

## ARCHAEOLOGY

# Past Threatened by Aswan Dam

Eight countries have responded to UNESCO's plea for aid in saving hundreds of ancient Egyptian monuments to be flooded when the new high Aswan Dam is built.

By TOVE NEVILLE

THE ANCIENT GODS OF EGYPT are threatened with extinction by flood waters from the reservoir of the new high Aswan Dam being built and supervised by Russia.

The high dam will promote the cultivation of 2,500,000 acres of desert to help feed the rapidly growing population. But in providing for the future, the water of the dam will destroy some of the greatest monuments of man's heritage.

It is up to the rest of the world to rescue the past. Russia has not so far offered to take part in salvage operations to save these monuments, although eight other nations, including the United States, have responded to a UNESCO plea on behalf of the United Arab Republic and promised aid.

The level of the reservoir of the present low Aswan Dam is 397 feet. The backed-up Nile already floods numerous monuments, among them the beautiful temples on the island of Philae that have been called the vision of paradise.

## The Temple of Nectanebo

The oldest building on the island of Philae is the temple of Nectanebo (359-341 B.C.), dedicated to Isis, goddess of fertility. The pharaohs of ancient Egypt were believed to be incarnations of the gods themselves and often had to impersonate the gods at religious rites. Quite possibly, Cleopatra once officiated here in her capacity as the goddess Isis.

Ptolemy XIII, Cleopatra's father, built part of another temple on the island of Bigeh, a sister island to Philae. Another part of this temple was decorated during the reign of the Emperor Augustus. This temple replaced earlier ones that may go back as far as the 19th century B.C. The ram god Khnum and his companion goddess were worshipped here.

Religious carvings in bas-relief and hieroglyphic inscriptions decorate the temples on these islands.

Located between the present dam and the site of the new one, these monuments are flooded nine months of the year. When the new dam is completed the water level will drop but will vary daily and thereby damage the monuments even more.

The rock-cut temples at Abu Simbel are located south of—and upstream from—both the present dam and the new.

These two temples are probably the most magnificent of the hundreds of monuments now in danger. Built in the 13th century B.C., the great temple is 108 feet high, 124 feet wide, 210 feet deep and entirely carved out of the mountains on the river

bank. Four 67-foot colossi in front of the temple depict Rameses II, who built the temple in honor of the gods Horus, Amon and Ptah, as well as of himself. Details of two of these figures are shown on the front cover of this week's SCIENCE NEWS LETTER.

Rameses was "the last great warrior king" and a fanatic builder. Close to the great temple stands a "smaller" temple dedicated to his wife, Nefertari, and to Hathor, goddess of love, mirth and social joy. Here again are four colossal statues of Rameses and two of Nefertari.

Many of the monuments in Egyptian and Sudanese Nubia can be moved, but the two temples of Abu Simbel cannot because they are carved out of a rock that is too delicate.

The new high dam, being built upstream from the present dam, will create a 300-mile lake, 426 feet deep. The lake will flood 21 temples and a number of archaeological sites, some still unknown.

Dr. John A. Wilson, professor of Egyptology of the University of Chicago, and executive secretary of the U. S. Committee for the Preservation of Nubian Monuments, told the U. S. Senate Foreign Relations Committee that rescue operations would cost from \$60,000,000 to \$90,000,000.

The committee was considering an amend-

ment to the Mutual Security Act of 1954. This would have given the President the authority under certain conditions to use U. S. owned local currencies for the project up to about 30% of the cost, or about \$20,000,000 to \$25,000,000.

In the amendment as passed, no authorization of funds was actually made, but Congress asked the President to make recommendations to Congress regarding the project by March 1, 1961.

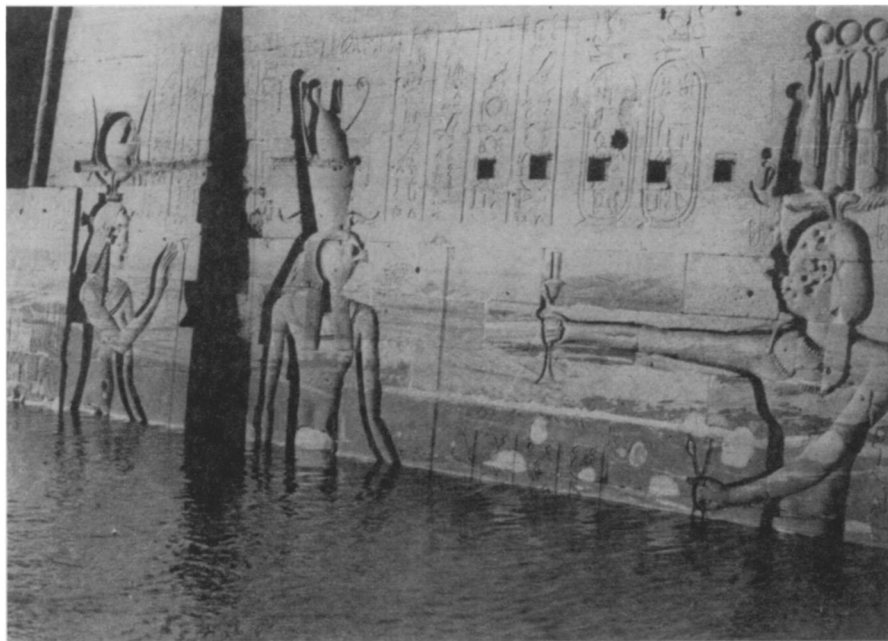
Dr. Wilson said that the most important temples must be left where they are and protected by dams. Three small dams have been proposed to protect the island of Philae, and UNESCO has asked a French technological firm, Andre Coyne and Jean Bellier, to work out a plan for a dam around the temples at Abu Simbel.

## Cooperation Asked

UNESCO has asked for cooperation from the entire world in a campaign for the rescue of the ancient monuments in southern Egypt and Northern Sudan—collectively called Nubia.

Both Egypt and Sudan have offered to reward nations participating in the operations with at least half of the treasures they help save, with a few exceptions. They have also offered rights to excavate in other parts of the country for those who participate.

Among the countries that have already offered to help in this, the greatest archaeological adventure of the century, are some in open political conflict elsewhere.



**FLOODED GODS**—These gods on the temple of Isis on Philae are not wading in the Nile. Flooded nine months of the year, the temple will be in even greater danger when the new Aswan Dam is built. Here, at left, is the fertility goddess Isis, with her falcon-headed son Horus beside her. Hathor, goddess of love and mirth, is at right.

Austria is planning a mission of archaeologists. Belgium has offered 1,000,000 Belgian francs. Belgium also has offered to send three experts—an Egyptologist and two architects—and is now holding an exhibit of Egyptian art for the benefit of the campaign.

The French Society for Egyptology is collecting contributions for the campaign.

France will send architects, engineers, and specialists in the fields of ancient inscriptions, prehistory and anthropology. France is also considering offering the services of its National Geographic Institute in the field of photogrammetry.

India has promised the assistance of several experts. Poland has offered the assistance of a soil expert to join UNESCO's preliminary study mission.

Spain is ready to send specialists in prehistory and Coptic art. Spain would also make available a river boat equipped for scientific investigations. From the United Kingdom, the Egypt Exploration Society is already working at the Buhen site in Sudan near the Egyptian border.

A joint mission to excavate in Egyptian Nubia is being planned in the United States by the University of Pennsylvania Museum and the Peabody Museum of Yale University. Another American project is a five-year program by the Oriental Institute of the University of Chicago for investigation, excavations and documentation in Egyptian and Sudanese Nubia.

And one U. S. businessman has offered to buy the temple of Dendur and move it to Indiana.

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#### ROCKETS AND MISSILES

### Atlas Will Be Simpler And Lighter in Design

THE ADVANCED "E" SERIES Atlas ICBM propulsion system will have a 389,000-pound thrust at sea level. The U. S. Air Force's Air Research and Development Command reported that it will be lighter and simpler in design than present Atlas missile engines. Designated MA-3, the new Atlas power plant is produced by the Rocketdyne Division, North American Aviation Corp., and has been tested at their facilities in the Santa Susanna Mountains.

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#### PHYSICS

### Million-Dollar Reactor To Test Radiation

A NEW MILLION-DOLLAR NUCLEAR REACTOR to test the effects of radiation on military equipment will be installed next year in the Forest Glen, Md., section of Walter Reed Army Medical Center. It will produce intense, self-limiting pulses of nuclear radiation to which samples will be exposed repeatedly for short periods.

General Dynamics' General Atomic Division of San Diego, Calif., will design and construct both the pulsed TRIGA (Training Research Isotope (Production) General Atomic) reactor and associated test facilities.

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#### PUBLIC HEALTH

## Test Civil Defense Shelter

IF AN ATOMIC BOMB should explode in the area of Long Island, N. Y., the laboratory building of the Brookhaven National Laboratory at Upton will provide an important civil defense shelter.

Preliminary tests indicate that in the Laboratory's basement, outside fallout contamination will be reduced 150 to 200 times by the brick and concrete, Dr. Robert A. Conard, civil defense liaison officer for the Brookhaven Medical Center, told SCIENCE SERVICE.

The basement will house emergency medical supplies and equipment, including several beds. Its area of more than 100,000 square feet can accommodate several hundred persons and necessary supplies.

The atomic and medical research center was exposed to a pattern of simulated fallout such as was used to test the Atomic Energy Commission Building in Germantown, Md. A radioactive slug of 200 curies of cobalt-60 was pumped through special plastic tubing on the surrounding grounds and the roof of the Laboratory building.

Human exposure to this amount of cobalt-60 can be dangerous.

From 80% to 90% of the contamination that reached the basement from the simulated fallout came from the flat, gravel-covered roof.

Dr. Conard said studies show that this type of roof, common to modern buildings, yields the greatest concentration of radioactive contamination. A sloping-type roof, from which fallout can wash down, affords the greatest protection from radiation hazards. It would appear that consideration of radiation from fallout did not play a major role in the design of the hospital and medical buildings at Brookhaven.

The more than half-mile-long structure in which the atom-smashing alternate gradient synchrotron is housed underground also would provide shelter protection from a bomb explosion, Dr. Conard said. At the present time, however, civil defense plans do not include housing and equipment provisions for this extensive area.

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#### TECHNOLOGY

## Can Cut Highway Toll

A SCIENTIFIC ATTACK on the automobile accident problem would reduce deaths and serious injuries by one-half in ten years.

Dr. Irwin D. J. Bross, chief of the department of statistics, Roswell Park Memorial Institute, Buffalo, N. Y., said this was a realistic target.

Emphasizing the need for cooperation of automobile manufacturers, legislators, law enforcement agencies, safety groups, scientists and the general public, Dr. Bross said, "If the public realized how close we are to a major reduction in the highway toll, the cooperation would be forthcoming."

The first step in attacking the problem is the collection of detailed scientific reports on accident circumstances and resulting injuries of persons involved in highway accidents, Dr. Bross said. He cited the Cornell Automotive Crash Injury Research Program (ACIR) as one that provided adequate information for a genuine scientific study of the accident-injury problem.

After establishing the chain of events leading up to an accident, Dr. Bross advised preventive measures. These include car design changes, commonly called "hardware."

Better door locks are still needed because the "modified door locks" that were successful in laboratories have been only about 25% better in holding doors shut in roll-over accidents.

Dr. Bross said one reason for this only slight improvement was that the hard-top styling trend, which came in about the same time as the modified door locks, weakened the top support and permitted greater de-

formation of the frame in the case of roll-over accidents.

Getting rid of pointed objects, projections, sharp bends in instrument panels and other hazards in the car interior would constitute what Dr. Bross calls a "de-lethalization" program.

Dr. Bross reported in Public Health Reports, 75:573, 1960, that highway design and traffic control devices also provide promising preventive measures.

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#### TECHNOLOGY

### "Atomic" Incinerator Safely Disposes of Waste

SAFER AND MORE ECONOMICAL waste disposal is being accomplished by an "atomic incinerator" installed by the General Electric Company in its nuclear equipment plant.

Before its installation this spring, burnable contaminated material at the San Jose, Calif., plant was encased in concrete and dumped in special burial grounds. With the incinerator, in one hour 100 pounds of waste material can be reduced to a small pile of ashes which may be disposed of easily, thus cutting disposal costs by 75%, according to company spokesmen.

Designed by GE's Atomic Power Equipment Department, the incinerator has an automatic safety shut-off and is equipped with a filtering system which prevents the escape of radioactive particles from the high-temperature furnace box.

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