

Atlantis Lost and Found

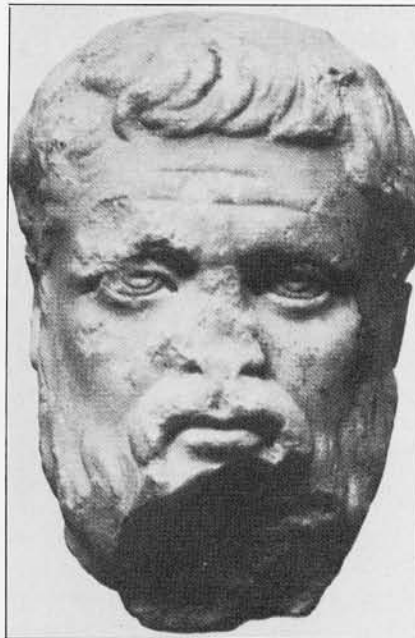
The Ancient Aegean from Politics to Volcanoes

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In addressing the topic of "Atlantis", which over the years has become a catch-all term for a number of wildly unrelated ideas, my purpose is to sort out fact from fantasy. Let us begin with facts. The word *Atlantis* and some of the ideas surrounding it originated in the writings of Plato (428-347 B.C.; Fig. 1), the Greek political and moral philosopher who was the pupil and successor of Socrates. The specific source is a pair of philosophical works, or dialogues, entitled *Timaeus* and *Critias*, two of a planned series of three dialogues written at the end of Plato's life. At his death, the *Critias* remained unfinished, and a final dialogue, which would probably have been called the *Hermocrates*, was never even begun.

These works, building on some of the ideas discussed by Plato in his *Republic*, presented his conception of the ideal state and the ideal citizen of that state. The *Timaeus* presents Plato's view of what the Greeks described as Natural Philosophy—the origin of the universe, cosmology, natural science, the creation and nature of Man, and the nature of the gods. The *Critias* deals with the exploits of the citizens of Athens (Plato's own city-state and the cultural center of Classical Greece) during a period preceding a great flood, which was placed 9000 years before Plato's own time. The events in the *Critias*, occurring in remote antiquity, are presented as a political and moral paradigm for

modern Athens, as a pattern for Plato's ideal modern state. We do not know what the topic of the final dialogue, the *Hermocrates*, would have been: it might have been intended to recapitulate the ideas that had been presented in the other two works and draw more explicit moral conclusions.



1
Portrait of Plato, perhaps by the sculptor Silanion, ca. 355-330 B.C. (Roman copy, now in the National Museum, Athens)

The passage below is from the *Timaeus* (24d-25d). The story being told involves Solon, the Archaic Greek law-giver, who is paying a visit to Egypt. There, an Egyptian priest explains to him that, as compared with the Egyptians, the Greeks are mere children

in terms of remembering their own past. The Egyptians, he says, preserve histories of the Greeks which they themselves have long ago forgotten, and he tells Solon about one of the great feats of the Athenians, carried out 9000 years ago:

Many great and wonderful deeds are recorded of your state in our histories, but one of them exceeds all the rest in greatness and valor. For these histories tell of a mighty power which unprovoked made an expedition against the whole of Europe and Asia, and to which your city put an end. This power came forth out of the Atlantic Ocean, for in those days the Atlantic was navigable; and there was an island situated in front of the Straits [Strait of Gibraltar] which are by you called the Pillars of Heracles; the island was larger than Libya and Asia put together.... Now in this island of Atlantis there was a great and wonderful empire which had rule over the whole island and several others, and over parts of the continent, and, furthermore, the men of Atlantis had subjected the parts of Libya within the columns of Heracles as far as Egypt, and of Europe as far as Tyrrhenia [west coast of Italy]. This vast power, gathered into one, endeavored to subdue at a blow our country [Egypt] and yours [Athens] and the whole of the region within the Straits; and then, Solon, your country shone forth, in the excellence of her virtue and strength, among all

mankind. She was pre-eminent in courage and military skill, and was the leader of the Hellenes. And when the rest fell off from her, being compelled to stand alone, after having undergone the very extremity of danger, she defeated and triumphed over the invaders, and preserved from slavery those who were not yet subjugated, and generously liberated all the rest of us who dwell within the pillars. But afterwards there occurred violent earthquakes and floods; and in a single day and night of misfortune all your warlike men in a body sank into the earth, and the island of Atlantis in like manner disappeared in the depths of the sea. For which reason the sea in those parts is impassable and impenetrable, because there is a shoal of mud in the way; and this was caused by the subsidence of the island.

This passage, let me emphasize, is *the* primary original literary evidence for the existence of any place which might be referred to as Atlantis. Plato did not draw the idea of Atlantis from the pre-Classical mythological or historical tradition (which was extremely rich) for the simple reason that no

place resembling Atlantis is mentioned in that tradition.

The *Critias* describes the physical characteristics of the mythical city of Atlantis. It was laid out geometrically, expressing the social and political organization of this great empire. It was adorned with gold and marble, was well watered, well wooded, and commercially influential and had a powerful army. Plato also describes the system of justice, the gods of Atlantis, and provisions for commerce and defense. What he is portraying is in fact what the Greeks of the 4th century B.C. perceived as the Golden Age of the Greek city-state. It should be noted that the primary loyalty of an ancient Greek lay not with the Greek people as a whole, but with his own city-state: Greek history seethes with disputes, war, and perfidy between tiny independent regions.

The following brief passage summarizes Plato's characterization of the inhabitants of Atlantis (referred to as "Atlantics" in this 1804 translation by Thomas Taylor):

For many generations, the Atlantics, as long as the nature of the God was sufficient for them,

were obedient to the laws, and benignantly affected toward a divine nature, to which they were allied.... Nor were they intoxicated by luxury, nor did they fall into error, in consequence of being blinded by incontinence; but, being sober and vigilant, they acutely perceived that all these things were increased through common friendship, in conjunction with virtue.... But when that portion of divinity, or divine destiny, which they enjoyed, vanished from among them, in consequence of being frequently mingled with much of a mortal nature, and human manners prevailed, then, being no longer able to bear the events of the present life, they acted in a disgraceful manner.

Jupiter, ...when he saw that an equitable race was in a miserable condition, and was desirous of punishing them, in order that by acquiring temperance they might possess more elegant manners, ...having assembled the Gods, he thus addressed them:...(Critias 120e-121c)

At this point the dialogue breaks off, so we will never know for certain what the intention of the gods was towards the Atlantics.

Madame Blavatsky and Theosophy

One of the more popular recent reincarnations of the legend of Atlantis took place in the United States. During the 1870s, Madame Helena Petrovna Blavatsky (1831-1891) lived on Sansom Street, within the present boundaries of the University of Pennsylvania campus. This strange and eccentric Russian woman had enjoyed a diverse career as a circus horse rider, a professional pianist, a business woman, and a spiritualist.

She is, however, best remembered as the founder of a modern religious movement. While living in West Philadelphia, Madame Helena became ill with a seriously

infected leg. During a period of delirium she underwent a spiritual transformation, and was inspired to found the Theosophical Society. The term theosophy applies to a set of religious teachings rooted in the ancient tradition of occultism. It incorporates a number of Indian doctrines such as the concepts of reincarnation and Karma. Life is seen as a continuum, and the seeker is encouraged to transcend the current imperfect state of the world, reaching a higher plane of being (Nirvana).

After a visit to India, Madame Helena published *The Secret Doctrine* (1888), a six-volume work that serves as the basic text for Theosophists all over the world. In this work, she wrote about seven root races of humanity. The first consisted of invisible astral jellyfish. The second, the Hyperboreans,

lived near the North Pole and were also bodiless. Next came a race of egg-laying lemurs, who had eyes in the back of their heads. They lived on the continent of Lemuria, located in the Pacific Ocean. The Lemurians were naughty. They discovered sex, which was their downfall. Their continent was destroyed, leaving only remnants that we know as Easter Island and Australia. The people of Atlantis were the fourth of Madame Helena's races, and the fifth were ourselves. The remaining two were, and still are, to come. The guardians for an infant humanity, their home lies in outer space, specifically Venus. All of this is peculiar, strange, and exotic, and has proved enormously popular ever since the 1880s.

Brian Fagan and the editors

This being a moral fable, however, we may guess that they were to be punished for their wickedness, and that a number of philosophical and moral lessons would be drawn from their fate, that having been the purpose for which Plato created them.

Atlantis as Allegory

Can we find anything within this socio-political morality tale that suggests a core of topographical or historical reality within it? Let us look at some of the salient points:

—*Atlantis was "an island situated in front of the Straits (i.e., in the Atlantic Ocean), and "in those days the Atlantic was navigable."* Since the Atlantic has remained navigable through recent geological time, the obvious meaning of the sentence is that in Plato's day, Athenians *thought* the Atlantic to be inaccessible. Therefore, "in front of the Straits" or "beyond the Straits" is another way of saying 'a faraway place which we cannot reach now,' 'a place which is no more.'

—*The Atlanteans invaded the lands within the Straits; and Athens alone withstood and defeated them.* This is a transparent reference to the Persian invasion of the eastern Mediterranean and of Greece in particular (492-479 B.C.).

The Persians were backed up by a massive empire consisting of a large amount of territory and many subject peoples. All of this was thrust against one very small area of Greece, and Athens, a single Greek city-state abandoned by most of its allies, did indeed withstand and defeat them. This was a feat that Athenians still remembered in Plato's time and would remember for hundreds of years as their finest hour. The obvious parallels between the two evil empires of Persia and Atlantis represent an appeal to civic pride, not at all surprising when Plato is dealing with politics and, being a Greek, inevitably with the politics of his own city-state.

—*These events occurred 9000 years before Plato's time.* Anything that is described as taking place that long ago, even among the Greeks with their long historical/

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2 Warriors such as these, portrayed on the facade of a building at the Persian capital of Persepolis, probably inspired Plato's description of the Atlantean army and their invasion of the Mediterranean area. (Photo by M. Voigt)

mythological memories, is obviously being deliberately set in a time so remote that it constitutes a separate reality. The source of the information given to Solon argues the same way. In comparison with the Greeks and the rest of the Mediterranean world, Egypt did in fact have a longer record of cultural continuity than any other Mediterranean civilization, and had therefore, by the Classical era, acquired a reputation as possessors of arcane and mysterious knowledge not available to outsiders (see Silverman, this issue).

—*There were earthquakes and flood, after which Atlantis sank into the sea and all the "warlike men" of Athens sank into the earth.* These events must again be regarded as metaphor: they represented not only a punishment for wickedness, but the violent and unequivocal end of a mythical epoch. To make his moral fable believable, and produce a suitable impression on a contemporary audience, Plato needed to make a sharp distinction between mythical Then and down-to-earth Now. The catastrophic destruction of both the wicked Atlanteans and the superhuman warriors of Athens again places these awesome events unequivocally in The Past.

We can conclude, therefore, on the basis of the literary evidence (and I stress once more that it is the only evidence which we have), that Atlantis represents Plato's fictional embodiment of the perfect state which fell from grace. It was created as a background and a counterpart to ancient (and thus idealized) Athens, which was Plato's subject, to embody his idea of the perfect social and political condition of man. His intended audience was the Athenian citizenry of his own day, whose political, social and moral attitudes he was attempting to influence. The geographical setting of Atlantis, beyond the Pillars of Hercules, gave it the proper aura of mythical inaccessibility. Plato selected a chronological context 9000 years in the past, in other words, 'once upon a time.' The source of the story is Egypt, the fountainhead of all wonderful and fabulous knowledge, and the fate of Atlantis is to sink "in a day and a night," both as a

punishment for its transgressions, and to set the entire narrative irrevocably in The Past.

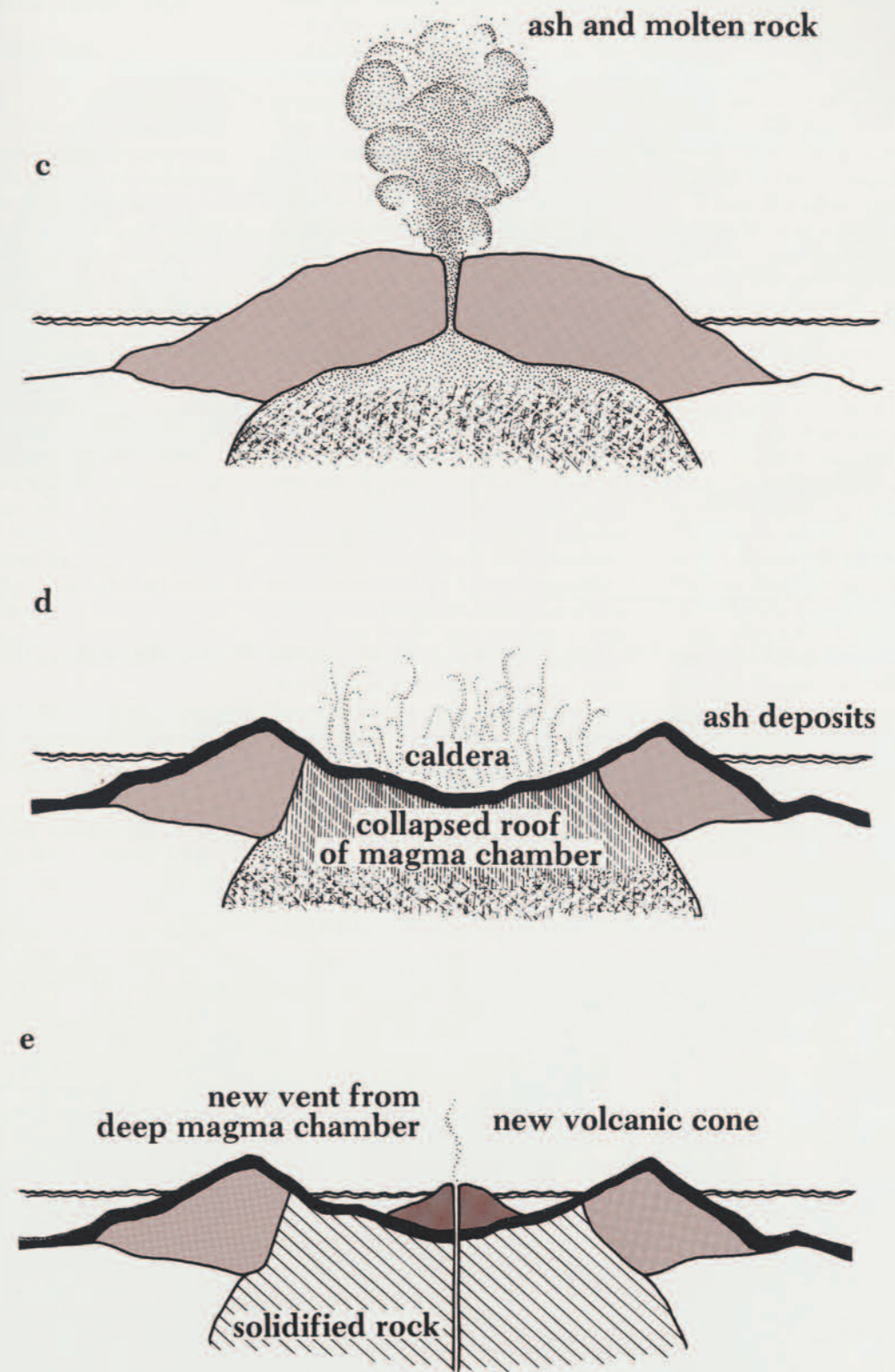
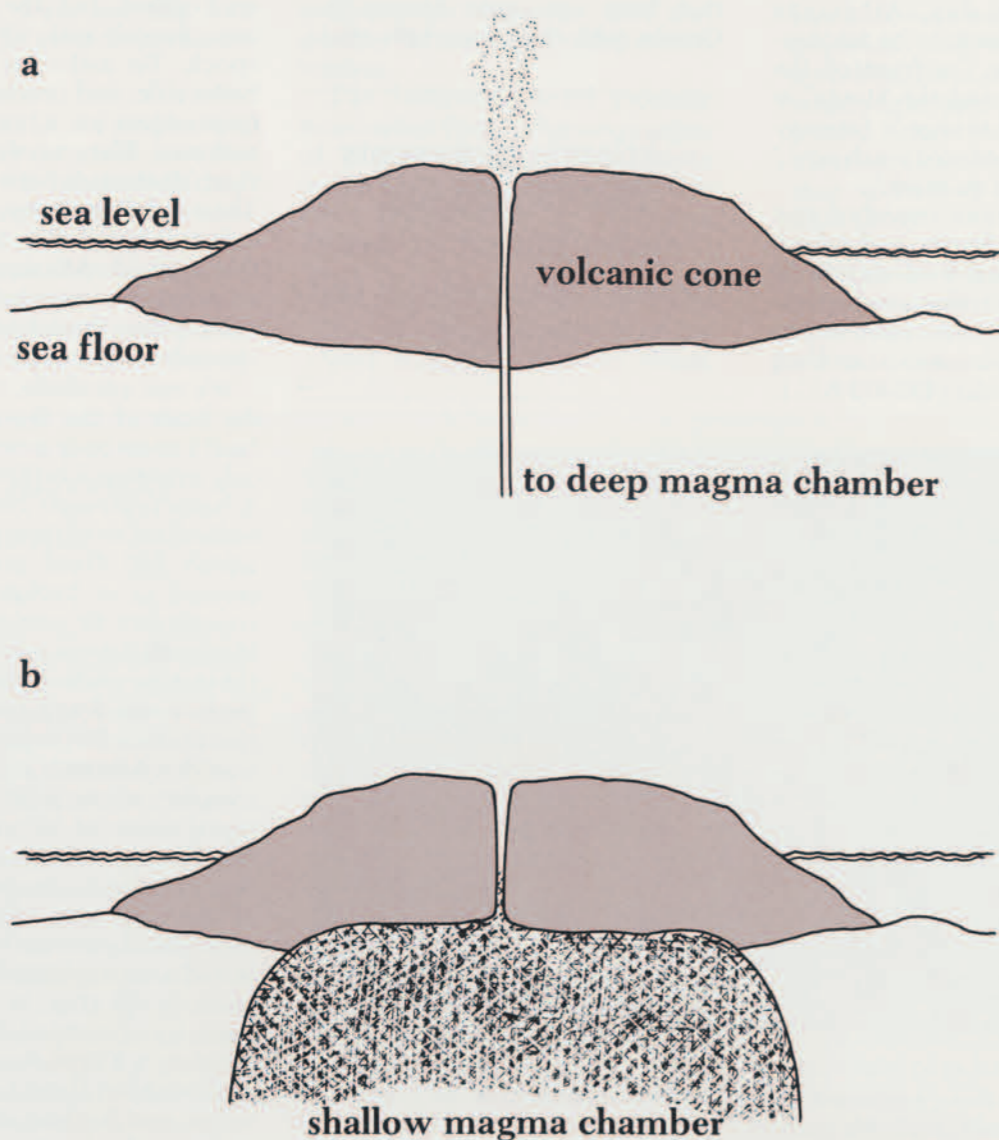
Atlantis and Reality

Having now reduced mighty Atlantis to the status of a philosophical fairy-tale kingdom, can we nonetheless find any connection between Plato's didactic political fable and historical or geographical fact? Not really. Plato does use individual elements with a factual basis, such as Athenian memories of the Persian Wars, but he sets his action 9000 years in the past. He takes separate bits of history and melds them together into a pseudo-historical whole that suits his purposes. True historical consistency cannot be expected.

Geographically, there is no continent-sized submerged land mass in front of the Strait of Gibraltar in the Atlantic, or anywhere else nearby. This is not an unromantic, wet-blanket opinion, but a fact based on 200 years of steady scientific progress in geology, oceanography, and remote sensing. With a few exceptions which will be discussed below, large land masses simply do not rise or sink detectably within a human lifetime. The location of Atlantis, as we have seen, is simply a metaphor for remoteness. The term used by the Greeks to describe something unreachably far away was "beyond the Pillars of Heracles," since as far as they knew that was where the world ended. Since they knew of nothing existing out there in their own day, any

place located in the Atlantic must obviously have vanished utterly a long time ago.

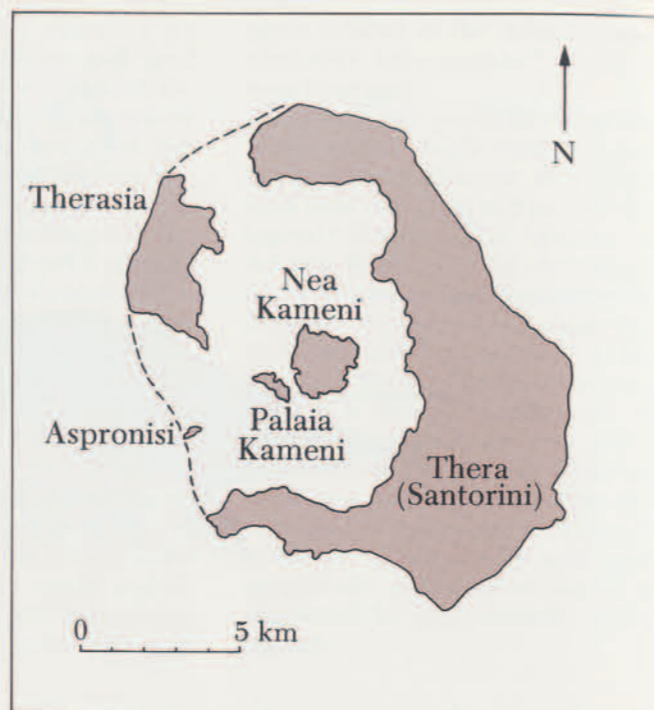
Is there any possibility that the Atlantis fable might contain a real geographical element that Plato took over and used as a part of this legend? Maybe. The location of Atlantis, its size, and the chronology of its existence are demonstrably fictional. But there is one statement, that the island "disappeared in the depths of the sea," which offers us a very thin thread leading out of Plato's imagination and into fact. I hasten to add that we will not be led back into Atlantis, which was and remains a literary fantasy. There is, however, a historically and geographically real context which is suggested by one element of the legend.



3a-e

Schematic cross-sections showing the stages in a caldera-forming eruption. (Drawn by Denise Hoffman; not to scale)

a) A volcanic vent, fed by a deep magma chamber, has built up a cone of debris that rises above sea level to form an island. b) A large, shallow magma chamber forms. c) Pressure within the magma chamber is explosively released, causing a massive eruption. d) The material above the magma chamber is now unsupported, and collapses into the empty chamber, creating the caldera. The caldera, the remnants of the original volcanic cone, and the sea floor are covered with a layer of ash and other debris. e) A lagoon now fills the caldera. A new vent has appeared within it, and has begun to build up volcanic debris.



4a,b
a) Map of the Aegean Sea; b) the island of Thera (Santorini), with the approximate original outline of Strongyle shown as a dashed line.



5
The present island of Thera forms a narrow fringe of land surrounding the sea-filled caldera. (Photo by M. Voigt)

The Fallout from the Thera Eruption

The effects of the Thera eruption on the island itself were devastating. Estimates of the amount of volcanic material (tephra) ejected during the eruption range from 3 to 28 cubic kilometers. Much of this volume fell back directly onto the island, burying parts of it under 30 meters of debris. Thera would also have suffered violent earthquakes before and during the eruption, and was repeatedly raked by white-hot avalanches of volcanic gas and dust called "base surges."

The eruption's effects on the rest of the Aegean and the Mediterranean have been the subject of lively debate among geologists and archaeologists. The evidence is sparse and equivocal, and scholars are by no means unanimous even now, but these statements are probably accurate:

—The noise of the first explosion was heard all over the eastern

Mediterranean. Although the total power released by the eruption was comparable to that of a multi-megaton thermonuclear bomb, the volcanic event released its energy over a much longer period of time, so that outside the island itself, there were none of the "blast effects" associated with nuclear weapons.

—An unknown proportion of the tephra released from the crater was carried away by winds at low and high altitudes. Sea-floor soundings have detected ash from the Thera eruption throughout the Aegean and eastern Mediterranean, with a distribution indicating that winds were from the northwest. Tephra may have reached as far as northwestern Cyprus (600 km away), and portions of the island of Crete were covered with ash, to depths estimated at between 5 millimeters and 10 centimeters. The most noticeable effect was darkness: complete blackness over the island for a period of days to weeks, and perceptible darkening for days over the entire Aegean area. If sufficient quantities of ash were propelled

into the upper atmosphere and circulated around the globe by high-altitude winds, the amount of sunlight reaching the Earth's surface would have decreased, and there would have been effects on climate worldwide for a period of years after the eruption.

—When the magma chamber beneath the island finally collapsed to form a caldera, the result was an underwater shock wave called a *tsunami*, a Japanese word for what is often inaccurately called a tidal wave. Tsunamis are unlike ordinary sea waves: they travel at up to 750 kilometers per hour across open sea, and contain a huge amount of energy. One calculation indicates that the collapse of the Thera caldera generated a tsunami that was 11 meters high when it struck the north coast of Crete near Herakleion. Such a wave might have penetrated some distance inland. This assumes, however, that the collapse occurred essentially all at once; if the process was slower, the sequence of smaller tsunamis would have been much less destructive.

As mentioned above, there are very few natural processes which can cause a land-mass to sink perceptibly. Most of them involve very small areas: beaches can be eroded by storms, rivers can gradually change course, slippage occurs during earthquakes, etc. Only one process causes really large parcels of land to "disappear" overnight, and only under very specific circumstances. The process involves volcanoes, and Figure 3 illustrates what happens. In Figure 3a, a cone of volcanic debris has been built up over a long period of time by successive ejections of ash and rock. A "long" period in this case means long in terms of a human lifetime—hundreds of thousands or millions of years, a period of time which is geologically very short. Then, under certain circumstances, a large pool of molten rock accumulates just below the surface of the cone (within 4-5 kilometers; Fig. 3b). Because it is very hot, this pool melts out a hollow space, called a magma chamber. The third phase, triggered by tectonic or chemical

"A few elements of the legend may have been suggested by actual events."

mechanisms that are still unclear, is an eruption (Fig. 3c); not the minor ejections of material that built up the overlying volcanic cone, but a huge, catastrophic event in which the entire magma chamber is explosively emptied. Such a cataclysm is called a Plinian eruption in memory of the Roman naturalist Pliny the Elder, who died observing the eruption of Vesuvius in A.D. 79 that entombed the city of Pompeii. It occurs almost instantaneously in geological terms, meaning that within a few days, an enormous volume of highly pressurized, very hot magma (between 20 and 200 cubic kilometers) is purged out into the atmosphere. If the magma chamber

was particularly large and close to the surface, the thin roof of the magma chamber, now emptied of its molten rock, can no longer support its own weight and collapses, leaving a large circular hole (Fig. 3d).

If the volcano was located on land, this hole or *caldera* may fill up with water. Crater Lake in Oregon is in fact a water-filled caldera located where Mount Mazama, formerly 4000 meters high, was literally blown to bits in a Plinian eruption about 6000 years ago. If the volcano was an island, water will immediately rush into the caldera, and where once was land is now sea (Fig. 3e).

Caldera-forming eruptions have occurred countless times over the geological history of the earth, but only two events occurring within human memory have been extensively studied: one at Krakatau near Java in 1883, and one involving a small island in the southern Aegean Sea called Thera or Santorini, some time between 1650 and 1500 B.C. (Fig. 4). The Thera eruption was



6

Excavations on Thera have revealed the remains of a harbor town with well-preserved buildings standing up to 3 stories high. (Photo by R.H. Dyson, Jr.)

probably the loudest noise heard on earth for several thousand years. The original volcanic island had been approximately circular (geologists call it Strongyle, meaning "round"), but it was reduced to a thin arc of island fragments when the colossal crater, 10 by 5 kilometers across, filled with seawater (Figs. 4b, 5). The little islands in the center of the crater, Palaia and Nea Kameni, represent material built up from the caldera floor by continued volcanic activity since the catastrophic event some 3500 years ago. In another few million years, the island will probably be round again, having been filled in from the middle.

The Thera eruption occurred at the height of the Aegean Bronze Age, a period when the entire Mediterranean was at a high cultural level and politically and commercially interconnected. On the island itself, recent and ongoing excavations are slowly revealing a harbor town that was abruptly destroyed by the eruption (Fig. 6). Its buildings, preserved to three storeys and more beneath tens of meters of volcanic ash, were solidly constructed and often lavishly decorated. The artifacts left behind as the inhabitants fled indicate commercial and cultural relations with most

of the civilizations in the eastern Mediterranean.

In view of Thera's central location in the Aegean, the eruption probably had more or less disastrous effects on the entire eastern Mediterranean basin (see box). I suggest that some recollection of this colossal event survived in Greek folktales

and legends and ultimately contributed the single aspect of the Atlantis legend that we may consider connected to geographic fact, namely that at some point in the distant past, a significant land-mass all but vanished into the sea. It was a small island and not a great continent, and located in the Aegean rather than in the Atlantic Ocean, but however distorted, some memory of that event seems to have survived. This does not mean, however, that the flourishing Bronze Age civilization on Thera that was wiped out by the explosion can be identified with the Atlantis described by Plato.

Was "Atlantis" therefore completely fabricated by Plato? As a geographical or historical entity, the answer is yes. A few elements of the legend may have been suggested by actual events. The idea of a massive invasion by a foreign power was in all likelihood based on Athenian memories of the Persian wars. And the catastrophe echoed in Plato's tale probably represents a remembrance of the volcanic eruption that devastated Thera. But Atlantis never existed: it was a fictional place created as a narrative device, serving as a frame for Plato's political teachings. 2



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