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to comparably enlarged European and North American tree rings dated at 1628 B.C., the investigators contend.

Some kind of environmental disturbance produced a dramatically cooler, wetter climate throughout much of the world, resulting in these alterations in tree growth, they propose. The main candidate for this disturbance is a volcanic eruption that took place on the Aegean island of Thera (SN: 4/16/88, p. 251), the researchers hold.

That volcanic blast, or perhaps another one that has yet to be identified, spewed out a blanket of dust that drastically reduced the amount of sunlight reaching Earth's surface, they propose. As a result, soil remained unusually moist that year and contributed to expanded growth of annual tree rings.

Archaeologists have recently uncovered pumice, presumably derived from the Thera eruption, in sediment surrounding the remains of a palace from ancient Egypt, Renfrew notes. The palace belonged to a dynasty traditionally thought to have assumed power in 1550 B.C. If Kuniholm's group proves correct about the 1628 B.C. date of Thera's eruption, substantial changes may have to be made in the chronology of ancient Egypt, says Renfrew.

However, an "unassailable causal link" does not yet exist between the Thera eruption and the unusual spurt of tree growth in ancient Turkey or elsewhere, the British researcher contends.

"We're saying we have evidence for a global climatic event in late 1629 B.C. or early 1628 B.C.," asserts Cornell's Maryanne Newton, a tree-ring researcher and a member of Kuniholm's team. "It wasn't necessarily the Thera eruption, but the Turkish sites in our study were downwind from Thera."

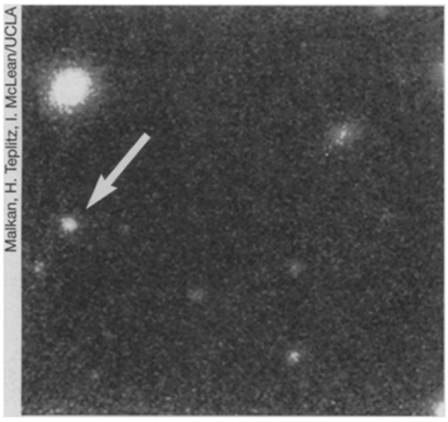
Although critical questions remain, Kuniholm's project "offers the best hope we have for a really sound chronology for the later prehistory and history of the Near East and Egypt—and indeed the eastern Mediterranean in general," Renfrew concludes. — *B. Bower*

A cluster of observations poses puzzles

If the life of the universe were a book, the later parts would be clearly legible. It's the early chapters that remain fuzzy.

Using the world's largest optical telescope, the 10-meter W.M. Keck atop Hawaii's Mauna Kea, several teams of astronomers have recently taken a leap back in time, sketching in some of the details about the cosmos shortly after its birth some 10 to 20 billion years ago.

In May, Judith G. Cohen of the California Institute of Technology in Pasadena and her colleagues reported that distant galaxies, viewed as they appeared when the cosmos was half its current age, were clumped together rather than distributed evenly across the sky. The finding suggested that this lumpiness in the cosmos may have arisen earlier than some theories can easily account for (SN: 4/27/96, p. 260). Now, another Keck observation hints that such clustering might have occurred earlier still, when the cosmos was less than one-fifth its current age.



This galaxy (arrow) is part of a newly found cluster that dates from when the universe was one-third its current age.

The new findings focus on the region surrounding the distant quasar BR 2237-0607. Last year, Richard G. McMahon of the University of Cambridge in England and Esther M. Hu of the University of Hawaii in Honolulu found what appears to be a young, ordinary galaxy in the neighborhood of the quasar (SN: 9/30/95, p. 212). The galaxy's measured redshift of 4.5 means that the light now reaching Earth left the galaxy when the cosmos was just a few billion years old. McMahon and Hu have spied a second galaxy in the vicinity, they reported June 10 at a meeting of the American Astronomical Society in Madison, Wis.

A grouping of two ordinary galaxies and a quasar does not necessarily a cluster make, McMahon emphasizes. Quasars, dazzling powerhouses that may represent an unusual type of galaxy, seem more likely than other objects to reside in groups. Yet McMahon says that the discovery, together with evidence of clustering later in the history of the cosmos, suggests that astronomers may find larger groupings in the early universe as telescopes like Keck deepen their view.

"Seeing even one object this far away is difficult, and so finding even another one is suggestive of clustering," says Mark A. Dickinson of the Space Telescope Science Institute in Baltimore.

"It's dicey; they really don't have enough data," says Cohen. But, she adds, the finding could be the "beginning of a great discovery."

Cohen says she and other astronomers, including Lennox L. Cowie of the University of Hawaii, have confirmed her team's evidence of clustering later in cosmic history by analyzing the Hubble Deep Field, the most detailed deep-sky images ever made. At a workshop in Cambridge next week, Dickinson plans to present observations of a cluster of galaxies dated slightly earlier than that of Cohen's team.

At the Madison meeting, Matthew A. Malkan and his colleagues at the University of California, Los Angeles reported finding two clusters of infant galaxies dating from about one-third the universe's current age. This places them even earlier in cosmic history than Dickinson's finds but later than those reported by Hu and McMahon. — *R. Cowen*

Growers bee-moan shortage of pollinators

Most people in the northern half of the United States will remember the winter of 1996 for record snows that seemed to take forever to melt. Apiculturists, however, will remember it as the winter their bees died.

"We've been hearing regularly of people who lost 80 or 90 percent of their [commercial] honeybees," reports Anita M. Collins of the Agriculture Department's bee research lab in Beltsville, Md. Honeybees, the most versatile and widely cultivated of natural pollinators, play a pivotal role in the fruiting or seed development of numerous plants, including at least 30 U.S. crops valued together at about $10 billion annually, according to Roger Morse of Cornell University.

The shortage extends beyond the snow belt and managed bee colonies, observes Gary P. Nabhan, of the Arizona-Sonora Desert Museum in Tucson. In Arizona, for instance, "we've seen a 70 percent loss in [wild] honeybees since 1991," he says. Nationally, he reports, only about 2.7 million wild and managed honeybee colonies exist—fewer than half as many as 50 years ago. "And half this loss," he notes, "occurred within just the last 5 years."

The pandemic spread of two parasitic mites has fostered this decline in the honeybee population. "We know they are everywhere now in the United States," Collins says of the mites, and "perhaps one-quarter of the [bee] colonies have both."

The tracheal mite, which entered the United States from Mexico in 1984, burrows holes through the inside wall of a bee's windpipe to get at the insect's equivalent of blood. The *Varroa* mite, which entered the country 3 years later, attaches to the outside of the honeybee and sucks out this bloodlike fluid.

The parasites weaken, but do not kill, the honeybees. However, Collins says, new data