

THE PRESOCRATICS

EDITED BY

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THE COVER

*Head of Athena. Fifth Century B.C., Temple of Zeus at
Olympia*



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The Scientist-Philosophers of Miletus

ONE OF THE great significant steps in the development of human thought took place at the Ionian city of Miletus in the sixth century B.C. Miletus was then a thriving seaport on the lower shore of the Aegean Sea, in what is now southwestern Turkey, about midway between the Greek islands of Samos to the north and Cos to the south. Its location together with its harbor facilities made it an important center of maritime commerce in the ancient world, and as a natural consequence it enjoyed the benefits of much trading in ideas as well. An intelligent Milesian, being more or less constantly exposed to various tales and customs from abroad, would soon come to perceive the relative and therefore dubious nature of those tales of the gods and myths of cosmic beginnings on which he had been reared. Such challenges to traditional belief tend to stimulate fresh efforts of thought, provided there are thinkers capable of meeting the challenge. Miletus was fortunate in producing at least three such thinkers—Thales, his independent disciple Anaximander, and the last known member of the school Anaximenes.

These three ancient Milesian thinkers were philosophers and scientists at once. Fields of knowledge had not yet become com-

partmentalized, and any inquiry into the nature of things would normally express interests which today we would distinguish as philosophical, scientific, ethical, aesthetic, and religious. Thales' declaration that all things are full of gods (i, T 8), or that the gods are blended with all things (i, T 15), was not totally distinct from his explanation of things in terms of water; for water was to him a living substance with an aura of divine potentialities still clinging to the idea of it. Again, Anaximander's explanation of natural change with the help of the ethical and religious idea of doing penance (ii, Fr. 1) would not have appeared to him, as it would to us, a paradoxical combination of two diverse ideas, but a reasonable description of how the living world carries out its visible and teleologically oriented activities.

In what sense were these Milesian philosophers scientific? Not, to be sure, in the full sense of the word as accepted currently. The contemporary demands of maximum exactitude, of experimentally controlled verifications, and of intellectual economy, were unknown to them. Exactitude, by anything like modern standards, was by no means characteristic of ancient investigations of nature; nor could it possibly have been so, in view of the fact that scientific thinking in the ancient world was predominantly qualitative, and that the concept of identical units, on which quantitative analysis depends, was of little concern to them.

Nevertheless in a threefold sense they were naturalistic and to that extent scientific. In the first place, they tried systematically to explain nature in terms of nature, instead of referring to the supposed will or caprice of supernatural beings. While Thales' statements that the magnet "has soul" and that all things are full of gods may appear at first sight to run counter to this naturalistic commitment, yet if carefully interpreted they will serve to illustrate it. For neither the word "soul" (*psychê*) nor the word "god" (*theos*) is here intended to carry the older mythological implications. There is no suggestion of immortality when Thales speaks of soul, and little or no anthropomorphic attachment in his idea

of god. He seems to be trying, in the absence of an adequate vocabulary, to point toward the notion which Aristotle was later to call "potentiality" or "potency" (*dynamis*). In both of his concretions of the idea Thales was expressing an awareness of the mystery of birth, growth, activity, and the unforeseen emergence of new qualities. Such ideas do break through the patterns of any naturalistic system and point to the unanswered questions that always extend indefinitely beyond the questions that get answered. But so far as our slim evidence can tell, they never tempted Thales to let his mind dwell upon the supernatural aspects; his focus and his emphasis kept their place and balance within, or just a little beyond, the world of nature as it can be experienced.

A second reason why the Milesian philosophers can be regarded as scientists is that they gave preference systematically, for perhaps the first time, to the kinds of observation that can be shared by virtually any interested and unprejudiced observer. The venerable prestige of inspired utterances by prophets and of privileged knowledge which could be imparted only after initiation into the secret mysteries of a religious cult was discarded. Heraclitus, writing quite independently at the nearby city of Ephesus, gave vivid expression, in his Fragment 15, to the principle of openly available knowledge, as that which is shared by men who are fully awake.

Thirdly, the Milesians began to make a practice of seeing the individual thing or event not as an isolated phenomenon of interest in itself alone, but as representative and symptomatic of a class. A solar eclipse was of interest to Thales not only as an event which changed the tide of battle between the Medes and the Lydians (T 2), but more significantly in relation to his hypothesis about the cause of eclipses (T 20) and to his intellectual faith that given the same conditions the same result would occur.

Thus it is not in their specific conclusions, not in their individual preferences for water or air or the Unlimited as the ultimate explanatory principle, that the Milesians are important. It is

rather in their new method of procedure, manifested in their new way of asking questions. They were teaching themselves to ask "What?" instead of "Who?" and to ask "How?" instead of "With what intent and purpose?" These two revised modes of questioning took the more precise and metaphysical form: (1) "What is the primary stuff of which the world is constituted?" and (2) "How do the manifold and changing appearances come about?" The first question is of concern to all three of the Milesians; the second takes hold gradually. Basically the two questions are inseparable however, for to ask seriously what a thing *is* involves asking what it *does*; and their interplay, in one manner or another, may be seen as shaping the character of Greek metaphysics during at least the next two centuries.

In examining such proto-scientific inquiries, however, it is important to keep in mind certain characteristic differences of the early Greek intellectual perspective, particularly as represented by the two assumptions defined in the General Introduction—that of the four basic elements and that of the primacy of qualitative opposites. The former assumption finds expression in Thales' theory that water is the sole fundamental substance, all the various things and qualities of the world being mere transformations of it, as well as in Anaximenes' theory of the primacy of air. The latter assumption, on the other hand, finds expression in Anaximander's theory of the Boundless—i.e., of an infinite reservoir of all possible qualities, from which one and only one of each pair of opposites comes into existence at any given time. One of the chief tasks of subsequent Greek metaphysics then becomes to seek for principles of existence and change that are more fundamental than anything so contingent and perceptually familiar as the substances and qualities of everyday experience.

i. Thales

Thales, the founder of the Milesian school, "flourished" in 585 B.C. The high reputation which caused him to be named on virtually every list of the legendary Seven Sages in early Greece was by no means based on his theoretical exploits alone. He applied his knowledge to astronomy, drawing upon the long kept Babylonian tables of solar and lunar orbits, to predicting correctly the year (although not the month) of a solar eclipse which occurred during a battle between the Medes and the Lydians throwing both armies into confusion and rout (T 2). His practical business acumen is attested by Aristotle's account (T 4) of his success in cornering the olive market. Herodotus (T 3) indicates his competence as a military engineer. He wrote treatises for the use of mariners who might venture beyond the sight of land (cf. T 11). And, as remarked earlier, he devised means of measuring the height of pyramids and the distance of ships at sea (T 9, 10).

Although the main points of Thales' doctrines are securely known, there are no surviving quotations of his actual words. Consequently in his case there can be no section of Fragments, but in its place there is offered Aristotle's version of the four most important propositions which he affirmed. It is as close as we can get to the actuality of his thought and utterance.

MAIN PROPOSITIONS OF THALES AS STATED BY ARISTOTLE

1. *The first principle and basic nature of all things is water.* (T 6)
2. *The earth rests upon water.* (T 5, 6)

3. *All things are full of gods.* (T 8)
4. *The magnetic stone has soul because it sets the iron in motion.* (T 7)

TESTIMONIA

FROM HERODOTUS:

T 1. Thales, a man of Miletus, was originally of Phoenician descent. (*The Persian Wars* I. 170)

T 2. In the sixth year of the war [between the Medes and the Lydians], neither side having gained much of an advantage, it suddenly happened in the midst of battle that the day turned into night. The shift from day to night had been foretold to the Ionians by Thales of Miletus, who set as its limit the year in which it actually occurred. (I. 74)

T 3. Once when [King] Croesus was at a loss how to take his army across a river where there was no bridge, it is said that Thales, who was then serving with the army, switched the course of the river, causing it to flow behind the army instead of altogether in front of them. Here is how he did it. Going upstream he dug a deep channel in the shape of a crescent, thereby dividing the river and partly diverting it to the rear of the army, letting it return to its original course after passing the camp. The result was that both parts of the river were now shallow enough to be forded. (I. 75)

FROM ARISTOTLE:

T 4. When people had been mocking him for his poverty, insinuating that his philosophy was of no practical use to him, he drew upon his knowledge of the heavenly bodies to predict a large olive crop, and collecting some money while it was still

winter he bought up all the olive presses in Miletus and Chius, securing them by partial payments very cheaply because of the absence of competing bids. When the proper time arrived there was a sudden demand for olive presses, which he then rented out on his own terms, making large profits for himself. (*Politikê* 1259a 9)

T 5. As against those who say that the earth extends downward without limit there are those who say that the earth rests upon water. This is the oldest theory that has been preserved, and it is accredited to Thales of Miletus. The earth stays in place, he explained, because it floats like wood or some such substance of a nature to let it float upon water but not upon air. As if the same problem didn't logically arise for the water supporting the earth as for the earth itself! (*De Caelo* 294a 28)

T 6. Most of those who first engaged in philosophy supposed that the only principles of things were to be found as material elements. That of which all things consist, that from which they first arise and into which they finally vanish away, that of which the "basic being" (*ousia*) persists although the perceptible characteristics are changed,—this, they say, is the prime element and first-principle of things. Therein they hold that nothing either comes-to-be or is destroyed, since this kind of "basic nature" (*physis*) always persists.

As to the nature of what is fundamental, however, and even as to whether it is one or many, there was much disagreement. Thales, the founder of this type of philosophy, declared the first-principle to be water, and for that reason he also held that the earth rests upon water. Probably the idea was suggested to him by the fact that the nutriment of everything contains moisture, and that heat itself is generated out of moisture and is kept alive by it. For of course it is assumed that whatever something is generated out of must be its first-principle. He drew his notion also from the fact that the seeds of everything have

a moist nature; and of course the first-principle of moist things is water.

There are some who think that men of olden times—those who, long before the present era, first began to speculate about the gods—held similar views about basic nature. For they represented Oceanus and Tethys as the parents of creation, and the gods as swearing their oaths by the River Styx, which is to say by water, the oldest and most honorable thing by which man swears. At any rate, while it is perhaps uncertain whether or not the view in question is really so ancient and venerable, it is generally accepted that Thales explained the primary cause in this way. (*Metaphysica* 983b 7)

T 7. From the stories that are told of him it would seem that Thales conceived of soul as somehow a motive power, since he said that the magnetic stone has soul in it because it sets a piece of iron in motion. (*De Anima* 405a 19)

T 8. Some say that soul is diffused throughout the universe; and perhaps that is what Thales meant in saying that all things are full of gods. (*ibid.* 411a 7)

FROM LATER GREEK SOURCES:

T 9. Thales was one of the seven sages, according to Plato. Moreover, Demetrius of Phalerum states in his *Catalogue of Archons* that Thales was the first man to be called a sage, the word then being applied to seven such men, and that this occurred at Athens when Damasias was archon [582 B.C.]. Although most writers speak of him as a native Milesian of distinguished family, it is held by some that he was admitted to citizenship at Miletus after having been exiled from Phoenicia.

Thales had no regular teacher, but went to Egypt and studied under the priests there. After an early period of political activity he became a student of natural science. He appears to have

given excellent advice on political matters. For instance, when Croesus offered to Miletus certain terms of alliance it was Thales who thwarted the plan, and to this freedom from alliance the city later owed its salvation when Cyrus [of Persia] won the victory. On the other hand, Heraclides quotes Thales as declaring that he always lived in solitude as a private individual and kept himself aloof from state affairs.

Some say that he married and had a son Cybisthus. Others say that he adopted his sister's son, and that to those who asked why he had no children of his own he replied that it was because he loved children. It is reported that when his mother first urged him to marry he replied that the "right time" (*kairos*) had not yet come, and that when she urged him again at a later period of his life he replied that the right time had passed. Hermippus in his *Lives* attributes to Thales the statement of the three blessings for which he was most grateful to fortune: "first, that I was born a human being and not a beast; next, that I was born a man and not a woman; thirdly, that I was born a Greek and not a barbarian."

Thales was the first to predict eclipses and to determine the time of the solstices: so Eudoxus says in his treatise on astronomy. He determined the sun's course between one solstice and the next. According to some he was the first to declare that the size of the sun was a seven hundred and twentieth part of the solar orbit, and that the same ratio existed between the size of the moon and the lunar orbit. Pamphilê says that having studied geometry with the Egyptians he discovered for himself how to inscribe a right-angled triangle in a circle, whereupon in thanksgiving he sacrificed an ox. According to Hieronymus he measured the pyramids by their shadow, after noting the time of day at which the shadow of a man equalled his height. The basic principle of everything he identified as water; moreover he declared the universe to be ensouled and full of daemons. It was he, they say, who divided the year into four seasons and into

365 days, and it was he who first called the last day of the month "the thirtieth."

There is a story that on one occasion, while a woman servant was leading him through the fields by night in order that he might observe the stars, he stumbled into a ditch; whereupon the woman as she helped him out remarked, "How can you expect to know all about the heavens, Thales, when you can't know what lies right under your feet?"

He held that there was no difference between life and death. "Why, then, don't you kill yourself?" someone asked. "Because there is no difference," Thales replied. To the question what man is happiest he gave the answer, "He who enjoys a healthy body, a resourceful mind, and a calm disposition." When asked what is most difficult he replied, "To know oneself"; and when asked what is easiest he replied, "To give advice to others." (Diogenes Laertius I. 22-38)

T 10. Thales was the first to go into Egypt and bring back scientific knowledge into Greece. He discovered a number of propositions himself, and he explained to his successors the underlying principles of many others. In some cases he employed deduction from universals, in others his approach was empirical.

Eudemus in his treatise on geometry attributed to Thales this theorem [that triangles which are equal with respect to one side and its two adjacent angles are equal in all respects]; arguing that Thales must have employed the theorem in computing, as he is said to have done, the distance of ships at sea. (Proclus, *On Euclid*)

T 11. Thales is generally regarded as the first who taught the Greeks the investigation of nature. Although he had many predecessors, as Theophrastus has remarked, he surpassed them all to such a degree that they are forgotten. He is said by some to have left no writings except his so-called nautical star-guide. (Simplicius *Commentaria*)

T 12. Thales was the earliest thinker to say that water is the first-principle of things, all things having emerged from it and eventually returning to it. (Pseudo-Plutarch *Stromata*)

T 13. Of those who say that the first-principle is one and movable (i.e., those whom Aristotle has called *physikoi*) some consider it to be limited; this line is taken, for instance, by Thales of Miletus and, in an anti-religious vein, by Hippo. Both philosophers hold the first-principle to be water—a view to which they are led by certain perceptual evidences. For warmth lives in moisture. Moreover the seeds as well as the nourishment of things are moist; and it is natural that what gives birth to a thing should also be its means of nourishment. Since water is the first-principle of the moistness of anything, they declare it to be the first-principle of everything; hence they argue that the earth must rest upon water. (Theophrastus, *Physical Opinions*)

T 14. Thales declared that God is the same as mind in the universe, that the All is ensouled and full of spirits, and that a divine moving power pervades the elemental moisture. He was the first to declare that the soul by its very nature is always in motion, and indeed is self-moving. (Aëtius)

T 15. Thales says that gods are blended with all things—a strange doctrine! (Simplicius *Commentaria*)

T 16. It is said that Thales of Miletus, one of the seven wise men, was the first to undertake the study of natural philosophy. He declared water to be the beginning and the end of all things. As the water solidifies, things acquire firmness; as it melts, their individual existence is threatened. Such changes are the causes of earthquakes, whirlwinds, and the movements of the stars. (Hippolytus *Refutatio*)

T 17. Thales of Miletus, who mistakenly supposed “first-principle” to mean the same as “element,” declared water to

be both the element and the first-principle of things. All things, he held, come out of water and are resolved into water. His reasons for the belief were: first, that the first-principle of animals is their seed, which is moist; secondly, that plants bear fruit when they have moisture but wither away when they lack it; thirdly, that even the fire of the sun and stars is fed by exhalations that arise from the waters. (Aëtius)

T 18. Thales holds that the earth is one, and that it is spherical. (*ibid.*)

T 19. Thales and certain others agree with the astronomers of our day that the monthly phases of the moon indicate that it is lighted by the sun and travels in relation to it. Lunar eclipses he explained as caused by the earth's shadow, in that the earth cuts off the sun's light from the moon when it is directly between the two orbs. (*ibid.*)

T 20. And he says that eclipses of the sun occur when the moon passes directly in front of it; explaining that the moon is of an earthy nature, even though it gives the appearance of a disc laid across the disc of the sun. (*ibid.*)

FROM LATIN SOURCES:

T 21. Thales of Miletus, who was the first to study such matters, said that water is the first-principle of all things, and that “god” signifies the mind which forms all things out of water. (Cicero *De Natura Deorum* I. 25)

T 22. He discovered how to measure the height of pyramids, by waiting until that hour of the day when the shadow of a thing was equal to its body. (Pliny the Elder, *Natural History* XXXVI. 82)

T 23. Thales was distinguished as an investigator into the nature of things; and in order that he might have successors

in his school he committed his dissertations to writing. What especially made him eminent, however, was his ability by astronomical calculations to predict eclipses of the sun and moon. He supposed water to be the first-principle of things, holding that all the elements of the world, the world itself, and whatever is generated in it, ultimately consist of water. In all his writings, however, so admirable in dealing with the world, he included nothing about the nature of the divine mind. (*Augustine Civitas Dei* VIII. 2)

ii. Anaximander

Anaximander of Miletus, described by ancient writers as pupil and companion of Thales, is said to have been born in the second or third year of the forty-second Olympiad, which is to say in 611 or 610 B.C. His interests, like those of his eminent teacher, pointed mainly toward natural science, geometry, and astronomy; his one book that is generally mentioned by later ancient writers bore the title *On Nature*. In his own day he was particularly noted for having constructed, for the first time in Greece, a sundial, a map of the known world, and a celestial globe containing a chart of the stars.

Whereas Thales had continued to suppose that the earth must rest on a support of some kind, Anaximander with a bold leap of scientific imagination declared that it hangs in the middle of the sky, its stability assured by the fact that it is equally distant from what lies on all sides. To transcend the idea of an absolute up-vs.-down and to think in terms of the sphere as a basic cosmological form, represents a conceptual revolution of high importance for science and philosophy alike.

Another conceptual innovation, no less revolutionary, is to be found in Anaximander's theory of how physical change occurs. The question has to do with the changing qualities of things:

with the transformations which we perceive in everyday experience from bright to dark, from warm to cool, from moist to dry, and the reverse. What happens to the bright gleam when a torch is extinguished? What has become of the wintry cold when summer heat takes its place? Today, with a different set of intellectual demands imposed by a conspicuously different kind of civilization, we do not ask the questions in such terms; they probably sound to us naive and childish. That is equivalent to saying that since we have found the questions to be unanswerable in their older qualitative form, we have learned to give our attention to related questions of another order—to questions of molecular activity, of light-wave frequency, and such. But Anaximander was still addressing himself to questions of a pre-scientific kind and was undertaking to answer them by a first attempt at scientific method. Qualities, considered in themselves as qualities, come into existence and vanish away. Overhead the sky is now sparkling blue, but the hue will presently vanish and its place will be taken by cloudy gray or nocturnal black. The music will vanish when the lyre's string stops quivering: the string remains, but where is the sound? Evidently then there must be, Anaximander reasoned, a kind of storehouse or reservoir of qualities, from which the qualities that now confront us have "separated off" and into which, when their contraries come forth in turn, they will go back; the process being repeated in reverse, and so on in never-ending cycles.

What causes this alternation of qualities which, whether rapid or slow, goes on ceaselessly in the natural world? Anaximander gives his answer in the one substantial quotation of his own words that has been preserved. Each actually existing thing, he says in effect, is a usurper; for during the time that it exists it "commits injustice" by preventing its opposite from existing; accordingly it must eventually pay the penalty by yielding up its overt existence and returning to its submerged place in the great qualitative reservoir. That, he adds, is how time is ordered. The order is telic and basically moral, like the rise and fall of nations, the life and

death of organisms, the perpetual and complex alternation between good and evil, success and defeat.

The ontological storehouse is called by Anaximander the *Apeiron*—that is, the Unlimited, or the Boundless. Probably the most nearly accurate translation would be “the Qualitatively Unlimited”; the adjective should be present in thought, even if it is not spoken. The word “infinite” has technical associations in modern speech, which may render it misleading for so early a mode of thought; the Greek word carries with it the secondary meaning of “indeterminate.” In any case the *Apeiron* must be conceived as having unlimited potentialities since it has to account for all the innumerable changes that make up the incessant ongoingness of the world. And being qualitatively unlimited it is logically superior to any and every kind of particularity.

FRAGMENT

1. *The Unlimited is the first-principle of things that are. It is that from which the coming-to-be [of things and qualities] takes place, and it is that into which they return when they perish, by moral necessity, giving satisfaction to one another and making reparation for their injustice, according to the order of time.* (1)

TESTIMONIA

FROM ARISTOTLE:

T 1. There is a second group [as distinguished from those who explain in terms of a single element] who declare that opposite qualities are contained in the One and emerge from it by separation, as for instance Anaximander. (*Physica* 187a 20)

T 2. The Unlimited encompasses and governs all things. On this basis the Unlimited is equivalent to the Divine, since it is deathless and indestructable, as Anaximander says and as most physicists who employ the term will agree. (*ibid.* 203b 6)

T 3. If there were one simple unlimited corporeal principle, it would have to be either one of the elements or, as some maintain, something distinct from them. There are indeed some who have adopted the latter view, arguing that if the Unlimited were something specific like air or water, the other elements would be annihilated by it. For the different elements have contrariety with one another: air is cold, water warm, and fire hot. If one of them were unlimited the others would have ceased to exist by now. Such thinkers conclude, therefore, that the Unlimited is distinct from specific things of all kinds and is their source. (*ibid.* 204b 21)

T 4. There are some among the ancients, Anaximander for instance, who say that the earth keeps its place because of its spatial indifference. Movement upward, downward, or sideways would be equally inappropriate, they argue, to what is situated at the very center equally distant from every extreme point; and therefore, since it is impossible to move in opposite directions at the same time, there is nothing for the earth to do but remain still. (*De Caelo* 295b 11)

FROM LATER GREEK SOURCES:

T 5. Anaximander, son of Praxiades, was a native of Miletus. He was the first inventor of the gnomon and, as Favorinus states in his *Miscellaneous History*, he set one up in Sparta for the purpose of determining the solstices and equinoxes. He also constructed instruments for marking the hours. He was the first to draw a map containing all the outlines of land and sea, and he constructed a global chart of the sky also. His ex-

position of his doctrine was made in the form of a summary which probably came into the hands of Apollodorus of Athens; that writer states in his *Chronology* that Anaximander was sixty-four years old in the second year of the fifty-eighth Olympiad [547-546 B.C.] and that he died soon after.

Anaximander held that while the parts undergo change the whole is unchangeable; that the earth, which is spherical, lies at the very center of things; and that the sun is as large as the earth and consists of purest fire. (Diogenes Laertius I. 1-2)

T 6. Anaximander of Miletus, son of Praxiades, successor and disciple of Thales, said that the "ultimate source and first principle" (*archê*) as well as the primary substance (*stoicheion*) is the [qualitatively] Unlimited; he was the first to apply this name to the ultimate source. He maintained that it is neither water nor any other of the so-called elements, but is of an altogether different nature from them, in that it is unlimited [i.e., is not limited to being just this or that]. From it there arose the universe and all the worlds within it. (Simplicius *Commentaria*, followed by the quotation of Fr. 1)

T 7. Evidently since he sees the four elements changing into one another he does not think it right to identify the underlying reality with any single one of them; it must be something distinct. Coming-to-be, he holds, does not involve any alteration of basic substance (*stoicheion*); it results from the separation of opposites which the eternal motion causes. (*ibid.*, preceded by the quotation of Fr. 1)

T 8. Anaximander's theory is that all change takes place by separation: that is to say, the opposites which are in the unlimited substratum are separated off from it. He was the first thinker to speak of the underlying reality as the "source and first principle" (*archê*). By the opposites he meant such [qualities] as hot and cold, dry and moist, etc. (*ibid.*)

T 9. Those who believed in an unlimited number of worlds, as Anaximander and his associates did, regarded them as coming-to-be and passing away throughout unlimited time. There are always some worlds in process of coming to be, others in process of passing away, they hold; such motion being eternal. (*ibid.*)

T 10. Anaximander, an associate of Thales, said that the earth is cylindrical in shape, its depth being one-third its breadth. And he said that at the beginning of the world there separated itself out from the eternal a something capable of producing heat and cold. It took the form of a flame, surrounding the air that surrounds the earth, like the bark of a tree. This sphere became broken into parts, each of which was a different circle; which is how the sun, moon and stars were generated. (Pseudo-Plutarch *Stromata*)

T 11. Anaximander held that the Unlimited is the first-principle and is eternal, without age, and that it encompasses all the worlds; moreover that it is in perpetual activity, and that out of its activity the worlds have originated.

He held that the earth is a body suspended in the sky, not resting on anything else but keeping its position because it is the same distance away from all [extremities]; that it is in the shape of a cylinder like a stone column with a curved top surface; and that it has two faces, the one of them being the surface on which we walk, the other opposite to it.

He further held that each of the heavenly bodies is a wheel of fire, surrounded by air, which separates it from the fire at the extremities. The air has little breathing holes somewhat like the holes in a flute, and through them the orbs are seen. When the hole of the [solar or lunar] orb gets clogged an eclipse occurs. The moon goes through its phases as its breathing hole gets successively opened and stopped up. The sun's wheel is

twenty-seven times as large as that of the moon, and is situated higher, while the wheel of the stars is lower. (Hippolytus *Refutatio* I. 6)

T 12. Anaximander held that the stars are hoops of fire, compressed by air, and that they breathe out flames from little openings in the air. He said furthermore that the sun is as large as the earth, and that the wheel which carries it around and from which it breathes itself forth is twenty-seven times the size of the earth's wheel. When the sun is eclipsed, he said, it is because its breathing hole has gotten stopped up. (Aëtius)

T 13. Some of the early philosophers of nature declared that the sea is a remnant of the primal moisture. The upper part of that original moisture, they explain, was evaporated by the sun; out of it there came-to-be the winds, as well as the revolutions of the sun and moon, the causes of their revolutions being the vapors and exhalations which exist there in abundance. A small part of the moisture got left in the hollow places on the earth's surface and became the sea, which goes on diminishing in quantity as it is evaporated by the sun, and will eventually be dried up altogether. Theophrastus says that Anaximander and Diogenes [of Apollonia] held this view. (Alexander of Aphrodisias *Commentaria*)

T 14. Animals, according to Anaximander, came-to-be from vapors raised by the sun; and man came into being from an animal other than himself, namely the fish, which in early times he resembled. (Hippolytus, *loc. cit.*)

T 15. He says, too, that in earliest times men were generated from various kinds of animals. For whereas the other animals can quickly get food for themselves, the human infant requires careful feeding for a long while after birth; so that if he had originated suddenly he could not have preserved his own existence. (Pseudo-Plutarch *Stromata*)

T 16. Anaximander says that men were originally generated in the bodies of fishes; that after birth they were reared in the way that sharks are reared, until they became capable of protecting themselves; and that eventually they were cast ashore, so that they had to learn to live on dry land. (Plutarch *Moralia* 730E)

T 17. The first animals, according to Anaximander, were generated in moisture, and were covered with a prickly skin which, as they grew older, dried and broke off, whereupon they continued to live for a while without it. (Aëtius)

FROM LATIN SOURCES:

T 18. It was the opinion of Anaximander that the gods come into existence and perish, rising and setting at long intervals; and that there are countless worlds. (Cicero *De Natura Deorum* I. 25)

T 19. Thales was succeeded by his pupil Anaximander, who held a different opinion concerning the nature of things, believing not like Thales that everything arose out of water as the only first-beginning of things, but rather that each thing arises from its own appropriate first-beginning. Such first-principles he held to be infinite in number. He believed that the worlds, too, are infinite in number, and that they contain everything that would grow upon them by nature. He held further that those worlds are subject to perpetual cycles of alternating dissolution and regeneration, each of them lasting for a longer or shorter time, according to the nature of the case. Nor did he, any more than Thales, attribute the cause of all this ceaseless activity to a divine mind. (St. Augustine *Civitas Dei* VIII. 2)

iii. Anaximenes

The last of the three known Milesian philosophers, Anaximenes, is generally regarded as inferior to his two predecessors in philosophical stature. In going back to Thales' acceptance of a single element as the first-principle of physical nature he appears to have lacked both Thales' originality and Anaximander's abstractive acuteness. His main importance, however, lies not in his ontology but in his cosmology—not in his choice of air as the prototype of reality but in his dawning conception, so significant for later scientific thought and method, of serial order.

Anaximenes appears to have been the first to arrange the four elements explicitly in terms of what Heraclitus was describing as the upward and downward ways. Moreover he took a step toward overcoming the qualitative gaps between one element and the next, by indicating certain familiar kinds of matter as their intermediaries. Air, when it condenses, becomes successively wind, cloud, water, mud, earth, and finally stone; in rarefying it becomes aether (at once the buoyant and sparkling sky which we see above us and the inner brightness which may shoot through our minds and psyches in moments of inspiration and joy), then pure fire. The incipient notion of continuity and serial order which this otherwise primitive theory expresses must stand as Anaximenes' one real contribution to the development of scientific and philosophical thought.

FRAGMENT

1. *As our souls, being air, hold us together, so breath and air embrace the entire universe.* (2)

TESTIMONIA

FROM ARISTOTLE:

T 1. Anaximenes and Diogenes [of Apollonia] treat air as prior to water and as the most fundamental of all simple bodies. (*Metaphysica* 984a 5)

T 2. Anaximenes, Anaxagoras, and Democritus explain the immobility of the earth by its flatness, which lets the earth cover the air beneath like a lid without cutting it. The flatness of which they are speaking, as responsible for earth's immobility, is the flatness on the under side by which the earth is in contact with the air on which it rests. This air, having no room in which to change its position, thickens and becomes a mass pressing against the earth, like the water in a clepsydra. (*De Caelo* 294b 14)

T 3. Anaximenes says that when the earth changes from moist to dry or the reverse it cracks open, causing earthquakes and the toppling of hills. That is why earthquakes occur both in droughts and during rainy seasons. (*Meteorologica* 365b 7)

FROM LATER GREEK SOURCES:

T 4. Anaximenes, son of Eurystratus, a native of Miletus, was a disciple of Anaximander. He held that the first-principle is air, and that this is the unlimited. He denied that the stars pass under the earth, explaining that they travel around its periphery. He wrote in the Ionian dialect, in a plain style without affectation. Apollodorus says that he lived at the time of the taking of Sardis and died in the sixty-third Olympiad [528-525 B.C.]. (Diogenes Laertius II. 3)

T 5. He says that all things, even gods and daemons, come-to-be as products of air. (Hippolytus *Refutatio* I. 7)

T 6. Anaximenes of Miletus, son of Eurystratus, was an associate of Anaximander and agreed with him that the essence of things is one and unlimited; on the other hand he declared that it is not indeterminate but that it has the specific nature of air, which differs in rarity and density according to the kind of things into which it forms itself. Rarefied it becomes fire; condensed it becomes wind, then cloud, and as the condensation increases it becomes successively water, earth, and then stones. Everything else gets made out of these. (Simplicius *Commentaria*)

T 7. Or should we, as Anaximenes of old maintained, accept neither hot nor cold as real things but regard them rather as epiphenomena and temporary states which occur in any material thing when it undergoes certain inner alterations? For he said that cold is a thing's contraction and condensation, and that heat is its distension and rarefaction. (Plutarch *Moralia* 947F)

T 8. He held that when the air is of most even consistency it is imperceptible to the eye; it becomes visible as a result of cold or heat or moisture or being stirred up. It is always in motion, for if it were not there would be no changes. (Hippolytus, *loc. cit.*)

T 9. Motion, according to Anaximenes, has existed forever. He adds that the earth came-to-be from a compression of the air; that it is very broad and rests on air. Sun, moon, and the other stars came-to-be as products of the earth. (Pseudo-Plutarch *Stromata*)

T 10. He says, too, that the stars are made of exhalations which arose from the earth and became attenuated into fire

as they ascended to the sky. * That the stars do not move under the earth at night, as others had supposed, but travel around its outer edge, as a cap is turned around on the head.

* That the rainbow is produced by the sun's rays falling on compressed air. (Hippolytus, *loc. cit.*)

T 11. Anaximenes held that the world is perishable. * That it is shaped like the top of a table. * That the sky is what revolves at greatest distance from the earth. * That the stars are fixed like nails in the crystalline sky. * That the stars shine by the light from the sun. * That the stars revolve because they are pushed by condensed air. (Aëtius)

FROM LATIN SOURCES:

T 12. After Anaximander his disciple Anaximenes posited infinite air [as the first-principle] but held that the things which originate from it are finite—earth, water, fire, and out of them everything else. (Cicero *Academica* II. 37)

T 13. Anaximenes said that air is a god, that it is infinite and always in motion. As if air could be a god, or as if it could be an exception to the rule that everything must eventually perish! (Cicero *De Natura Deorum* I. 26)

T 14. The successor to Anaximander was his disciple Anaximenes, who ascribed the causes of everything to infinite air. He neither denied nor ignored the existence of the gods; but instead of believing that the air had been created by them, he held on the contrary that they themselves were products of the air. (St. Augustine *Civitas Dei* VIII. 2)

3

Heraclitus

HERACLITUS OF EPHEBUS is reported to have flourished in the sixty-ninth Olympiad, 504 to 500 B.C., which is to say thirty-one years or more before the birth of Socrates. The city of Ephesus lay about thirty miles north of Miletus, the geographical scene of the preceding chapter. The patrician family into which Heraclitus was born held some kind of hereditary office, at once political and religious, which descended to the eldest son of each generation and required him among other things to supervise the city's official religious sacrifices. The task was not congenial to the philosopher, so he resigned in favor of a younger brother and went his own way. The banishment of his friend Hermadorus from Ephesus by the political party currently in power (we do not know on what charge, but see Frs. 95, 96) confirmed and increased Heraclitus' sharp opposition to the rule of "the many." Most of the rest of what Diogenes Laertius tells about his later years and the manner of his death is of doubtful credibility, except for the one plain fact that he died at the age of sixty, which would probably have been roughly between 490 and 480 B.C.

The traditional view of Heraclitus expressed by later ancient writers is that he was a pessimist and a snob, and that the latter trait caused him to write in deliberately obscure language in order

to restrict his readers to such as were worthy and willing to make the required effort. Both of these charges need careful qualification.

Pessimism has more than one meaning. As a colloquial ascription it may describe a mood, or it may mean something like a refusal to indulge in wishful thinking. Philosophical pessimism, on the other hand, (as illustrated for instance by Schopenhauer) is centered in the doctrine that there is more evil in the world than good, or that the evil is somehow more fundamental than the good; and to this one-sided view of reality Heraclitus, on grounds of logic and taste alike, did not subscribe. His philosophy, ever dynamically serene, asserts that good and evil are two sides of the same coin, interpenetrating aspects of the one manifold and ever-changing reality (cf. Frs. 106, 108, etc.), and that the wise man looks at the ambivalence unflinchingly, seeing the bright and the dark, the ugly and the fair, with calm freedom of mind.

The accusation of deliberate concealment ("He was fond of concealing his metaphysics in the language of the Mysteries," Clement of Alexandria says of him) stems from a misunderstanding of his temperament and his style alike. His aristocratic pride made him indifferent or even hostile to the masses, granted; but for that very reason he would not have allowed a thought of them to alter the things he wished to say or his manner of saying them. Besides, whatever may have been the case with those parts of his writings which have been lost, a sensitive and reflective reader of the Fragments, even in translation, is not so likely to find them obscure as to find them terse, challenging, and stimulating to the imagination. New semantic tones, amounting sometimes to new dimensions of meaning, may emerge from reflecting on certain groups of the Fragments in interrelation. Try the experiment, for instance, of considering as a group Frs. 2, 11, 15, 16, last clause of 43, 58, 117, 120, all dealing somehow diversely with the problem of knowledge; or again Frs. 17, 18, 111, 116, 121; or again Frs. 19, 65, 67. Other combinations an alert reader will wish to discover and test for himself. Heraclitus' utterances, both singly

and in groups, are characteristically marked by paradox and plurisignation, and in that character lies their special appeal to an active and mature mind. For there come stages in one's intellectual development when reality as actually encountered seems too dark, too riddling, ambiguous and irreducibly many-sided to be expressible in ordinary plain terms, and sometimes a well chosen paradox comes closer to representing our experienced view of the world than any logical tidiness can accomplish. Each reader must of course judge for himself, comparing Heraclitus' brief semantic vignettes with the testimonies of his own awareness, memory, and imagination.

The most central paradox, which provides the fulcrum on which Heraclitus' philosophy revolves, comes into focus when we compare the strong valuation expressed in Fr. 46 with the indifference of Fr. 108. Viewed with logical strictness the two Fragments clash; for how can the upward way be better than the downward if it is true that the two ways are "one and the same"? The paradox is a fundamental one, because the two opposing sides of it both represent indispensable truth-claims when a person reflects on his relation to the world seriously and without clichés. On the one hand we cannot live without some affirmation of value, and for Heraclitus the foremost value consists in the mental clarity and self-honesty represented by dry light as against the messy confusion of the downward way into sodden moisture, mud, and at length into stony immobility. The large half-truth of that valuation becomes evident when the direction of one's thought, one's governing perspective, is set by an initial affirmation of one's value as an individual endowed with the power of rational choice, which involves the ethical power of distinguishing between better and worse. But then comes the paradox. The same power of mind which enables us to distinguish between good and evil and so to make (occasionally) rational choices, proposes also another distinction, comprehensive and final—the metaphysical distinction between the temporal and the eternal. *Sub specie aeternitatis*

man's ethical judgements, his strivings toward clarity and away from confusion, look very small indeed. Will it be of any consequence a million years from now that somewhere in our era a dedicated individual chose to accept poverty and pain rather than compromise his ideals and convictions, whereas someone else was content to drift along with the push of circumstance? "Even sleepers are workers and collaborators" without knowing it (Fr. 124): that is to say, they are an inevitable part of the universe no less than the awakened ones. And yet Fragments 14, 15, and 16 show plainly enough where Heraclitus' allegiance lies—not, certainly, on the side of those who sleep. Hence the inevitability of the paradox: neither side of it can be abandoned, because each side expresses an inescapable truth, and the two opposed insights cannot be fitted into a neat conceptual package without dismissing or distorting one or the other of them. The paradox is thus ontological; and that is where the distinctive character of Heraclitus' thought most eminently shows itself—in his unusual sensitivity to, and his arresting and varied expression of, the ontological paradox.

There may well be a connection, deeper than appears at first glance, between Heraclitus' acceptance of ontological paradox and the aristocratic pride which shows itself especially in the Fragments grouped under "Men among Men." For the aristocratism which Heraclitus' social aphorisms express is something sturdier and worthier than a mere attitude of disdain toward those whose souls are moist; the attitude is shaped by what Nietzsche has called a "passion of distance." By this phrase, which can serve as one of the main keys to the Nietzschean philosophy, Nietzsche means to include at once the "Dionysian" passionate yet self-controlled affirmation of one's own selfhood with its peculiar values and the "Apollinian" power of self-overcoming, of utter serenity in the midst of battle. The same double attitude marks Heraclitus—the pride of self-affirmation standing in balance with the wisdom of self-transcendence. Now every genuine and deep

attitude (as opposed to attitudes that are imitative or self-advertised) creates its own epistemic, its own way of looking at the problems of being and value. The ambivalent attitude which gives life and shape to the aristocratic pride of the Heraclitean-Nietzschean sort of man generates a distinctive epistemic for him, a rooted perspective whereby to see and partly to understand the elements of experience, even the most hostile, without flinching. In that aristocratic outlook the ontological paradox shows and affirms itself. Aristocratic pride is thus the subjective correlative of the essential Heraclitean paradox which affirms with equal conviction the superiority of the upward way and the ultimate indifference of the ever-flowing universe to all human values of any and every kind.

But now let Heraclitus speak for himself; for no résumé or exposition can do him anything like justice. Seldom has a philosopher fashioned concepts of such power and flexibility combined. On first reading (for he needs to be read repeatedly, with meditation and excursion sandwiched between) let his terse remarks act on you as they will; some of them will speak more meaningfully than others. Then take the favored few, and with the memory of them in mind, including their meaning and tone and the suggestions they stir, read the body of Fragments a second time, and some that were at first obscure will now perhaps show gleams of intelligibility. By such oblique procedures must Heraclitus be approached, rather than by expository directness; for it is as true of his own utterances as he holds it to be of nature, that truth resides not in surface connections but in hidden depths.

FRAGMENTS*

THE WAY OF INQUIRY

1. *Although this Logos is eternally valid, yet men are unable to understand it—not only before hearing it, but even after they have heard it for the first time. That is to say, although all things come to pass in accordance with this Logos, men seem to be quite without any experience of it—at least if they are judged in the light of such words and deeds as I am here setting forth. My own method is to distinguish each thing according to its nature, and to specify how it behaves; other men, on the contrary, are as neglectful of what they do when awake as they are when asleep.* (1)

2. *We should let ourselves be guided by what is common to all. Yet, although the Logos is common to all, most men live as if each of them had a private intelligence of his own.* (2)

3. *Men who love wisdom should acquaint themselves with a great many particulars.* (35)

4. *Seekers after gold dig up much earth and find little.* (22)

5. *Let us not make arbitrary conjectures about the greatest matters.* (47)

6. *Much learning does not teach understanding, otherwise it would have taught Hesiod and Pythagoras, Xenophanes and Hecataeus.* (40)

* The present grouping and numbering of the Fragments, as well as the subtitles and most of the translations, are taken by permission of Atheneum Publishers from their paperback edition of the present editor's *Heraclitus*.

7. *Of those whose discourses I have heard there is not one who attains to the realization that wisdom stands apart from all else.* (108)
8. *I have searched myself.* (101)
9. *It pertains to all men to know themselves and to be temperate.* (116)
10. *To be temperate is the greatest virtue. Wisdom consists in speaking and acting the truth, giving heed to the nature of things.* (112)
11. *The things of which there can be sight, hearing, and learning—these are what I especially prize.* (55)
12. *Eyes are more accurate witnesses than ears.* (101a)
13. *Eyes and ears are bad witnesses to men having barbarian souls.* (107)
14. *One should not act or speak as if he were asleep.* (73)
15. *The waking have one world in common, whereas each sleeper turns away to a private world of his own.* (89)
16. *Whatever we see when awake is death; when asleep, dreams.* (21)
17. *Nature loves to hide.* (123)
18. *The lord whose oracle is at Delphi neither speaks nor conceals, but gives signs.* (93)
19. *Unless you expect the unexpected you will never find [truth], for it is hard to discover and hard to attain.* (18)

UNIVERSAL FLUX

20. *Everything flows and nothing abides; everything gives way and nothing stays fixed.* (—)

21. *You cannot step twice into the same river, for other waters and yet others go ever flowing on.* (91, 12)
22. *Cool things become warm, the warm grows cool; the moist dries, the parched becomes moist.* (126)
23. *It is in changing that things find repose.* (84a)
24. *Time is a child moving counters in a game; the royal power is a child's.* (52)
25. *War is both father and king of all; some he has shown forth as gods and others as men, some he has made slaves and others free.* (53)
26. *It should be understood that war is the common condition, that strife is justice, and that all things come to pass through the compulsion of strife.* (80)
27. *Homer was wrong in saying, "Would that strife might perish from amongst gods and men." For if that were to occur, then all things would cease to exist.* (—)

PROCESSES OF NATURE

28. *There is exchange of all things for fire and of fire for all things, as there is of wares for gold and of gold for wares.* (90)
29. *This universe, which is the same for all, has not been made by any god or man, but it always has been, is, and will be—an ever-living fire, kindling itself by regular measures and going out by regular measures.* (30)
30. *[The phases of fire are] craving and satiety.* (65)
31. *It throws apart and then brings together again; it advances and retires.* (91)

32. *The transformations of fire: first, sea; and of sea, half becomes earth and half the lightning-flash.* (31)

33. *When earth has melted into sea, the resultant amount is the same as there had been before sea became hardened into earth.* (31, ctd.)

34. *Fire lives in the death of earth, air in the death of fire, water in the death of air, and earth in the death of water.* (76)

35. *The thunderbolt pilots all things.* (64)

36. *The sun is new each day.* (6)

37. *The sun is the breadth of a man's foot.* (3)

38. *If there were no sun, the other stars would not suffice to prevent its being night.* (99)

39. *The boundary line of evening and morning is the Bear; and opposite the Bear is the boundary of bright Zeus.* (120)

40. *The fairest universe is but a heap of rubbish piled up at random.* (124)

41. *Every beast is driven to pasture by a blow.* (11)

HUMAN SOUL

42. *You could not discover the limits of soul, even if you traveled by every path in order to do so; such is the depth of its meaning.* (45)

43. *Soul is the vaporization out of which everything else is composed; moreover it is the least corporeal of things and is in ceaseless flux, for the moving world can only be known by what is in motion.* (—)

44. *Souls are vaporized from what is moist.* (12)

45. *Soul has its own inner law of growth.* (115)

46. *A dry soul is wisest and best.* [Alternative version:] *The best and wisest soul is a dry beam of light.* (118)

47. *Souls take pleasure in becoming moist.* (77)

48. *A drunken man has to be led by a boy, whom he follows stumbling and not knowing whither he goes, for his soul is moist.* (117)

49. *It is death to souls to become water, and it is death to water to become earth. Conversely, water comes into existence out of earth, and souls out of water.* (36)

50. *Even the sacred barley drink separates when it is not stirred.* (125)

51. *It is hard to fight against impulsive desire; whatever it wants it will buy at the cost of the soul.* (85)

52. *It would not be better if things happened to men just as they wish.* (110)

53. *Although it is better to hide our ignorance, this is hard to do when we relax over wine.* (95)

54. *A foolish man is a-flutter at every word.* (87)

55. *Fools, although they hear, are like the deaf: to them the adage applies that when present they are absent.* (34)

56. *Bigotry is the sacred disease.* (46)

57. *Most people do not take heed of the things they encounter, nor do they grasp them even when they have learned about them, although they think they do.* (17)

58. *If all existing things were smoke, it is by smell that we would distinguish them.* (7)

59. *In Hades souls perceive by smelling.* (98)

60. *Corpses are more fit to be thrown out than dung.* (96)

IN RELIGIOUS PERSPECTIVE

61. *Human nature has no real understanding; only the divine nature has it.* (78)
62. *Man is not rational; there is intelligence only in what encompasses him.* (—)
63. *What is divine escapes men's notice because of their incredulity.* (86)
64. *Although intimately connected with the Logos, men keep setting themselves against it.* (72)
65. *As in the nighttime a man kindles for himself (haptetai) a light, so when a living man lies down in death with his vision extinguished he attaches himself (haptetai) to the state of death; even as one who has been awake lies down with his vision extinguished and attaches himself to the state of sleep.* (26)
66. *Immortals become mortals, mortals become immortals; they live in each other's death and die in each other's life.* (62)
67. *There await men after death such things as they neither expect nor have any conception of.* (27)
68. *They arise into wakefulness and become guardians of the living and the dead.* (63)
69. *A man's character is his guardian divinity.* (119)
70. *Greater dooms win greater destinies.* (25)
71. *Justice will overtake fabricators of lies and false witnessses.* (28)
72. *Fire in its advance will catch all things by surprise and judge them.* (66)
73. *How can anyone hide from that which never sets?* (16)

74. [When visitors unexpectedly found Heraclitus warming himself by the cooking fire:] *Here, too, are gods.* (—)
75. *They pray to images, much as if they were to talk to houses; for they do not know what gods and heroes are.* (5)
76. *Night-walkers, magicians, bacchantes, revellers, and participants in the mysteries! What are regarded as mysteries among men are unholy rituals.* (14)
77. *Their processions and their phallic hymns would be disgraceful exhibitions were it not that they are done in honor of Dionysus. But Dionysus, in whose honor they rave and hold revells, is the same as Hades.* (15)
78. *When defiled they purify themselves with blood, as though one who had stepped into filth were to wash himself with filth. If any of his fellowmen should perceive him acting in such a way, they would regard him as mad.* (5, ctd.)
79. *The Sibyl with raving mouth utters solemn, unadorned, unlovely words, but she reaches out over a thousand years with her voice because of the god within her.* (92)

MAN AMONG MEN

80. *Thinking is common to all.* (113)
81. *Men should speak with rational awareness and thereby hold on strongly to that which is shared in common—as a city holds on to its law, and even more strongly. For all human laws are nourished by the one divine law, which prevails as far as it wishes, suffices for all things, and yet is something more than they.* (114)

82. *The people should fight for their law as for their city wall.* (44)
83. *Law involves obeying the counsel of one.* (33)
84. *To me one man is worth ten thousand if he is first-rate.* (49)
85. *The best of men choose one thing in preference to all else, immortal glory in preference to mortal good; whereas the masses simply glut themselves like cattle.* (29)
86. *Gods and men honor those slain in battle.* (24)
87. *Even those who are most in repute know and maintain only what is reputed.* (28)
88. *To extinguish hybris is more needful than to extinguish a fire.* (43)
89. *It is weariness to keep toiling at the same things so that one becomes ruled by them.* (84b)
90. *Dogs bark at a person whom they do not know.* (97)
91. *What sort of mind or intelligence have they? They believe popular folktales and follow the crowd as their teachers, ignoring the adage that the many are bad, the good are few.* (104)
92. *Men are deceived in their knowledge of things that are manifest, even as Homer was who was the wisest of all the Greeks. For he was even deceived by boys killing lice when they said to him: "What we have seen and grasped, these we leave behind; whereas what we have not seen and grasped, these we carry away."* (56)
93. *Homer deserves to be thrown out of the contests and flogged, and Archilochus too.* (42)
94. *Hesiod distinguishes good days and evil days, not knowing that every day is like every other.* (106)

95. *The Ephesians had better go hang themselves, every man of them, and leave their city to be governed by youngsters, for they have banished Hermadorus, the finest man among them, declaring: "Let us not have anyone among us who excels the rest; if there should be such a one, let him go and live elsewhere."* (121)
96. *May you have plenty of wealth, you men of Ephesus, in order that you may be punished for your evil ways!* (125a)
97. *After birth men have the wish to live and to accept their dooms; then they leave behind them children to become dooms in their turn.* (20)

RELATIVITY AND PARADOX

98. *Opposition brings concord. Out of discord comes the fairest harmony.* (8)
99. *It is by disease that health is pleasant, by evil that good is pleasant, by hunger satiety, by weariness rest.* (111)
100. *Men would not have known the name of justice if these things had not occurred.* (23)
101. *Sea water is at once very pure and very foul: it is drinkable and healthful for fishes, but undrinkable and deadly for men.* (61)
102. *Donkeys would prefer hay to gold.* (9)
103. *Pigs wash in mud, and domestic fowls in dust or ashes.* (37)
104. *The handsomest ape is ugly compared with human-kind; the wisest man appears as an ape when compared with a god—in wisdom, in beauty, and in all other ways.* (82, 83)

105. *A man is regarded as childish by a spirit (daemon), just as a boy is by a man. (79)*

106. *To God all things are beautiful, good, and right; men, on the other hand, deem some things right and others wrong. (102)*

107. *Doctors cut, burn, and torture the sick, and then demand of them an undeserved fee for such services. (58)*

108. *The way up and the way down are one and the same. (60)*

109. *In the circumference of the circle the beginning and the end are common. (103)*

110. *Into the same rivers we step and do not step. (49a)*

111. *For wool-carders the straight and the winding way are one and the same. (59)*

112. *The bones connected by joints are at once a unitary whole and not a unitary whole. To be in agreement is to differ; the concordant is the discordant. From out of all the many particulars comes oneness, and out of oneness come all the many particulars. (10)*

113. *It is one and the same thing to be living and dead, awake or asleep, young or old. The former aspect in each case becomes the latter, and the latter becomes the former, by sudden unexpected reversal. (88)*

114. *Hesiod, whom so many accept as their wise teacher, did not even understand the nature of day and night; for they are one. (57)*

115. *The name of the bow is life, but its work is death. (48)*

THE HIDDEN HARMONY

116. *The hidden harmony is better than the obvious. (54)*

117. *People do not understand how that which is at variance with itself agrees with itself. There is a harmony in the bending back, as in the cases of the bow and the lyre. (51)*

118. *Listening not to me but to the Logos, it is wise to acknowledge that all things are one. (50)*

119. *Wisdom is one and unique; it is unwilling and yet willing to be called by the name of Zeus. (32)*

120. *Wisdom is one—to know the intelligence by which all things are steered through all things. (41)*

121. *God is day and night, winter and summer, war and peace, satiety and want. But he undergoes transformations, just as * * * * * when mixed with a fragrance is named according to the particular aroma which it gives off. (67)*

122. *The sun will not overstep his measures; if he were to do so, the Erinyes, handmaids of justice, would seek him out [for punishment]. (94)*

123. *All things come in their due season. (100)*

124. *Even sleepers are workers and collaborators in what goes on in the universe. (75)*

TESTIMONIA

FROM PLATO:

T 1. There are those who incline to the opinion of Heraclitus that all things move and nothing abides. . . . Heraclitus

says, you know, that all things flow and nothing abides, and he likens the things that exist to the current of a river, saying that one cannot step into the same river twice. (*Cratylus* 401E, 402A)

T 2. There are wise men who tell us that all things are continually flowing both upwards and downwards. (*Philebus* 43A)

FROM ARISTOTLE:

T 3. All things are in motion, as Heraclitus says. (*Topica* 104b 21)

T 4. Hippasus of Metapontum and Heraclitus of Ephesus declare that fire is the first-principle. (*Metaphysica* 984a 7)

T 5. Heraclitus says that all things at some time become fire. (*Physica* 205a 3)

T 6. Some, such as Empedocles of Akragas and Heraclitus of Ephesus, say that there is alternation in the destructive process, which goes on now in this way, now in that, continuing without end. (*De Caelo* 279b 16)

T 7. It is logically impossible to suppose that the same thing is and is not, as some think Heraclitus said. (*Metaphysica* 1005b 24)

T 8. Supporters of the theory of Forms were led to it by means of Heraclitus' argument concerning truth, in which he holds that whatever is perceived by the senses is in a state of flux. [Accepting that much of his argument these philosophers go on to argue] that if there is to be science or knowledge of anything there must be other entities in nature besides those perceived by the senses, inasmuch as there can be no science of what is in a state of flux. (*ibid.* 1078b 12)

T 9. Whereas some think of the like as a friend and the opposite as an enemy, . . . others think of opposites as friends, and Heraclitus blames the poet who wrote, "Would that strife might perish from among gods and men," arguing that there could be no harmony without both low and high notes, and no living things without the pair of opposites male and female. (*Ethica Eudemia* 125a 20, 25)

T 10. To punctuate Heraclitus is difficult because it is [often] unclear whether a given word should go with what follows or with what precedes it. When, for instance, at the beginning of his treatise he says, "Although this Logos exists always men are unaware [of it]," it is unclear whether "always" belongs with "exists" or with "are unaware." (*Rhetorikê* 1407b 13)

FROM LATER GREEK SOURCES:

T 11. Heraclitus, son of Blosson, was a native of Ephesus and flourished in the sixty-ninth Olympiad [504-500 B.C.]. He was lofty-minded to an unusual degree, but haughty and overbearing. When the Ephesians requested him to draw up a set of laws for the city, he refused because he considered the city's constitution to be hopelessly bad. He would retire to the temple of Artemis where he would play knuckle-bones with boys. To the Ephesians who stood around watching he burst out: "Why do you look surprised, you scoundrels? Isn't this a better pastime than taking part in your politics?" Eventually, becoming a hater of mankind, he retired into the mountains and stayed there nourishing himself on grass and roots—a mode of life that made him ill of dropsy. He died at the age of sixty.

He was nobody's pupil; he said that he sought to know himself and that he learned everything by his own efforts. Some declare, however, according to Sotion, that he had been a pupil of Xenophanes. Antisthenes, in his *Succession of the Philoso-*

phers, speaks of Heraclitus' magnanimity in renouncing his claim to the hereditary governorship [of Ephesus] in favor of his brother.

The book of which he was author is called *On Nature*, a continuous treatise divided into three parts—one on the universe, one on politics, and one on theology. Theophrastus thinks it is because of his melancholy that some parts of the work are unfinished while other parts are queerly put together. He dedicated the book in the temple of Artemis. Some say that he wrote it obscurely on purpose, in order to ensure that those who might read it would be worthy and that none should undertake it lightly. Sometimes, however, he writes with penetrating clarity, so that even the dullest can grasp his meaning and feel themselves stirred and challenged by it. For pithy profundity his exposition has no equal. (Diogenes Laertius, IX. 1, 5-7)

T 12. Heraclitus' main tenets are these. Fire is the basic element. All things are interchangeable with fire, and they come-to-be by rarefaction and condensation, but how this occurs he has not clearly explained. All things come-to-be by conflict between opposites, and the universe in its entirety flows like a river. The All is limited, constituting a single world, which is alternately born from fire and dissolved into fire, and the succession of this endless cycle of alternating periods is fixed by Destiny. That phase of the cycle which involves a coming-to-be of things is called war and strife, while that which involves destruction by fire is called concord and peace. He refers to change as the road up-down, by which the cosmos comes-to-be.

Fire by compression becomes moist, by further compression it turns into water, and then the water as it stiffens is transformed into stone. This process he calls the downward road. Then the reverse process takes place, starting with earth, which changes into water, and so on through the other phases [of the

continuous process of liquefying, evaporating, and finally bursting into flame]. This process is the upward road.

Most of the phenomena [along the upward way] he explains by reference to exhalations from the sea. But there are exhalations from the earth also; those from the sea are bright and pure, while those from the earth are dark. Fire is nourished and increased by the bright exhalations, moisture by the dark ones.

Although he does not explain clearly the nature of the surrounding medium, he does say that it contains bowls with their hollow side turned toward us, and that bright exhalations collect in these concavities, where they are vaporized into flame. The resultant phenomena are the stars. The sun's flame is the brightest and hottest of these; the other stars are farther away from the earth, which is why we receive less light and heat from them. The moon is nearer to the earth, but it has to travel in a region that is impure. The sun, on the other hand, moves in a region that is transparent and unmixed, which is why it gives us more heat and light. Eclipses of the sun and moon occur when the bowls are turned upwards. The monthly phases of the moon take place as its bowl is gradually overturned. Day and night, months, and seasons of the year are due to different exhalations. Bright exhalations, when they have been vaporized into flame in the hollow orb of the sun, produce day; when dark exhalations win mastery there is night. The former cause an increase of warmth and summer; the latter, an increase of moisture and winter. His explanations of other natural phenomena are along much the same lines. (Diogenes Laertius, IX. 8-11)

T 13. To cite the testimony of poets and mythographers regarding matters of which we are ignorant is to take, as Heraclitus says, untrustworthy and disputable claims for facts. (Polybius, *Histories* IV. xl. 3)

T 14. When I consider the propositions "Socrates is healthy" and "Socrates is sick," I must necessarily confine my acceptance to a single one only. . . . Those philosophers think otherwise, however, who posit pairs of opposites as the first-principles—notably the Heracliteans, who argue that if one term of an opposition were to cease-to-be all things would dissolve and perish. (Simplicius *Commentaria*)

T 15. Hippasus of Metapontum and Heraclitus of Ephesus declare that reality is one and in motion and limited. Taking fire as the first-principle they explain all things as derived from fire and resolved again into fire through the complementary processes of condensation and rarefaction; for fire, they assert, is the one essential nature that underlies appearances. Whatever occurs, Heraclitus declares, is a transformation of fire; and in what occurs he finds a certain order and definite time, determined by fated necessity. (Theophrastus, *Physical Opinions*)

T 16. Heraclitus and Hippasus say that the first-principle of all things is fire, and that all things both come-to-be from fire and complete their existence by turning into fire again. As the fire gets extinguished things take shape and arrange themselves into an orderly universe. First by compression the dense earth is formed; then earth, being relaxed by fire, transforms itself into water; which in turn, by rarefying, becomes air. At another time the universe and all the bodies that compose it are consumed by fire in the Conflagration. (Aëtius)

T 17. Heraclitus says that the periodic fire is eternal, and that the Logos, which is Destiny, is the craftsman who has produced all things. (*ibid.*)

T 18. Heraclitus says that war and Zeus are the same thing. (Chrysippus)

T 19. In designating fire as the basic element of all other things Heraclitus does not identify fire with the pyramid. (Simplicius *Commentaria*)

T 20. Whereas Parmenides, Empedocles, and Plato explain sense-perception by similarity [between sense-object and sense-organ], Anaxagoras and Heraclitus explain it in terms of contrast. . . . On the assumption that sense-perception takes place as a result of some alteration they argue that the like is not affected by the like but only by what is contrasted and thus opposite to it. On this reasoning their theory of knowledge is based. Further evidence, they think, is given by the phenomenon of touch, inasmuch as we get no sensation when the heat or cold of what touches us is the same as that of our flesh. (Theophrastus *De Sensu* I. 2)

T 21. From the fact that honey appears bitter to some and sweet to others Democritus declared that it is neither sweet nor bitter, whereas Heraclitus said it is both. (Sextus Empiricus, *Outline of Pyrrhonism* II. 63)

T 22. Whereas the sceptics say that things appear to have contradictory qualities, Heraclitus says that they really do have them. (*ibid.* I. 210)

T 23. As for the first-principle and basic element of everything . . . Heraclitus, according to some, declared it to be air. (Sextus Empiricus, *Against the Physicists* I. 360)

T 24. In distinguishing the two instruments by which men seek to obtain a knowledge of truth—namely, sense and reason—Heraclitus holds that the findings of sense-experience are untrustworthy, and he sets up reason as the criterion. He expresses his criticisms of sense-experience in the statement [Fr. 13]; by which he means to say that to trust the non-rational appearances of sense is to be a barbarian soul. He declares that reason (*logos*) is the judge of truth—not just any kind of

reason, but such as is sharable and divine. The meaning of this must be briefly explained.

One of his favorite tenets as a "philosopher of nature" (*physikos*) is that what encompasses us is rational and intelligent. . . . According to Heraclitus it is by inbreathing the divine Reason that we become intelligent. During sleep the pores of our senses are closed, so that the mind in us is shut off from what is akin to it in the surrounding world, and its connection with other things is then preserved only at the vegetative level through the pores of the skin. Being thus cut off it loses its formative power of memory. But when we wake up again it peers out through the pores of the senses, which serve as little windows, and by thus entering into relation with what surrounds us it regains its power of reason. Just as coals when brought close to the fire undergo a change which renders them incandescent, while if moved away they become extinguished; so likewise that portion of the surrounding milieu which is making a sojourn in the body, in losing contact with its source, therein loses its rational character by the separation, inasmuch as its only communion with the outer universe now takes place through the body's very numerous pores.

Heraclitus asserts, then, that the sharable and divine Reason (*logos*), by participating in which we become rational, is the criterion of truth. Hence that which appears to all men as a shared experience is trustworthy, inasmuch as it is perceived by the sharable and divine Reason; but what affects only a single individual is, on the contrary, untrustworthy. Thus in beginning his discourse on Nature the writer of whom I am speaking points, in effect, to the enveloping reality when he declares [Fr. 1]. Then having in these words expressly stated that we do and think everything through participation in the divine Reason, he goes on to say after a short space [Fr. 2]. This is nothing else but an explanation of how things are ordered in the All. Therefore, in so far as we share in the memory

of It we say what is true, but when we utter our own private thoughts we speak false.

In this passage and in these words, then, he most explicitly declares that the sharable Reason is the criterion: i.e., that appearances are trustworthy when they are shared in common and are judged by the sharable Reason, whereas appearances which are private to a single individual are false. (Sextus Empiricus, *Against the Logicians* I. 126-134)

T 25. Heraclitus says that both life and death exist in our state of life and in our state of death alike; that during life our souls are dead and buried within us, and that when we die our souls revive and live. (Sextus Empiricus, *Outlines of Pyrrhonism* III. 230)

T 26. Heraclitus' language is close to that of Empedocles when he says that strife and love are the first-principles of everything, that God is intelligent fire, and that everything shares in the universal movement of things so that nothing stands still. Moreover he agrees with Empedocles' expressed view that the entire region occupied by man, from the earth's surface up to the level of the moon, is full of evils, the regions beyond the moon being much purer. (Hippolytus *Refutatio* Bk. I, Chap. 4)

T 27. Heraclitus says that souls when set free from the body pass into the soul of the All, which is akin to them in nature and essence. (Aëtius)

T 28. Heraclitus says that all things happen according to Destiny, and that Destiny itself is necessary, for he uses the expression, "It is absolutely determined." He says furthermore that reason, which pervades the All to its very essence, is one with Destiny. It has the form of aetherial matter, it is the seed from which all things are generated, and it is the measure of allotted time. (*ibid.*)

T 29. The universe, he says, is generated not according to time but according to thought. (*ibid.*)

T 30. The sun, he says, is an intelligent burning mass, which has arisen [and daily renews itself] from the sea. (*ibid.*)

T 31. He says that the sun and moon are bowl-shaped; that they receive bright rays from the moist vaporizations [from the sea], and thus produce their visible light. The sun's appearance is brighter because it moves through purer air; whereas the moon, moving through thicker air, shines more dimly. (*ibid.*)

T 32. Even wise old Heraclitus was unable to dissuade the Ephesians from washing away mud with mud. (*Letters of Apollonius of Tyana* 27)

T 33. Heraclitus describes these [religious mysteries] as "cures," on the ground that they heal our sufferings and release our souls from the conditions which beset them at birth. (Iamblichus *De Mysteriis* I. 11)

T 34. Heraclitus says that men's conjectures are like children's toys. (Iamblichus *De Anima*)

T 35. Sacrifices are of two kinds. There are those, as Heraclitus says, in which only one or a very few engage after they have undergone full purification; the rest are merely material. (Iamblichus *De Mysteriis* V. 15)

FROM LATIN SOURCES:

T 36. As for those who have believed that fire is the basic substance of everything and that the universe is composed of fire alone, it is evident that they have fallen far away from true reasoning. Their leader, the first to enter the fray, was Heraclitus, of bright repute because of his dark sayings. . . .

But what I want to know is, how can things be so various if they are made of fire purely? It does no good to explain that hot fire becomes densified and rarified, since the particles of fire still have the same nature as fire itself, and how could the existing variety of things be produced by variations of density and rarity of fire alone? (Lucretius *De Rerum Natura* I. 635-654)

T 37. In tracing all things back to a primal fiery force, Balbus, you seem to be following Heraclitus; however, not all are agreed as to how he should be interpreted, for he did not want to make his meaning clear. . . . At any rate, why should fire rather than air (*anima*) be regarded as that from which the mind (*animus*) of living beings is derived? (Cicero *De Natura Deorum* III. 35-36)

T 38. Heraclitus the philosopher says that the soul is a spark of starry essence. (Macrobius, *Commentary on the Dream of Scipio* I. 14)

T 39. Heraclitus says that if happiness consisted in bodily pleasures we would have to describe cattle as happy when they are eating fodder. (Albertus Magnus)