

Jade Jaguar In Ancient Maya Tomb

See Front Cover

► THE LARGEST single piece of carved jade ever found in Middle America was recently unearthed in an ancient Mayan tomb at Tikal, Guatemala.

The solid jade piece, carved in the shape of a jaguar's head, weighing three pounds 11 ounces, is shown on the front cover.

The three circular symbols carved in its eyes are hieroglyphs IX (pronounced ish) which are associated with the jaguar god. They were probably etched to insure proper identifi-



University Museum

POLYCHROME PLATE

cation of the figure. Mayan animal figures in other media were usually made with skin markings to indicate species, but no such lines clutter this jade piece.

The head was one of many objects found in the 1,200-year-old tomb, Dr. William R. Coe of the Museum of the University of Pennsylvania said.

Other pieces found in this and a second tomb included jade bracelets, necklaces and other such ornaments. Beautiful polychrome plates, wooden figures and pots were also discovered during this final year of the 11-year Tikal Project, jointly undertaken by the University Museum and the Government of Guatemala. All archaeological pieces belong to the Guatemalan Government and will be put into the museum there.

Dr. Coe will return to Tikal in August for the final excavation before the autumn rains descend, and the jungle once again moves in on still buried treasures, since the project is ending because of lack of funds.

Tikal was once the cultural capital and greatest ceremonial center of the lowland Maya civilization, which had its most creative and productive period from about 200 B.C. to 900 A.D.

No one knows exactly why the great civilization declined, Dr. Coe said. It may have been because of factors such as over-population, shortage of food or a series of social revolutions. (Cover photograph by the Museum of the University of Pennsylvania.)

• Science News, 89:482 June 18, 1966

TECHNOLOGY

Device Clarifies Helium Speech From Sealab II

► THE ALMOST unintelligible "Donald Duck" voices of the helium-breathing aquanauts in Sealab II have been restored to normal by a device invented 30 years ago.

Sealab's high-pressure atmosphere, 80% of it helium, was necessary to keep the crew from getting nitrogen narcosis, or "rapture of the deep," 200 feet below the Pacific. Normal air is composed of about 79% nitrogen and 21% oxygen.

Sound travels faster in helium than in air, so the resonant frequencies of the aquanauts' normal speaking voices were all higher. The result, though amusing, was that the crewmen could hardly be understood.

Intrigued by the problem, two scientists at Bell Telephone Laboratories, Dr. Roger M. Golden and D. J. MacLean, ran tapes of the aquanauts' speech through a gadget called a "vocoder," or voice coder.

The vocoder, invented in 1936, breaks down a voice into its fundamental pitch and resonant frequencies. Information from the vocoder can be transmitted to a receiver and synthesized into a replica of the original voice.

To restore the "helium speech," the two scientists modified the vocoder so that it restored the altered resonant frequencies to what they would have been in normal air. The fundamental voice pitch did not need to be restored, since it had been unaffected by the helium atmosphere.

Actually, Mr. MacLean and Dr. Golden did not use the vocoder itself. Instead, they simulated it on a computer. Speech samples were converted to electronic signals by the computer, then altered as the vocoder would have done, and reconverted into normal speech.

Such a vocoder could be constructed for live communications between divers and aquanauts, or between aquanauts and men at the surface.

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Questions

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Why do some scientists think man's hearing may have evolved from a fish? p. 483.

In what way can inactivity be a hazard? p. 491.

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