰ καιρὸν ἐκφύουσα τε πάντα καὶ τρέ-  
 φουσα καὶ δεχομένη, μυρίας τε φέρουσα ἰδέας καὶ  
 πάθη, τὴν ἀγήρω φύσιν ὁμοίως τηρεῖ, καίτοι καὶ  
 σεισοῖς τινασσομένη καὶ πλημυρίσιν ἐπικλυζομένη  
 30 πυρκαϊαῖς τε κατὰ μέρος φλογιζομένη. ταῦτα δὲ  
 πάντα ἔοικεν αὐτῇ πρὸς ἀγαθοῦ γινόμενα τὴν δι'  
 αἰῶνος σωτηρίαν παρέχειν· σειομένης τε γὰρ δι-  
 ἐξάπτουσιν αἱ τῶν πνευμάτων παρεμπτώσεις κατὰ  
 τὰ ῥήγματα τὰς ἀναπνοὰς ἴσχουσαι, καθὼς ἄνω  
 λέλεκται, καθαιρομένη τε ὄμβροις ἀποκλύζεται  
 35 πάντα τὰ νοσώδη, περιπνεομένη δὲ αὔραις τὰ τε  
 ὑπ' αὐτὴν καὶ τὰ ὑπὲρ αὐτὴν εἰλικρινεῖται. καὶ  
 397 b μὴν αἱ φλόγες μὲν τὸ παγετῶδες ἠπιαίνουσιν,<sup>2</sup> οἱ  
 πάγοι δὲ τὰς φλόγας ἀνιᾶσιν. καὶ τῶν ἐπὶ μέρος  
 τὰ μὲν γίνεται, τὰ δὲ ἀκμάζει, τὰ δὲ φθείρεται.

<sup>1</sup> οὗτος Lor. : ὁ αὐτὸς Bekk.<sup>2</sup> ἠπιαίνουσι(ν) BCFG Lor. : παιάνουσιν codd. cet. Bekk.

up the number of a month or a year? In size too the cosmos is mightiest, in motion swiftest, in brightness most brilliant, in power never-aging and indestructible. It is this that has given a different nature to the creatures of the sea, the land and the air, and measured their lives in terms of its own movements. From this all creatures breathe and take their life. Of this even the unexpected changes are accomplished in due order—the winds of all kinds that dash together, thunderbolts falling from the heavens, and storms that violently burst out. Through these the moisture is squeezed out and the fire is dispersed by currents of air; in this way the whole is brought into harmony and so established. The earth, too, that is crowned with plants of every kind and bubbles with springs and teems with living creatures everywhere, that brings forth everything in season and nurtures it and receives it back again, that produces a myriad shapes and conditions—this earth still keeps its never-aging nature unchanged, though it is racked by earthquakes, swamped by floods, and burnt in part by fires. All these things, it seems, happen for the good of the earth and give it preservation from age to age: for when it is shaken by an earthquake, there is an upsurge of the winds transfused within it, which find vent-holes through the chasms, as I have already said <sup>a</sup>; when it is washed by rain it is cleansed of all noxious things; and when the breezes blow round about it the things below and above it are purified. Furthermore the fires soften things that are frozen, and frost abates the force of the fires. And of the particular things on the earth some come into being while some are in their prime and others are perishing:

<sup>a</sup> 395 b 26.

καὶ αἱ μὲν γενέσεις ἐπαναστέλλουσι τὰς φθοράς,  
 5 αἱ δὲ φθοραὶ κουφίζουσι τὰς γενέσεις. μία δὲ ἐκ  
 πάντων περαινομένη σωτηρία διὰ τέλους ἀντιπερι-  
 ισταμένων ἀλλήλοις καὶ τοτὲ μὲν κρατούντων, τοτὲ  
 δὲ κρατουμένων, φυλάττει τὸ σύμπαν ἄφθαρτον δι'  
 αἰῶνος.

6. Λοιπὸν δὲ δὴ περὶ τῆς τῶν ὄλων συνεκτικῆς  
 10 αἰτίας κεφαλαιωδῶς εἰπεῖν, ὃν τρόπον καὶ περὶ τῶν  
 ἄλλων· πλημμελὲς γὰρ περὶ κόσμου λέγοντας, εἰ  
 καὶ μὴ δι' ἀκριβείας, ἀλλ' οὖν γε ὡς εἰς τυπώδη  
 μάθησιν, τὸ τοῦ κόσμου κυριώτατον παραλιπεῖν.  
 ἀρχαῖος μὲν οὖν τις λόγος καὶ πάτριός ἐστι πᾶσιν  
 ἀνθρώποις ὡς ἐκ θεοῦ πάντα καὶ διὰ θεοῦ ἡμῖν  
 15 συνέστηκεν, οὐδεμία δὲ φύσις αὐτῆ καθ' ἑαυτὴν  
 ἐστὶν αὐτάρκης, ἐρημωθεῖσα τῆς ἐκ τούτου σω-  
 τηρίας. διὸ καὶ τῶν παλαιῶν εἰπεῖν τινες προήχθη-  
 σαν ὅτι πάντα ταῦτά ἐστι θεῶν πλέα τὰ καὶ δι'  
 ὀφθαλμῶν ἰνδαλλόμενα ἡμῖν καὶ δι' ἀκοῆς καὶ  
 πάσης αἰσθήσεως, τῇ μὲν θείᾳ δυνάμει πρέποντα  
 20 καταβαλλόμενοι λόγον, οὐ μὴν τῇ γε οὐσία. σωτῆρ  
 μὲν γὰρ ὄντως ἀπάντων ἐστὶ καὶ γενέτωρ τῶν  
 ὁπωσδήποτε κατὰ τόνδε τὸν κόσμον συντελου-  
 μένων ὁ θεός, οὐ μὴν αὐτουργοῦ καὶ ἐπιπόνου  
 ζώου κάματος ὑπομένων, ἀλλὰ δυνάμει χρώμενος  
 ἀτρύτῳ, δι' ἧς καὶ τῶν πόρρω δοκούντων εἶναι  
 25 περιγίνεται. τὴν μὲν οὖν ἀνωτάτω καὶ πρώτην  
 ἔδραν αὐτὸς ἔλαχεν, ὕπατός τε διὰ τοῦτο ὠνό-  
 μασται, [καὶ]<sup>1</sup> κατὰ τὸν ποιητὴν “ ἀκροτάτη κο-

<sup>1</sup> καὶ om. BCG Lor.

and generation is set in the balance against destruction, and destruction lightens the weight of generation. There is one single principle of preservation, maintained without interruption among all these things that interchange with one another, ascending to power and declining in turn, and this keeps the whole system safe, eternally indestructible.

6. It remains now to discuss summarily, as the rest has been discussed, the cause that holds the world together; for in describing the cosmos, if not in detail, at least sufficiently to convey an outline, it would be wrong for us to omit altogether that which is supreme in the cosmos. It is indeed an ancient idea, traditional among all mankind, that all things are from God and are constituted for us by God, and nothing is self-sufficient if deprived of his preserving influence. So some of the ancients were led to say that all the things of this world are full of gods,<sup>a</sup> all that are presented to us through our eyes and hearing and all the senses; but in saying this they used terms suitable to the power of God but not to his essence. For God is indeed the preserver of all things and the creator of everything in this cosmos however it is brought to fruition; but he does not take upon himself the toil of a creature that works and labours for itself,<sup>b</sup> but uses an indefatigable power, by means of which he controls even things that seem a great way off. God has his home in the highest and first place, and is called Supreme for this reason, since according to the poet <sup>c</sup> it is on "the loftiest crest"

<sup>a</sup> Cf. the saying attributed to Thales (Diels, *Vorsokr.* 11 A 22 = Aristot. *De Anima* 411 a 7).

<sup>b</sup> The *ἀντροπυγός* (cf. 398 a 5, b 4) is the man who works his own land without a slave, e.g. Electra's husband in Euripides' *Electra*.

<sup>c</sup> Hom. *Il.* i. 499.

397 b

ρυφῆ'' τοῦ σύμπαντος ἐγκαθιδρυμένος οὐρανοῦ·  
 μάλιστα δέ πως αὐτοῦ τῆς δυνάμεως ἀπολαύει τὸ  
 πλησίον αὐτοῦ σῶμα, καὶ ἔπειτα τὸ μετ' ἐκείνο,  
 30 καὶ ἐφεξῆς οὕτως ἄχρι τῶν καθ' ἡμᾶς τόπων. διὸ  
 γῆ τε καὶ τὰ ἐπὶ γῆς ἔοικεν, ἐν ἀποστάσει πλείστη  
 τῆς ἐκ θεοῦ ὄντα ὠφελείας, ἀσθενῆ καὶ ἀκατάλληλα  
 εἶναι καὶ πολλῆς μεστὰ ταραχῆς· οὐ μὴν ἀλλὰ  
 [καὶ]<sup>1</sup> καθ' ὅσον ἐπὶ πᾶν δικνεῖσθαι πέφυκε τὸ  
 θεῖον, καὶ τὰ καθ' ἡμᾶς ὁμοίως συμβαίνει τά τε  
 35 ὑπὲρ ἡμᾶς, κατὰ τὸ ἔγγιον τε καὶ πορρωτέρω θεοῦ  
 398 a εἶναι μᾶλλον τε καὶ ἥττον ὠφελείας μεταλαμβά-  
 νοντα. κρεῖττον οὖν ὑπολαβεῖν, ὃ καὶ πρέπον ἐστὶ  
 καὶ θεῶ μάλιστα ἀρμόζον, ὡς ἢ ἐν οὐρανῷ δύναμις  
 ἰδρυμένη καὶ τοῖς πλείστον ἀφεστηκόσιν, ὡς ἐνι  
 γε εἰπεῖν, καὶ σύμπασιν αἰτία γίνεται σωτηρίας,  
 5 μᾶλλον ἢ ὡς διήκουσα καὶ φοιτῶσα ἔνθα μὴ καλὸν  
 μηδὲ εὐσχημον αὐτουργεῖ τὰ ἐπὶ γῆς. τοῦτο μὲν  
 γὰρ οὐδὲ ἀνθρώπων ἡγεμόσιν ἀρμόττει, παντὶ καὶ  
 τῷ τυχόντι ἐφίστασθαι ἔργῳ, οἷον στρατιᾶς ἄρχοντι  
 ἢ πόλεως ἢ οἴκου, [καὶ]<sup>2</sup> εἰ χρεὼν στρωματο-  
 δεσμον εἶη δῆσαι καὶ εἴ τι φανυλότερον ἀποτελεῖν  
 10 ἔργον, ὃ<sup>3</sup> κἂν τὸ τυχὸν ἀνδράποδον ποιήσειεν, ἀλλ'  
 οἷον ἐπὶ τοῦ μεγάλου βασιλέως ἱστορεῖται. τὸ  
 <γὰρ> Καμβύσου<sup>3</sup> Ξέρξου τε καὶ Δαρείου πρό-

<sup>1</sup> καὶ om. CGZ Lor.

<sup>2</sup> καὶ del. Wendland et Wilamowitz.

<sup>3</sup> ὃ . . . Καμβύσου sic Lor. : ὃ ἐπὶ τοῦ μεγάλου βασιλέως οὐκ ἂν τὸ τυχὸν ἀνδράποδον ποιήσειεν· ἀλλ' οἷον ἱστορεῖτο Καμβύσου κτλ. Bekk. : v. Lor. ad loc.

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of the whole heaven that he dwells: his power is experienced most of all by the body that is closest to him, less by the next, and so on down to the regions inhabited by us. So earth and the things that are on earth, being at the farthest remove from the help of God, seem to be feeble and discordant and full of confusion and diversity; but nevertheless, in that it is the nature of the Divine to penetrate to everything, even the things around us occur in the same way as the things above us, each having a greater or smaller share of God's help in proportion to its distance from him. So it is better to suppose, what is also fitting and most appropriate to God, that the power which is based on the heavens is also the cause of preservation in the most remote things, as we may say, and indeed in everything, rather than that of itself it carries out its tasks on earth by penetrating and being present where it is not honourable or fitting that it should.<sup>a</sup> For it is not fitting even among men for princes to superintend each and every action that may have to be done—for example, the commander of an army or leader of a city or head of a household, if it were necessary to pack up bedding or perform some other menial task which could be done by any slave—but rather it is fitting that they should act in the manner which was adopted, according to the records, under the Great King.<sup>b</sup> The pomp of Cambyses and Xerxes and Darius was ordered on a

<sup>a</sup> The "power" has here become identified with god; this is literally inconsistent with 397 b 19 above.

<sup>b</sup> Pseudo-Aristotle describes the King of Persia in his glory in the 6th/5th century B.C. He accords well with Herodotus's (i. 98) account of Deïoces' palace and régime at Ecbatana. This is a description of a fabulous past such as Aristotle would hardly have given.

398 a

σχημα εἰς σεμνότητος καὶ ὑπεροχῆς ὕψος μεγα-  
 λοπρεπῶς διεκεκόσμητο· αὐτὸς μὲν γάρ, ὡς λόγος,  
 ἴδρυτο ἐν Σούσοις ἢ Ἐκβατάνοις, παντὶ ἀόρατος,  
 15 θαυμαστὸν ἐπέχων βασιλείον οἶκον καὶ περίβολον  
 χρυσῶ καὶ ἠλέκτρῳ καὶ ἐλέφαντι ἀστράπτοντα·  
 πυλῶνες δὲ πολλοὶ καὶ συνεχεῖς πρόθυρά τε σύχνοις  
 εἰργόμενα σταδίοις ἀπ' ἀλλήλων θύραις τε χαλκαῖς  
 καὶ τείχεσι μεγάλοις ὠχύρωτο· ἔξω δὲ τούτων  
 ἄνδρες οἱ πρῶτοι καὶ δοκιμώτατοι διεκεκόσμητο,  
 20 οἱ μὲν ἀμφ' αὐτὸν τὸν βασιλέα δορυφόροι τε καὶ  
 θεράποντες, οἱ δὲ ἐκάστου περιβόλου φύλακες,  
 πυλωροὶ τε καὶ ὠτακουσται λεγόμενοι, ὡς ἂν ὁ  
 βασιλεὺς αὐτός, δεσπότης καὶ θεὸς ὀνομαζόμενος,  
 πάντα μὲν βλέποι, πάντα δὲ ἀκούοι. χωρὶς δὲ  
 τούτων ἄλλοι καθειστήκεσαν προσόδων ταμίαι καὶ  
 25 στρατηγοὶ πολέμων καὶ κυνηγεσίων δώρων τε  
 ἀποδεκτῆρες τῶν τε λοιπῶν ἔργων ἕκαστοι κατὰ  
 τὰς χρείας ἐπιμεληταί. τὴν δὲ σύμπασαν ἀρχὴν τῆς  
 Ἀσίας, περατουμένην Ἑλλησπόντῳ μὲν ἐκ τῶν  
 πρὸς ἑσπέραν μερῶν, Ἰνδῶ δὲ ἐκ τῶν πρὸς ἑῷ,  
 διειλήφεσαν κατὰ ἔθνη στρατηγοὶ καὶ σατράπαι  
 30 καὶ βασιλεῖς, δοῦλοι τοῦ μεγάλου βασιλέως, ἡμε-  
 ροδρόμοι τε καὶ σκοποὶ καὶ ἀγγελιαφόροι φρυκ-  
 τωρίων<sup>1</sup> τε ἐποπτῆρες. τοσοῦτος δὲ ἦν ὁ κόσμος,  
 καὶ μάλιστα τῶν φρυκτωρίων,<sup>1</sup> κατὰ διαδοχὰς  
 πυρσευόντων ἀλλήλοις<sup>2</sup> ἐκ περάτων τῆς ἀρχῆς  
 μέχρι Σούσων καὶ Ἐκβατάνων, ὥστε τὸν βασι-  
 35 λέα γινώσκειν αὐθημερὸν πάντα τὰ ἐν τῇ Ἀσίᾳ  
 398 b καινουργούμενα. νομιστέον δὴ τὴν τοῦ μεγά-  
 λου βασιλέως ὑπεροχὴν πρὸς τὴν τοῦ τὸν κόσμον

<sup>1</sup> φρυκτωρίων . . . φρυκτωρίων scripsi : φρυκτωριῶν . . . φρυκτωριῶν Bekk.

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grand scale and touched the heights of majesty and magnificence : the King himself, they say, lived in Susa or Ecbatana, invisible to all, in a marvellous palace with a surrounding wall flashing with gold, electrum and ivory ; it had a succession of many gate-towers, and the gateways, separated by many stades from one another, were fortified with brazen doors and high walls ; outside these the leaders and most eminent men were drawn up in order, some as personal bodyguards and attendants to the King himself, some as guardians of each outer wall, called Guards and the Listening-Watch, so that the King himself, who had the name of Master and God, might see everything and hear everything. Apart from these there were others appointed as revenue officials, leaders in war and in the hunt, receivers of gifts to the King, and others, each responsible for administering a particular task, as they were necessary. The whole Empire of Asia, bounded by the Hellespont in the West and the Indus in the East, was divided into nations under generals and satraps and kings, slaves of the Great King, with couriers and scouts and messengers and signals-officers. And such was the orderly arrangement of this, and particularly of the system of signal-beacons which were ready to burn in succession from the uttermost limits of the Empire to Susa and Ecbatana, that the King knew the same day all that was news in Asia. Now we must suppose that the majesty of the Great King falls short of the majesty of the god who rules the cosmos by as much

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<sup>2</sup> *πυρσευόντων ἀλλήλοις* Lor. : *πυρσεουσῶν ἀλλήλαις* Bekk.

ἐπέχοντος θεοῦ τοσοῦτον καταδεεστέραν ὅσον τῆς  
 ἐκείνου τὴν τοῦ φαυλοτάτου τε καὶ ἀσθενεστά-  
 του ζώου, ὥστε, εἴπερ ἄσεμνον ἦν αὐτὸν αὐτῷ  
 5 δοκεῖν Ξέρξην αὐτουργεῖν ἅπαντα καὶ ἐπιτελεῖν ἂ  
 βούλοίτο καὶ ἐφιστάμενον διοικεῖν, πολὺ μᾶλλον  
 ἀπρεπὲς ἂν εἴη θεῷ. σεμνότερον δὲ καὶ πρε-  
 πωδέστερον αὐτὸν μὲν ἐπὶ τῆς ἀνωτάτω χώρας  
 ἰδρῦσθαι, τὴν δὲ δύναμιν διὰ τοῦ σύμπαντος κό-  
 σμου διήκουσαν ἥλιόν τε κινεῖν καὶ σελήνην καὶ τὸν  
 10 πάντα οὐρανὸν περιάγειν αἰτιὸν τε γίνεσθαι τοῖς  
 ἐπὶ τῆς γῆς σωτηρίας. οὐδὲν γὰρ ἐπιτεχνήσεως  
 αὐτῷ δεῖ καὶ ὑπηρεσίας τῆς παρ' ἐτέρων, ὥσπερ  
 τοῖς παρ' ἡμῖν ἄρχουσι τῆς πολυχειρίας διὰ τὴν  
 ἀσθένειαν, ἀλλὰ τοῦτο ἦν τὸ θειότατον, τὸ μετὰ  
 ῥαστώνης καὶ ἀπλῆς κινήσεως παντοδαπὰς ἀπο-  
 15 τελεῖν ἰδέας, ὥσπερ ἀμέλει δρῶσιν οἱ μηχανοποιοί,<sup>1</sup>  
 διὰ μιᾶς ὀργάνου σχαστηρίας πολλὰς καὶ ποικίλας  
 ἐνεργείας ἀποτελοῦντες. ὁμοίως δὲ καὶ οἱ νευρο-  
 σπάσται μίαν μήρινθον ἐπισπασάμενοι ποιοῦσι καὶ  
 αὐχένα κινεῖσθαι καὶ χεῖρα τοῦ ζώου καὶ ὦμον καὶ  
 ὀφθαλμόν, ἔστι δὲ ὅτε πάντα τὰ μέρη, μετὰ τινος  
 20 εὐρυθμίας. οὕτως οὖν καὶ ἡ θεία φύσις ἀπὸ τινος

<sup>1</sup> μηχανοποιοί Z. I.or. (Notes): μηχανοτέχνηαι I.or. (*De Mundo*): μεγαλότεχνοι codd. pler. Bekk.

<sup>a</sup> It is not clear what kind of machine is meant; the  
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as the difference between the King and the poorest and weakest creature in the world, so that if it was beneath the dignity of Xerxes to appear himself to be the actual executor of all things, to carry out his wishes himself and to administer the Empire by personal supervision, it would be still more unbecoming for God. It is more noble, more becoming, for him to reside in the highest place, while his power, penetrating the whole of the cosmos, moves the sun and moon and turns the whole of the heavens and is the cause of preservation for the things upon the earth. He has no need of the contrivance and support of others, as rulers among us men need a multitude of workers because of their weakness; the most divine thing of all is to produce all kinds of result easily by means of a single motion, just like the operators of machines, who produce many varied activities by means of the machine's single release-mechanism.<sup>a</sup> In the same way too the men who run puppet-shows,<sup>b</sup> by pulling a single string, make the creature's neck move, and his hand and shoulder and eye, and sometimes every part of his body, according to a rhythmical pattern. So also the divine being,

"varied activities" probably refer to the various parts of the machine, and do not imply multi-purpose machines. *Mechanopoios* is most frequently used of military engineers. *Schasteria* is used of the release mechanism of catapults and ballistae. It is also used of the release-mechanism of automatic machines (such as Hero's machine for providing holy water); but in conjunction with *mechanopoios* and *organon* a reference to catapults, etc., seems more likely.

<sup>b</sup> Plato twice refers to puppets in the *Laws* (644 D, 804 B) as well as in the shadow-theatre of the *Republic* (514); in the *Laws* the puppets are worked by wires. Aristotle uses the example of puppets to illustrate a scientific theory in *De Gen. An.* 734 b 10 ff.

398 b

ἀπλῆς κινήσεως τοῦ πρώτου τὴν δύναμιν εἰς τὰ  
 συνεχῆ δίδωσι καὶ ἀπ' ἐκείνων πάλιν εἰς τὰ πορ-  
 ρωτέρω, μέχρις ἂν διὰ τοῦ παντός διεξέλθῃ· κι-  
 νηθὲν γὰρ ἕτερον ὑφ' ἑτέρου καὶ αὐτὸ πάλιν ἐκίνησεν  
 ἄλλο σὺν κόσμῳ, δρώντων μὲν πάντων οἰκείως ταῖς  
 25 σφετέραις κατασκευαῖς, οὐ τῆς αὐτῆς δὲ ὁδοῦ πᾶσιν  
 οὔσης, ἀλλὰ διαφόρου καὶ ἑτεροίας, ἔστι δὲ οἷς καὶ  
 ἐναντίας, καίτοι τῆς πρώτης οἷον ἐνδόσεως εἰς  
 κίνησιν μιᾶς<sup>1</sup> γενομένης· ὥσπερ ἂν εἴ τις ἐξ αἵπους<sup>2</sup>  
 ὁμοῦ ῥίψει σφαῖραν καὶ κύβον καὶ κῶνον καὶ κύ-  
 λινδρον—ἕκαστον γὰρ αὐτῶν κατὰ τὸ ἴδιον κινή-  
 30 θήσεται σχῆμα—ἢ εἴ τις ὁμοῦ ζῶον ἔνυδρόν τε καὶ  
 χερσαῖον καὶ πτηνὸν ἐν τοῖς κόλποις ἔχων ἐκβάλοι·  
 δῆλον γὰρ ὅτι τὸ μὲν νηκτὸν ἀλόμενον εἰς τὴν  
 ἑαυτοῦ δίαιταν ἐκνήξεται, τὸ δὲ χερσαῖον εἰς τὰ  
 σφέτερα ἦθη καὶ νομοὺς διεξερπύσει, τὸ δὲ ἀέριον  
 ἐξαρθὲν ἐκ γῆς μετάρσιον οἰχθήσεται πετόμενον,  
 35 μιᾶς τῆς πρώτης αἰτίας πᾶσιν ἀποδοῦσης τὴν  
 399 a οἰκείαν εὐμάρειαν. οὕτως ἔχει καὶ ἐπὶ κόσμου·  
 διὰ γὰρ ἀπλῆς τοῦ σύμπαντος οὐρανοῦ περιαγωγῆς  
 ἡμέρα καὶ νυκτὶ περατουμένης ἀλλοῖαι πάντων δι-  
 ἐξοδοὶ γίνονται, καίτοι ὑπὸ μιᾶς σφαίρας περιεχο-  
 μένων, τῶν μὲν θᾶπτον, τῶν δὲ σχολαιότερον  
 5 κινουμένων παρά τε τὰ τῶν διαστημάτων μήκη  
 καὶ τὰς ἰδίας ἐκάστων κατασκευάς. σελήνη μὲν  
 γὰρ ἐν μηνὶ τὸν ἑαυτῆς διαπεραίνεται κύκλον αὐξο-  
 μένη τε καὶ μειουμένη καὶ φθίνουσα, ἥλιος δὲ ἐν

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with a single movement of the nearest element distributes his power to the next part and then to the more remote parts until it permeates the whole. One thing is moved by another, and itself then moves a third in regular order, all things acting in the manner appropriate to their own constitution ; for the way is not the same for all things, but different and various, in some cases quite opposite, though the key of the whole movement, as it were, is set by a single opening note. For instance, a similar effect would be produced if one threw from a height a sphere, a cube, a cone and a cylinder, all together : each of them will move in the manner appropriate to its own shape ; or if one held in the folds of one's cloak an aquatic animal, a land animal and a winged animal, and then threw them out all together ; clearly the animal that swims will leap into its own habitat and swim away, the land animal will crawl off to its own customary pursuits and pastures, and the winged creature will rise from the ground and fly away high in the air ; a single cause has restored to all of them the freedom to move, each in the manner of its species. So too in the case of the cosmos : by means of a single revolution of the whole heaven completed in a night and a day, the various motions of all the heavenly bodies are initiated, and though all are embraced in one sphere, some move rapidly and others more slowly, according to their distances and their individual characters. For the moon completes its orbit in a month, waxing and waning and disappearing ; the sun and those which have an equal

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<sup>1</sup> *μῆς* Lor. : *μῆαν* codd. Bekk.

<sup>2</sup> *αἴπους* scripsi : *ἀγγους* codd. Lor. Bekk. : *ὄρους* Z : *per proclive* Ap.

399 a

ἐνιαυτῷ καὶ οἱ τούτου ἰσόδρομοι, ὃ τε Φωσφόρος  
 καὶ ὁ Ἑρμοῦ λεγόμενος, ὁ δὲ Πυρόεις ἐν διπλασίονι  
 10 τούτων χρόνῳ, ὁ δὲ Διὸς ἐν ἑξαπλασίονι τούτου,  
 καὶ τελευταῖος ὁ Κρόνου λεγόμενος ἐν διπλασίονι  
 καὶ ἡμίσει τοῦ ὑποκάτω. μία δὲ ἐκ πάντων ἁρ-  
 μονία συναδόντων καὶ χορευόντων κατὰ τὸν οὐρανὸν  
 ἕξ ἑνός τε γίνεται καὶ εἰς ἓν ἀπολήγει, κόσμον  
 ἐτύμως τὸ σύμπαν ἀλλ' οὐκ ἀκοσμίαν ὀνομάσασα.  
 15 καθάπερ δὲ ἐν χορῷ κορυφαίου κατάρξαντος  
 συνεπηχεῖ πᾶς ὁ χορὸς ἀνδρῶν, ἔσθ' ὅτε καὶ γυ-  
 ναικῶν, ἐν διαφόροις φωναῖς ὀξυτέραις καὶ βαρυ-  
 τέραις μίαν ἁρμονίαν ἐμμελῆ κεραυνύντων, οὕτως  
 ἔχει καὶ ἐπὶ τοῦ τὸ σύμπαν διέποντος θεοῦ· κατὰ  
 γὰρ τὸ ἄνωθεν ἐνδόσιμον ὑπὸ τοῦ φερωνύμως ἄν  
 20 κορυφαίου προσαγορευθέντος κινεῖται μὲν τὰ ἄστρα  
 αἰεὶ καὶ ὁ σύμπας οὐρανός, πορεύεται δὲ διττὰς  
 πορείας ὁ παμφαῆς ἥλιος, τῇ μὲν ἡμέραν καὶ  
 νύκτα διορίζων ἀνατολῇ καὶ δύσει, τῇ δὲ τὰς τέσ-  
 σαρὰς ὥρας ἄγων τοῦ ἔτους, πρόσω τε βόρειος καὶ  
 ὀπίσω νότιος διεξέρπων. γίνονται δὲ ὑετοὶ κατὰ  
 25 καιρὸν καὶ ἄνεμοι καὶ δρόσοι τὰ τε πάθη τὰ ἐν τῷ  
 περιέχοντι συμβαίνοντα διὰ τὴν πρώτην καὶ ἀρχέ-  
 γονον<sup>1</sup> αἰτίαν. ἔπονται δὲ τούτοις ποταμῶν ἐκροαί,  
 θαλάσσης ἀνοιδήσεις, δένδρων ἐκφύσεις, καρπῶν  
 πεπάνσεις, γοναὶ ζώων, ἐκτροφαὶ τε πάντων καὶ  
 ἀκμαὶ καὶ φθίσεις, συμβαλλομένης πρὸς ταῦτα καὶ  
 30 τῆς ἐκάστου κατασκευῆς, ὡς ἔφην. ὅταν οὖν ὁ  
 πάντων ἡγεμών τε καὶ γενέτωρ, ἀόρατος ὢν ἄλλω

<sup>1</sup> ἀρχέγονον Wendland et Wilamowitz, Lor.: ἀρχαιόγονον codd. Bekk.

## ON THE COSMOS, 6

course with it, namely Phosphorus (Venus) and Hermes (Mercury), complete their course in a year, Pyroeis (Mars) in twice this time, Zeus (Jupiter) in twelve years, and lastly the star called after Cronus (Saturn) in two and a half times the period of the one below it.<sup>a</sup> The single harmony that is produced by all these as they sing and dance in concert round the heavens has one and the same beginning and one and the same end, in a true sense giving to the whole the name of "order" (κόσμος) and not "disorder" (ἀκοσμία). Just as in a chorus at the direction of the leader all the chorus of men, sometimes of women too, join in singing together, creating a single pleasing harmony with their varied mixture of high and low notes, so also in the case of the god who controls the universe : the note is sounded from on high by him who might well be called the chorus-master ; then the stars and the whole heavens move continually, and the all-shining sun makes his double journey, dividing night from day by his rising and setting, and bringing the four seasons of the year as he moves forwards to the North and back to the South. There are rains in due season, and winds, and falls of dew, and all the phenomena that occur in the atmosphere—all are the results of the first, original cause. These are followed by the springing up of rivers, the swelling of the sea, the growth of trees, the ripening of fruit, the birth of animals, the nurture, the prime and the decay of all things ; and the individual constitution of each thing contributes to the process, as I have said. So when the leader and author of all things, unseen except to the eye of

<sup>a</sup> *i.e.* thirty years. These periods correspond to those of Eudoxus (*ap. Simplic. In de Caelo* 495. 26 ff.).

399 a

πλὴν λογισμῶ, σημήνη πάση φύσει μεταξὺ οὐρανοῦ  
 τε καὶ γῆς φερομένη, κινεῖται πᾶσα ἐνδελεχῶς ἐν  
 κύκλοις καὶ πέρασιν ἰδίους, ποτὲ μὲν ἀφανιζομένη,  
 35 ποτὲ δὲ φαινομένη, μυρίας ιδέας ἀναφαίνουσά τε  
 καὶ πάλιν ἀποκρύπτουσα ἐκ μιᾶς ἀρχῆς. ἔοικε

399 b

δὲ κομιδῇ τὸ δρώμενον τοῖς ἐν πολέμου καιροῖς  
 μάλιστα γινομένοις, ἐπειδὰν ἢ σάλπιγξ σημήνη τῷ  
 στρατοπέδῳ· τότε γὰρ τῆς φωνῆς ἕκαστος ἀκού-  
 σασ ὁ μὲν ἀσπίδα ἀναιρεῖται, ὁ δὲ θώρακα ἐνδύεται,  
 5 ὁ δὲ κνημίδας ἢ κράνος ἢ ζωστήρα περιτίθεται·  
 καὶ ὁ μὲν ἵππον χαλινοῖ, ὁ δὲ συνωρίδα ἀναβαίνει,  
 ὁ δὲ σύνθημα παρεγγυᾷ· καθίσταται δὲ εὐθέως ὁ  
 μὲν λοχαγὸς εἰς λόχον, ὁ δὲ ταξίαρχος εἰς τάξιν,  
 ὁ δὲ ἵππεὺς ἐπὶ κέρας, ὁ δὲ ψιλὸς εἰς τὴν ἰδίαν  
 ἐκτρέχει χώραν· πάντα δὲ ὑφ' ἓνα σημάντορα δο-  
 10 νεῖται κατὰ προστάξιν τοῦ τὸ κράτος ἔχοντος ἡγε-  
 μόνος. οὕτω χρῆ καὶ περὶ τοῦ σύμπαντος φρονεῖν·  
 ὑπὸ γὰρ μιᾶς ῥοπῆς ὀτρυνομένων ἀπάντων γίνεται  
 τὰ οἰκεία, καὶ ταύτης ἀοράτου καὶ ἀφανοῦς. ὅπερ  
 οὐδαμῶς ἐστὶν ἐμπόδιον οὔτε ἐκείνη πρὸς τὸ δρᾶν  
 οὔτε ἡμῖν πρὸς τὸ πιστεῦσαι· καὶ γὰρ ἢ ψυχὴ, δι'  
 15 ἣν ζῶμέν τε καὶ οἴκους καὶ πόλεις ἔχομεν, ἀόρατος  
 οὕσα τοῖς ἔργοις αὐτῆς<sup>1</sup> ὁράται· πᾶς γὰρ ὁ τοῦ βίου  
 διάκοσμος ὑπὸ ταύτης εὔρηται καὶ διατέτακται καὶ  
 συνέχεται, γῆς ἀρόσεις καὶ φυτεύσεις, τέχνης ἐπί-  
 νοιαι, χρήσεις νόμων, κόσμος πολιτείας, ἔνδημοι  
 πράξεις, ὑπερόριος πόλεμος, εἰρήνη. ταῦτα χρῆ  
 20 καὶ περὶ θεοῦ διανοεῖσθαι, δυνάμει μὲν ὄντος ἰσχυ-  
 ροτάτου, κάλλει δὲ εὐπρεπεστάτου, ζωῇ δὲ ἀθανά-  
 του, ἀρετῇ δὲ κρατίστου, διότι πάση θνητῇ φύσει

## ON THE COSMOS, 6

reason, gives the sign to every moving thing between heaven and earth, everything is moved continually in its orbit and within its peculiar limits, now disappearing, now appearing, revealing innumerable different forms and concealing them again, all from a single beginning. The process is very like what happens, particularly at moments in a war, when the trumpet gives a signal in a military camp ; then each man hears the sound, and one picks up his shield, another puts on his breast-plate, and a third his greaves or helmet or belt ; one harnesses his horse, one mounts his chariot, one passes on the watchword ; the company-commander goes at once to his company, the brigadier to his brigade, the cavalryman to his squadron, and the infantryman runs to his own station ; all is stirred by a single trumpeter to a flurry of motion according to the orders of the supreme commander. It is a similar idea that we must have of the universe : by a single inclination all things are spurred to action and perform their peculiar functions—and this single agent is unseen and invisible. Its invisibility is no impediment either to its own action or to our belief in it ; for the soul, whereby we live and build households and cities, though it is invisible is perceived through its deeds : for all the conduct of life is discovered, arranged and maintained by the soul—the ploughing and sowing of land, the inventions of art, the use of laws, the order of a city's government, the activities of people in their own country, and war and peace with foreign nations. This is what we must also believe about God, who is mightiest in power, outstanding in beauty, immortal in life, and supreme in excellence, because

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<sup>1</sup> *αὐτῆς* codd. L.or. : *αὐτοῖς* codd. al. Bekk.

399 b

γενόμενος ἀθεώρητος ἀπ' αὐτῶν τῶν ἔργων θεω-  
ρεῖται. τὰ γὰρ πάθη, καὶ τὰ δι' ἀέρος ἅπαντα καὶ  
τὰ ἐπὶ γῆς καὶ τὰ ἐν ὕδατι, θεοῦ λέγοντ' ἂν ὄντως  
25 ἔργα εἶναι τοῦ τὸν κόσμον ἐπέχοντος· ἐξ οὗ, κατὰ  
τὸν φυσικὸν Ἐμπεδοκλέα,

πάνθ' ὅσα τ' ἦν ὅσα τ' ἔσθ' ὅσα τ' ἔσται ὀπίσσω,  
δένδρεά τ' ἐβλάστησε καὶ ἀνέρες ἠδὲ γυναῖκες  
θῆρές τ' οἰωνοὶ τε καὶ ὕδατοθρέμμοι ἰχθῦς.

ἔοικε δὲ ὄντως, εἰ καὶ μικρότερον παραβαλεῖν,<sup>1</sup>  
30 τοῖς ὀμφαλοῖς λεγομένοις τοῖς ἐν ταῖς ψαλίαις  
[λίθοις],<sup>2</sup> οἱ μέσοι κείμενοι κατὰ τὴν εἰς ἑκάτερον  
μέρος ἔνδесιν ἐν ἀρμονίᾳ τηροῦσι καὶ ἐν τάξει τὸ  
πᾶν σχῆμα τῆς ψαλίδος καὶ ἀκίνητον. φασὶ δὲ καὶ  
τὸν ἀγαλματοποιὸν Φειδίαν κατασκευάζοντα<sup>3</sup> τὴν ἐν  
35 ἀκροπόλει Ἀθηναίων ἐν μέσῃ τῇ ταύτης ἀσπίδι τὸ  
ἑαυτοῦ πρόσωπον ἐντυπώσασθαι, καὶ συνδῆσαι τῷ  
400 a ἀγάλματι διὰ τίνος ἀφανοῦς δημιουργίας, ὥστε ἐξ  
ἀνάγκης, εἴ τις βούλοιο αὐτὸ περιαιρεῖν, τὸ σύμπαν  
ἄγαλμα λυεῖν τε καὶ συγχεῖν. τοῦτον οὖν ἔχει τὸν  
λόγον ὁ θεὸς ἐν κόσμῳ, συνέχων τὴν τῶν ὄλων  
5 ἀρμονίαν τε καὶ σωτηρίαν, πλὴν οὔτε μέσος ὢν,  
ἐνθα ἢ γῆ τε καὶ ὁ θολερὸς τόπος οὗτος, ἀλλ' ἄνω  
καθαρὸς ἐν καθαρῷ χωρῷ βεβηκώς, ὃν ἐτύμως κα-  
λοῦμεν οὐρανὸν μὲν ἀπὸ τοῦ ὄρον εἶναι τὸν ἄνω,  
"Ολυμπον δὲ οἶον ὀλολαμπῆ τε καὶ παντὸς ζόφου καὶ

<sup>1</sup> μικρότερον παραβαλεῖν Lor.: μικρότερον, παραβάλλειν τὸν  
κόσμον Bekk.

<sup>2</sup> λίθοις del. Wendland et Wilamowitz.

<sup>3</sup> κατασκευάζοντα BDL; [Arist.] *De Mir. Ausc.* 155; Lor.:  
κατασκευαζόμενον Bekk.

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though he is invisible to every mortal thing he is seen through his deeds. For it would be true to say that all the phenomena of the air, the land and the water are the works of the God who rules the cosmos; from whom, according to Empedocles<sup>a</sup> the natural philosopher,

grows all that is and was and is yet to come,  
the trees and the whole race of men and women,  
beasts, birds and water-nurtured fish.

Though it is rather a humble comparison, he is truly like the so-called "keystones" of vaults, which lie in the middle and by their junction with each side ensure the proper fit of the whole structure of the vault and preserve its arrangement and stability. They say too that the sculptor Pheidias, when he was making the Athena on the Acropolis, carved his own face into the middle of her shield, and by some hidden trick of craftsmanship attached it to the statue in such a way that if anyone tried to remove it he inevitably destroyed and demolished the whole statue.<sup>b</sup> And this is the position held in the cosmos by God, who maintains the orderliness and preservation of the whole: except that he is not in the centre—for here lies the earth, this turbulent, troubled place—but high aloft, pure in a pure region, which we rightly call "heaven" (*οὐρανός*) because it forms the uppermost boundary (*ὄρος . . . ἄνω*) or "Olympus" because it shines brightly all over (*ὀλολαμπής*) and is

<sup>a</sup> Diels, *Vorsokr.*<sup>6</sup> 31 B 21.

<sup>b</sup> Cf. Ps.-Aristot. *De Mir. Ausc.* 846 a 19 ff.; Plut. *Pericles* 31; Cic. *Tusc. Disp.* i. 15. 34; Val. Max. viii. 14. 6. Cicero and Plutarch only mention the portrait. The statue was the gold and ivory Athena in the Parthenon. In several economic crises the gold was removed and melted down and later restored.

400 a

ἀτάκτου κινήματος κεχωρισμένον, οἷα γίνεται παρ'  
 10 ἡμῖν διὰ χειμῶνος καὶ ἀνέμων βίας, ὥσπερ ἔφη  
 καὶ ὁ ποιητῆς [Ὀμηρος]<sup>1</sup>

Οὐλυμπόνδ', ὅθι φασὶ θεῶν ἔδος ἀσφαλὲς αἰεὶ  
 ἔμμεναι· οὐτ' ἀνέμοισι τινάσσεται οὔτε ποτ'  
 ὄμβρω

δεύεται, οὔτε χιῶν ἐπιπίλνεται, ἀλλὰ μάλ' αἴθρη  
 πέπταται ἀνέφελος, λευκὴ δ' ἐπιδέδρομεν αἶγλη.

15 συνεπιμαρτυρεῖ δὲ καὶ ὁ βίος ἅπας, τὴν ἄνω χώραν  
 ἀποδοὺς θεῶ· καὶ γὰρ πάντες ἄνθρωποι ἀνατείνομεν  
 τὰς χεῖρας εἰς τὸν οὐρανὸν εὐχὰς ποιούμενοι. καθ'  
 ὃν λόγον οὐ κακῶς κακείνο ἀναπεφώνηται

Ζεὺς δ' ἔλαχ' οὐρανὸν εὐρὺν ἐν αἰθέρι καὶ νεφέλῃσι.

20 διὸ καὶ τῶν αἰσθητῶν τὰ τιμιώτατα τὸν αὐτὸν  
 ἐπέχει τόπον, ἄστρα τε καὶ ἥλιος καὶ σελήνη·  
 μόνα τε τὰ οὐράνια διὰ τοῦτο αἰεὶ τὴν αὐτὴν σώ-  
 ζοντα τάξιν διακεκόσμηται, καὶ οὔποτε ἀλλοιω-  
 θέντα μετεκινήθη, καθάπερ τὰ ἐπὶ γῆς εὐτρεπτα  
 ὄντα πολλὰς ἑτεροιώσεις καὶ πάθη ἀναδέδεκται·

25 σεισμοὶ τε γὰρ ἤδη βίαιοι πολλὰ μέρη τῆς γῆς  
 ἀνέρρηξαν, ὄμβροι τε κατέκλυσαν ἐξ ἡπείρου καταρ-  
 ραγέντες, ἐπιδρομαὶ τε κυμάτων καὶ ἀναχωρήσεις  
 πολλάκις καὶ ἠπείρους ἐθαλάττωσαν καὶ θαλάττας  
 ἠπείρωσαν, βιαί τε πνευμάτων καὶ τυφώνων ἔστιν

30 ὅτε πόλεις ὄλας ἀνέτρεψαν, πυρκαϊαὶ τε καὶ φλόγες  
 αἰ μὲν ἐξ οὐρανοῦ γενόμεναι πρότερον, ὥσπερ  
 φασίν, ἐπὶ Φαέθοντος τὰ πρὸς ἔω μέρη κατέφλεξαν,  
 αἰ δὲ πρὸς ἐσπέραν ἐκ γῆς ἀναβλύσασαι καὶ ἐκφυ-  
 σήσασαι, καθάπερ τῶν ἐν Αἴτνῃ κρατήρων ἀναρ-  
 ραγέντων καὶ ἀνὰ τὴν γῆν φερομένων χειμάρρου

400 b δίκην. ἔνθα καὶ τὸ τῶν εὐσεβῶν γένος ἐξόχως

## ON THE COSMOS, 6

removed from all darkness and disorderly motion such as occurs among us when there is a storm or a violent wind ; as the poet says,<sup>a</sup>

To Olympus, where they say the gods' dwelling stands  
always safe ; it is not shaken by winds, nor drenched  
by showers of rain, nor does snow come near it ; always  
unclouded

the air spreads out, and a white radiance lies upon it.

And all ages bear witness to this fact, and allot the upper region to God : all of us men stretch out our hands to the heavens when we pray. According to this reasoning, the following also has been well said <sup>b</sup> :

To Zeus belongs the wide heaven in the clouds and the aether.

So also the same place is occupied by the most honoured of perceptible things, the stars and the sun and the moon ; and for this reason only the heavenly bodies always keep the same order and arrangement, and are never changed or altered ; while the transient things on earth admit many alterations and conditions. For violent earthquakes before now have torn up many parts of the earth, monstrous storms of rain have burst out and overwhelmed it, incursions and withdrawals of the waves have often made seas of dry land and dry land of seas ; sometimes whole cities have been overturned by the violence of gales and typhoons ; flaming fires from the heavens once burnt up the Eastern parts, they say, in the time of Phaëthon, and others gushed and spouted from the earth, in the West, as when the craters of Etna erupted and spread over the earth like a mountain-torrent. Here, too, the race of pious

<sup>a</sup> Hom. *Od.* vi. 42-45.

<sup>b</sup> Hom. *Il.* xv. 192.

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<sup>1</sup> \*Ομηρος om. Z Lor.

ἐτίμησε τὸ δαιμόνιον, περικαταληφθέντων ὑπὸ  
 τοῦ ρεύματος διὰ τὸ βαστάζειν γέροντας ἐπὶ τῶν  
 ὤμων γονεῖς καὶ σώζειν· πλησίον γενόμενος ὁ τοῦ  
 πυρὸς ποταμὸς ἐξεσχίσθη παρέτρεψέ τε τοῦ φλογ-  
 5 μού τὸ μὲν ἔνθα, τὸ δὲ ἔνθα, καὶ ἐτήρησεν ἀβλα-  
 βεῖς ἅμα τοῖς γονεῦσι τοὺς νεανίσκους.

Καθόλου δὲ ὅπερ ἐν νηὶ μὲν κυβερνήτης, ἐν  
 ἄρματι δὲ ἡνίοχος, ἐν χορῶ δὲ κορυφαῖος, ἐν πόλει  
 δὲ νομο(θέτης),<sup>1</sup> ἐν στρατοπέδῳ δὲ ἡγεμῶν, τοῦτο  
 θεὸς ἐν κόσμῳ, πλὴν καθ' ὅσον τοῖς μὲν καματη-  
 10 ρὸν τὸ ἄρχειν πολυκίνητόν τε καὶ πολυμέριμνον, τῷ  
 δὲ ἄλυπον ἄπονόν τε καὶ πάσης κεχωρισμένον  
 σωματικῆς ἀσθενείας· ἐν ἀκινήτῳ γὰρ ἰδρυμένος  
 πάντα κινεῖ καὶ περιάγει, ὅπου βούλεται καὶ ὅπως,  
 ἐν διαφόροις ἰδέαις τε καὶ φύσεσιν, ὥσπερ ἀμέλει  
 καὶ ὁ τῆς πόλεως νόμος ἀκίνητος ὢν ἐν ταῖς τῶν  
 15 χρωμένων ψυχαῖς πάντα οἰκονομεῖ τὰ κατὰ τὴν  
 πολιτείαν· ἐφεπόμενοι γὰρ αὐτῷ δηλονότι ἐξίασιν  
 ἄρχοντες μὲν ἐπὶ τὰ ἀρχεῖα, θεσμοθέται δὲ εἰς τὰ  
 οἰκεῖα δικαστήρια, βουλευταὶ δὲ καὶ ἐκκλησιασ-  
 ταὶ εἰς συνέδρια τὰ προσήκοντα, καὶ ὁ μὲν τις εἰς  
 τὸ πρυτανεῖον βαδίζει σιτησόμενος, ὁ δὲ πρὸς τοὺς  
 20 δικαστὰς ἀπολογησόμενος, ὁ δὲ εἰς τὸ δεσμωτή-  
 ριον ἀποθανούμενος. γίνονται δὲ καὶ δημοθινιαὶ  
 νόμιμοι καὶ πανηγύρεις ἐνιαύσιοι θεῶν τε θυσίαι  
 καὶ ἡρώων θεραπείαι καὶ χοαὶ κεκμηκότων· ἄλλα  
 δὲ ἄλλως ἐνεργούμενα κατὰ μίαν πρόσταξιν ἢ νό-  
 μμον ἐξουσίαν σώζει τὸ τοῦ ποιήσαντος ὄντως ὅτι

25 πόλις δ' ὁμοῦ μὲν θυμιαμάτων γέμει,  
 ὁμοῦ δὲ παιάνων τε καὶ στεναγμάτων,

<sup>1</sup> νομο(θέτης) conit. I.or. : νόμος codd. Bekk.

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men was especially honoured by the divinity,<sup>a</sup> when they were overtaken by the stream of lava, because they were carrying their old parents on their shoulders to keep them safe ; for when the river of fire drew near them it was split in two and turned one part to this side and the other to that, and preserved unharmed both the young men and their parents.

In a word then, as the helmsman in his ship, as the charioteer in his chariot, as the leader in a chorus, as the lawgiver in a city, as the commander in a military camp, so is God in the cosmos, except that their command is wearisome and fraught with many movements and cares, while God rules without pain and toil, free from all bodily weakness : for he is established in the immovable, and moves and directs all things as and where he wishes, among the varieties of form and nature ; just as the law of the city, itself immovably established within the minds of those who observe it, disposes all the activities of the state : for in obedience to the law the magistrates go to their offices, the judges to their appropriate courts, the councillors and members of the assembly to their appointed meeting-places ; and one man goes to the prytaneum for his meals, another to the law-courts to defend himself, a third to prison to die. The law also ordains public feasts and annual festivals, sacrifices to the gods, cults of heroes and libations to the dead : and other varied activities, all arising from a single ordinance or authority of the law, accord well with these words of the poet <sup>b</sup> :

The city is full of heavy incense-fumes,  
with crying for deliverance, and laments.

<sup>a</sup> The story is told of Amphion and his brother by the poet of the *Aetna* (625 f.)

<sup>b</sup> Soph. *O.T.* 4-5.

400 b

οὕτως ὑποληπτέον καὶ ἐπὶ τῆς μείζονος πόλεως,  
 λέγω δὲ τοῦ κόσμου· νόμος γὰρ ἡμῖν ἰσοκλιῆς ὁ  
 θεός, οὐδεμίαν ἐπιδεχόμενος διόρθωσιν ἢ μετά-  
 30 θεσιν, κρείττων δέ, οἶμαι, καὶ βεβαιοτέρος τῶν ἐν  
 ταῖς κύρβεσιν ἀναγεγραμμένων. ἡγουμένου δὲ  
 ἀκινήτως<sup>1</sup> αὐτοῦ καὶ ἐμμελῶς ὁ σύμπας οἰκονο-  
 μεῖται διάκοσμος οὐρανοῦ καὶ γῆς, μεμερισμένος  
 κατὰ τὰς φύσεις πάσας διὰ τῶν οἰκείων σπερμάτων  
 εἷς τε φυτὰ καὶ ζῶα κατὰ γένη τε καὶ εἶδη· καὶ γὰρ  
 401 a ἄμπελοι καὶ φοίνικες καὶ περσέαι

συκέαι τε γλυκεραὶ καὶ ἐλαῖαι,

ὡς φησιν ὁ ποιητής, τά τε ἄκαρπα μέν, ἄλλας δὲ  
 παρεχόμενα χρείας, πλάτανοι καὶ πίτυες καὶ πύξοι  
 κλήθρη τ' αἰγείρος τε καὶ εὐώδης κυπάρισσος,  
 5 αἶ τε καρπὸν ὀπώρας ἠδὺν ἄλλως δὲ δυσθησαύ-  
 ριστον φέρουσαι,

ὄχραι καὶ ροιαὶ καὶ μηλέαι ἀγλαόκαρποι,

τῶν τε ζώων τά τε ἄγρια καὶ ἡμερα, τά τε ἐν ἀέρι  
 καὶ ἐπὶ γῆς καὶ ἐν ὕδατι βοσκόμενα, γίνεται καὶ  
 10 ἀκμάζει καὶ φθείρεται τοῖς τοῦ θεοῦ πειθόμενα  
 θεσμοῖς· “πᾶν γὰρ ἐρπετὸν πληγῇ νέμεται,” ὡς  
 φησιν Ἡράκλειτος.

7. Εἷς δὲ ὧν πολυώνυμός ἐστι, κατονομαζόμενος  
 τοῖς πάθεσι πᾶσιν ἅπερ αὐτὸς νεοχμοῖ. καλοῦμεν  
 δὲ αὐτὸν καὶ Ζῆνα καὶ Δία, παραλλήλως χρώμενοι  
 15 τοῖς ὀνόμασιν, ὡς καὶ εἰ λέγοιμεν δι' ὃν ζῶμεν.  
 Κρόνου δὲ παῖς καὶ χρόνου λέγεται, διήκων ἐξ  
 αἰῶνος ἀτέρμονος εἰς ἕτερον αἰῶνα· ἀστραπαῖός  
 τε καὶ βρονταῖος καὶ αἴθριος καὶ αἰθέριος κεραυνίος

<sup>1</sup> ἀκινήτως Stob. Lor. : ἀεικινήτως codd. Bekk.

## ON THE COSMOS, 6-7

So it is, we must suppose, with that greater city, the cosmos : God is a law to us, impartial and admitting no correction or change ; he is surely a stronger and more stable law than those inscribed on tablets.<sup>a</sup> Under his motionless and harmonious guidance all the orderly arrangement of heaven and earth is administered, extending over all things through the seed proper to their kind, to plants and animals by genus and species ; vines, palms and *perseae*, “ sweet figs and olives,”<sup>b</sup> as the poet says, and those that bear no fruit but serve some other purpose, planes and pines and box-trees, “ the alder, the poplar and the sweet-scented cypress-tree ”<sup>c</sup> ; and those which in the autumn bring forth a harvest that is sweet but hard to store, “ pears and pomegranates and apples with shining fruit ”<sup>d</sup> ; and animals, some wild, some tame, that live in the air and on the earth and in the water,—all these come into being and grow strong and perish, obedient to the laws of god. “ For every creature that crawls is driven to pasture by his goad,”<sup>e</sup> as Heracleitus says.

7. Though he is one, he has many names, according to the many effects he himself produces. We call him both Zena and Dia, using the names interchangeably,<sup>f</sup> as if we were to say “ Him through whom (*διὰ ὅν*) we live (*ζῆν*).” He is called the Son of Cronus and of time (Chronos), because he lives from endless age to another age ; God of Lightning and of Thunder, God of the Air and Aether, God of the Thunderbolt

<sup>a</sup> At Athens, tablets on which the early laws were written.

<sup>b</sup> Hom. *Od.* xi. 590.

<sup>c</sup> Hom. *Od.* v. 64.

<sup>d</sup> Hom. *Od.* xi. 589.

<sup>e</sup> Diels, *Vorsokr.*<sup>6</sup> 22 B 11.

<sup>f</sup> Ζῆνα and Δία are used interchangeably as accusatives of Zeus.

401 a

τε καὶ ὑέτιος ἀπὸ τῶν ὑετῶν καὶ κεραυνῶν καὶ τῶν  
 ἄλλων καλεῖται. καὶ μὴν ἐπικάρπιος μὲν ἀπὸ τῶν  
 20 καρπῶν, πολιεὺς δὲ ἀπὸ τῶν πόλεων ὀνομάζεται,  
 γενέθλιός τε καὶ ἐρκείος καὶ ὁμόγνιος καὶ πατρῶος<sup>1</sup>  
 ἀπὸ τῆς πρὸς ταῦτα κοινωνίας, ἑταιρειός τε καὶ  
 φίλιος καὶ ξένιος καὶ στρατίος καὶ τροπαιοῦχος,  
 καθάρσιός τε καὶ παλαμναῖος καὶ ἰκέσιος καὶ μειλί-  
 χιος, ὥσπερ οἱ ποιηταὶ λέγουσι, σωτήρ τε καὶ  
 25 ἐλευθέριος ἐτύμως, ὡς δὲ τὸ πᾶν εἰπεῖν, οὐράνιός  
 τε καὶ χθόνιος, πάσης ἐπώνυμος φύσεως ὦν καὶ  
 τύχης, ἅτε πάντων αὐτὸς αἴτιος ὦν. διὸ καὶ ἐν  
 τοῖς Ὀρφικοῖς οὐ κακῶς λέγεται

Zeus prōtos gēneto, Zeus ὑστατος ἀρχικέρανος<sup>2</sup>.  
 Zeus κεφαλή, Zeus μέσσα, Διὸς δ' ἐκ πάντα  
 τέτυκται.

401 b

Zeus πυθμὴν γαίης τε καὶ οὐρανοῦ ἀστερόεντος.  
 Zeus ἄρσην γένητο, Zeus ἄμβροτος ἔπλετο νύμφη.  
 Zeus πνοιὴ πάντων, Zeus ἀκαμάτου πυρὸς ὄρμη.  
 Zeus πόντου ρίζα, Zeus ἥλιος ἠδὲ σελήνη.

5 Zeus βασιλεύς, Zeus ἀρχὸς ἀπάντων ἀρχικέρα-  
 νος<sup>3</sup>.

πάντας γὰρ κρύψας αὐθις φάος ἐς πολυγηθὲς  
 ἐξ ἱερῆς κραδίης ἀνεπέκατο, μέρμερα ρέζων.

Οἶμαι δὲ καὶ τὴν Ἀνάγκην οὐκ ἄλλο τι λέγεσθαι  
 πλὴν τοῦτον, οἷονεὶ ἀνίκητον αἰτίαν<sup>4</sup> ὄντα, Εἰμαρ-  
 10 μένην δὲ διὰ τὸ εἶρειν τε καὶ χωρεῖν ἀκωλύτως,

<sup>1</sup> πατρῶος Wendland et Wilamowitz, Lor. : πάτριος codd. Bekk.

<sup>2</sup> ἀρχικέρανος P Lor. : ἀργικέρανος codd. cet. Bekk. (et 401 b 5).

## ON THE COSMOS, 7

and the Rain—he takes his name from all these things. He is called Harvest-God and City-God, God of the Family and the Household, God of Kinsmen and Ancestral God, because of his connexion with these things; God of Fellowship and Friendship and Hospitality, of War and Victory, of Purification and Vengeance, of Supplication and Grace, as the poets say, and in a true sense Saviour and Liberator. To sum up all, he is a God of Heaven and God of Earth,<sup>a</sup> and takes his name from every kind of nature and estate; for he himself is the cause of all. So it is rightly written in the Orphic books<sup>b</sup>:

Zeus is the first-born, Zeus is last, the lord of the lightning;  
Zeus is the head, Zeus the centre; from Zeus comes all  
that is;

Zeus is the foundation of the earth and the starry heavens;  
Zeus is a man, Zeus an immortal maid;

Zeus is the breath of all things, Zeus is the spring of tire-  
less fire;

Zeus is the root of ocean, Zeus is the sun and moon;

Zeus is king, Zeus is the master of all, the lord of the  
lightning.

For he hid all men away, and has brought them again to  
the lovely light

from the holiness of his heart, working great marvels.

I think too that Necessity (*Ἀνάγκη*), is nothing but another name for him, as being a cause that cannot be defeated (*ἀνίκητος*); and Destiny (*Εἰμαρμένη*), because he binds things together (*εἶρειν*) and moves

<sup>a</sup> *Χθόνιος* usually implies the Underworld; but Pseudo-Aristotle is probably stretching the meaning slightly to suit his own cosmology.

<sup>b</sup> Kern, *Fragm. Orph.* 21 a.

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<sup>3</sup> vid. 401 a 28.

<sup>4</sup> *αἰτίαν* CG Lor. : *οὐσίαν* codd. al. Bekk.

Πεπρωμένην δὲ διὰ τὸ πεπερατώσθαι πάντα καὶ  
 μηδὲν ἐν τοῖς οὖσιν ἄπειρον εἶναι, καὶ Μοῖραν μὲν  
 ἀπὸ τοῦ μεμερίσθαι, Νέμεσιν δὲ ἀπὸ τῆς ἐκάστω  
 διανεμήσεως, Ἀδράστειαν δὲ ἀναπόδραστον αἰτίαν  
 οὖσαν κατὰ φύσιν, Αἴσαν δὲ αἰεὶ οὖσαν. τὰ τε περι  
 15 τὰς Μοῖρας καὶ τὸν ἄτρακτον εἰς ταῦτό πως νεύει·  
 τρεῖς μὲν γὰρ αἱ Μοῖραι, κατὰ τοὺς χρόνους με-  
 μερισμένοι, νῆμα δὲ ἀτράκτου τὸ μὲν ἐξειργα-  
 σμένον, τὸ δὲ μέλλον, τὸ δὲ περιστρεφόμενον·  
 τέτακται δὲ κατὰ μὲν τὸ γεγονός μία τῶν Μοιρῶν,  
 Ἄτροπος, ἐπεὶ τὰ παρελθόντα πάντα ἄτρεπτά ἐστι,  
 20 κατὰ δὲ τὸ μέλλον Λάχεσις—[εἰς]<sup>1</sup> πάντα γὰρ ἡ  
 κατὰ φύσιν μένει λῆξις—κατὰ δὲ τὸ ἐνεστὸς  
 Κλωθῶ, συμπεραίνουσά τε καὶ κλώθουσα ἐκάστω  
 τὰ οἰκεῖα. περαίνεται δὲ καὶ ὁ μῦθος οὐκ ἀτάκτως.

Ταῦτα δὲ πάντα ἐστὶν οὐκ ἄλλο τι πλὴν ὁ θεός,  
 καθάπερ καὶ ὁ γενναῖος Πλάτων φησὶν· “ὁ μὲν δὴ  
 25 θεός, ὡσπερ ὁ παλαιὸς λόγος, ἀρχὴν τε καὶ τελευτὴν  
 καὶ μέσα τῶν ὄντων ἀπάντων ἔχων, εὐθεία περαίνει  
 κατὰ φύσιν πορευόμενος· τῷ δὲ αἰεὶ ξυνέπεται δίκη,  
 τῶν ἀπολειπομένων τοῦ θείου νόμου τιμωρός—ἧς  
 ὁ γενήσεσθαι<sup>2</sup> μέλλων μακάριός τε καὶ εὐδαίμων  
 ἐξ ἀρχῆς εὐθύς μέτοχος εἶη.”

<sup>1</sup> εἰς del. Wendland et Wilamowitz.

<sup>2</sup> γενήσεσθαι Bücheler: εὐδαιμονήσειν vel εὐδαιμονῆσαι codd.  
 (cf. Plato, *Laws* 716 A).

## ON THE COSMOS, 7

without hindrance ; Fate (Πεπρωμένη), because all things are finite (πεπερατωσθαι) and nothing in the world is infinite ; Moira, from the division of things (μερίζειν) ; Nemesis, from the allocation of a share to each (διανέμησις) ;Adrasteia—a cause whose nature is to be inescapable (ἀναπόδραστος αἰτία) ; and Aisa—a cause that exists for ever (ἀεὶ οὖσα). The story of the Fates (Μοίραι) and the spindle also has much the same tendency : there are three Fates, corresponding to different times, and part of the yarn on their spindles is already completed, part is still to be spun, and part is now being worked. The past is the concern of one of the Fates, called Atropos, because all past things are irreversible (ἄτρεπτι) ; the future belongs to Lachesis, for a fortune allotted (λῆξις) by nature awaits all things ; the present is Clotho's province, who settles each man's own destiny and spins (κλώθειν) his thread. So the story ends, and it is well said.

All these things are no other than God, as the great Plato tells us <sup>a</sup> : “ God, as the ancient story says, holding the beginning and the end and the middle of all things that are, moves by a straight path in the course of nature, bringing them to fulfilment ; and behind him, taking vengeance on all that fall short of the divine law, follows Justice—let no man be without this, even from his earliest years, if he is to live in blessed happiness.”

<sup>a</sup> ὁ μὲν . . . τιμωρός *Laws* 715 E—716 A ; ἡς . . . εἶη *Laws* 730 c. The antecedent of ἡς in Plato is ἀλήθεια. Pseudo-Aristotle runs the two passages together, making δίκη the antecedent of ἡς.



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