ARCHEOLOGY

Computing the temple

For 17 years the Egyptians worshipped Aten, the sun god, as the prime ruler of earth. That was when Akhenaten was Pharaoh—from 1367 to 1350 B.C. But when a new king came to power, the spurt of monotheism came to an end and its religious symbols were destroyed.

The Egyptians so completely dismantled one of the era's most important temples that computers must now be employed to recreate the building. The temple lies in 30,000 pieces—too many, it is said, for the human brain to assemble without electronic assistance. But by matching photographs of the individual pieces on computers, American and Egyptian archaeologists expect to have the temple reconstructed—at least pictorially in a year or two.

Egyptians who took the temple apart 33 centuries ago apparently wanted to destroy evidence of the switch from pantheism to monotheism. King Akhenaten, who built the temple, is often credited as the founder of monotheism.

His successor, King Tutankhamen, wiped out the reformation, re-establishing the traditional gods.

Egyptians then began using Aten Temple as a quarry, carting away the sandstone blocks to use as filler, inside walls and under columns of nearby buildings. For about 60 years the relief-cut blocks have been turning up in the foundations and walls of these buildings during reconstruction work. Because the task of reassembling the temple seemed impossible, the blocks could only be stacked away in warehouses, although Egyptologists recognized their significance.

The blocks are decorated with scenes and hieroglyph inscriptions which carry historical, religious and architectural significance. Once recreated, the temple is expected to throw light on the obscured reign of King Akhenaten, whose queen was the famous Nefertiti. Aten Temple once formed part of a complex of public buildings at Thebes (now Karnak), ancient capital of the Egyptian empire.

After the temple pieces disappeared into other Theban buildings, the area was shaken by one or more violent earthquakes which weakened the newer structures. Eventually, the condition of the ground led to the toppling of many columns and during 20th century reconstruction work, archaeologists discovered the temple blocks.

Recreation of the temple has been undertaken by a team from the University of Pennsylvania, the Department of Antiquities of the United Arab Republic, and IBM Corp.

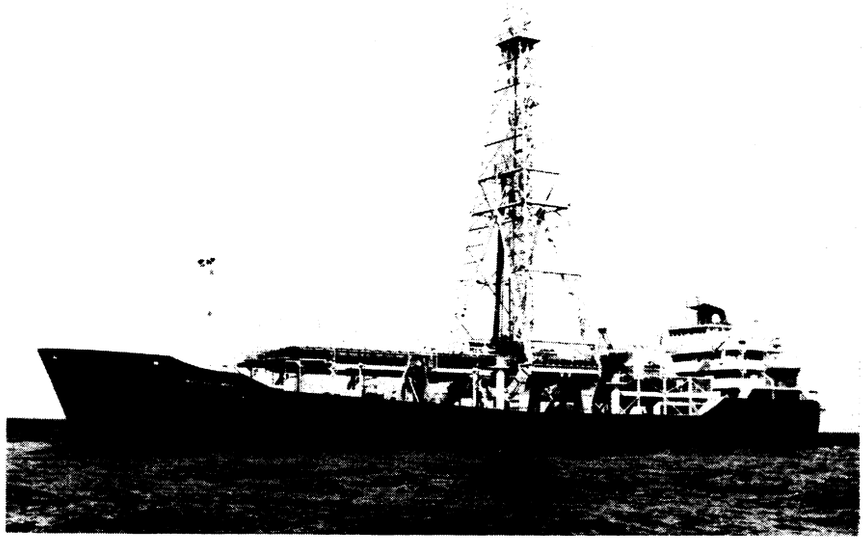
So far 25,000 blocks have been photographed, coded and computer-processed. The tedious process of matching is now underway.

University of Pennsylvania

One of the 30,000 decorated blocks.

CHALLENGER

Oil, salt and geology



NSF

Challenger: Striking oil, shaking a theory and breaking some teeth.

It took just eight days of a planned 18-month mission for the first operational U.S. deep ocean drilling program (SN: 8/10, p. 143) to prove its worth. After finishing her sea trials on Aug. 11, the 400-foot oceanographic research ship Glomar Challenger set forth to cross the world's major oceans, collecting core samples from beneath as much as four miles of water and reaching some 2,500 feet down into the sediments overlying the earth's crust.

On the total itinerary are studies ranging from changes in the planet's magnetic field to the possibility that once there was no Atlantic Ocean, that North and South America, Africa and Eurasia were once a single body of land. More than 60 holes are planned for the project, which is being sponsored by the National Science Foundation.

By the second hole, the scientists were already reaping rewards. On Aug. 19, in the Gulf of Mexico, the Challenger drilling team pulled up a 472-foot-long core from one of the Sigsbee Knolls, a belt of submerged hills stretching more than a thousand miles from the Texas-Louisiana coast south to Mexico's Yucatan peninsula. The soft, porous sandstone in the core oozed forth a sticky, black liquid: oil.

The findings do not necessarily indicate a vast oil field, but the possibility is strong. "It opens up the whole Gulf and the Caribbean," says Dr. William E. Benson, in charge of earth sciences for the NSF. This means an area of some 1.66 million square miles, six times the size of the entire state of Texas. Texas currently produces more than $3.3 billion worth of crude oil annually.

Of even greater interest to the scientists than the oil are the geological formations in which it was found. The core samples definitely established that the Sigsbee Knolls are salt domes, common enough in land oil fields, but previously thought by some researchers to be highly unlikely in the deep ocean where large salt deposits would presumably be unable to form.

Either the 170 or more salt domes were formed by geological processes that are so far unknown, says Dr. Benson, or else "the entire Gulf was once a huge down-dropped block of continental crust." If the latter is the case,