

Biographical Encyclopedia of Astronomers

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Thales of Miletus

Born circa 625 BCE

Died circa 547 BCE

Thales was credited by Aristotle with founding Ionian natural philosophy. His fame as an astronomer is based more specifically on his purported prediction of a solar eclipse, an achievement that marks for some historians the beginning of western astronomical science. One of the major intellectual traditions within pre-Socratic science between 600 and 400 BCE was that established and developed by the Milesians (after the city of Miletus; also Ionians, after the region, the present-day Turkish coast of Asia Minor). Of the new Greek communities that sprang up in Greece itself and across the Aegean Sea in Asia Minor, the most prosperous was Miletus.

Now but lonely ruins inland from the coast because the river and harbor silted up long ago, Miletus was, in its time, the richest city in the Greek world

One objective of Ionian science or philosophy—the two were not separate disciplines at this time—seems to have been to search for a basic substance or substances that persist throughout all changes. The Ionians were more interested in cosmogony (the creation of the world) than in cosmology (the structure and evolution of the world).

According to Aristotle, writing more than two centuries later, Ionian philosophers thought that matter, or principles in the form of matter, were the principle of all things:

Most of the first philosophers thought that principles in the form of matter were the only principles of all things: For the original source of all existing things, that from which a thing first comes into being and into which is finally destroyed, the substance persisting but changing in its qualities, this they declare is the element and first principle of existing things, and for this reason they consider that there is no absolute coming-to-be or passing away, on the ground that such a nature is always preserved for there must be some natural substance, either one or more than one, from which the other things come-into-being, while it is preserved. Over the number, however, and the form of this kind of principle they do not all agree; but Thales, the founder of this type of philosophy, says that it is water (and therefore declared that the earth is on water), perhaps taking this supposition from seeing the nurture of all things to be moist, and the warmth itself coming-to-be from this.

Thales was reputed to be the wisest of the seven wise men or sages of Greece. Asked what was difficult, he answered "to know thyself." Asked what was easy, he answered "to give advice." Supposedly, Thales was the first mathematician to demonstrate that a circle is bisected by its diameter, that the angle of a semicircle is a right angle, and that angles at the base of an isosceles triangle are equal. An acerbic scholar has noted, however, that "inevitably there accumulated

around the name of Thales, as that of Pythagoras (the two often being confused), a number of anecdotes of varying degrees of plausibility and of no historical worth whatsoever."

Thales is also credited with predicting a solar eclipse. According to the Greek historian Herodotus, writing in the 5th century BCE, more than a century after Thales:

In the sixth year of the war, which they [the Medes and the Lydians] had carried on with equal fortunes, an engagement took place in which it turned out that when the battle was in progress the day suddenly became night. This alteration of the day Thales the Milesian foretold to the Ionians, setting as its limit the year in which the change actually occurred.

Either the warring parties took the eclipse of the sun as a sign to cease fighting, or they were eager for any reason to cease and found the eclipse a convenient excuse

Astronomical calculations indicate a total solar eclipse on 28 May 585 BCE at the site of the battle in northern Turkey, thus lending credence to Herodotus's history. Subsequent discussions have centered less on the credibility of the tradition itself and more on what methods Thales could have used to predict the solar eclipse. From a study of the periodic recurrence of solar eclipses, Thales might possibly have predicted a slightly later eclipse but taken credit for the 585 eclipse. It is not certain that the eclipse reported by Herodotus is the eclipse of 585; eclipses of 582 and 581 have been pointed to as other possibilities, though they were not total over Asia Minor. Also, some scholars dismiss the whole eclipse prediction legend as more myth than historical truth

Another legend involving Thales has him providing a practical justification for the study of philosophy. This time Aristotle is the source, in his *Politics*:

For when they reproached him [Thales] because of his poverty, as though philosophy were no use, it is said that, having observed through his study of the heavenly bodies that there would be a large olive crop, he raised a little capital while it was still winter, and paid deposits on all the olive presses in Miletus and Chios, hiring them cheaply because no one bid against him. When the appropriate time came there was a sudden rush of requests for the presses; he then hired them out on his own terms and so made a large profit, thus demonstrating that it is easy for philosophers to be rich, if they wish, but that it is not in this that they are interested

Thus did Thales demonstrate that philosophers could be rich in conventional monetary terms if they wished. The philosopher's true wealth, however, is not measured in money; it is found in the pleasure derived from intellectual endeavor. In eschewing a myopic pursuit of wealth, Thales demonstrated his wisdom again. Still, Thales was not always practical, as Plato noted in his *Thaetetus*.

Theodorus, a witty and attractive Thracian servant-girl, is said to have mocked Thales for falling into a well while he was observing the stars and gazing upward; declaring that he was eager to know the things in the sky, but that what was behind him and just by his feet escaped his notice.

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