

ARCHAEOLOGY

# Guatemala Highland Tombs Enclose Rulers, Dog and Slaves

**New Discoveries Will Prove "Tremendous Addition To Knowledge of Maya Life, Ceremony, Dress, and Art"**

**I**N the depths of a nest of Mayan pyramids in Guatemala archaeologists of the Carnegie Institution of Washington have discovered important tombs of ancient American rulers. Dr. A. V. Kidder and archaeologists of the expedition who came upon this scene, sealed up for centuries, found the bones fallen and everything in a fragile state almost defying archaeological skill to examine it.

The three tombs explored will yield a wealth of information regarding burial practices of the Mayan Indian empire, America's highest native civilization.

"It will take months to get the collection in shape," Dr. Kidder reports. "But it will prove a tremendous addition to our knowledge of Maya life, ceremony, dress and art."

A fourth tomb is yet to be entered, since the rainy season interrupted the discoveries.

In the center of one tomb a middle-aged priest or ruler had been placed sitting cross-legged. The body was loaded with ornaments—jade beads, beautifully carved jade pendants, ornaments of crystal and shell, and ear plugs. A heap of pottery was beside him.

At his feet a young woman was stationed ready to serve the master in the hereafter. With her were placed the dishes for serving his food, and milling stones for grinding corn. The faithful little dog of the dead ruler stayed with him. The dog's bones were found in one corner of the tomb chamber.

## May Solve Mystery

These four tombs may solve the mystery of why the Mayas persisted in building one pyramid over another like a nest of boxes, as if ambitious to make ever larger and loftier foundations for their temples. The location of the four tombs in the four-layered pyramid suggests that when a priest-ruler died he was interred in the pyramid with which he was associated, and which he may have built, as European rulers are sometimes interred in cathedrals. Then the

pyramid was sealed by enclosing it within a new one.

The site in Guatemala now being explored by Carnegie Institution expeditions opens up new possibilities in Mayan discovery, because it is in the highlands, rather than in the much-explored lowland jungles of the Mayan area. The pyramid is the first of the kind ever discovered in the highland region, though such construction was common in the lowland Mayan cities.

At the site explored 100 mounds dot an area no longer than a mile and a half, and in these mounds, one of which has already revealed the important tombs, there are hidden ruins of an extensive native community. The site has been called by modern farmers of the region Milaflores, but the archaeologists propose calling it Kamin-aljuyu, meaning in the Quiche Indian speech "Hills of the Dead."

Mayan Indians are a challenging mystery to modern science because they achieved a brilliant civilization with no aid from the Old World. Mayan at-

tainments in astronomy, writing, sculpture, architecture and government organization are well known. But, how they arrived at these heights of culture is a puzzle, which archaeologists are determined to trace stage by stage.

Calling the Hills of the Dead a site "of first importance," Carnegie archaeologists have hopes that the solution may be found in these ruins.

## Built in Layers

In probing the one mound containing the pyramid and tombs Dr. Kidder has already discovered stratification of buildings. He also has recovered large amounts of pottery from levels of earth which represent a sequence—show what the culture of these people was like at successive eras.

The oldest objects recovered from the Hills of the Dead go all the way back to the Archaic type. That is, they are similar to the oldest relics ever found in other parts of Guatemala and Mexico.

The tombs in the pyramid are not so old as this. Their contents are pronounced closely like objects found at the ruins of Uaxactun, in the lowlands of Guatemala, representing a period of Mayan history known as the Old Empire. This Old Empire flourished, with many cities in Guatemala, Honduras and southern Yucatan, in the earliest centuries of the Christian era.

Dr. Kidder astutely predicted the importance of discoveries in this region over a year ago, when he said:



## HILLS OF THE DEAD

*This flight of steps leads to number two of a series of four pyramids, superimposed like a nest of boxes, which are being explored in Guatemala by archaeologists of the Carnegie Institution of Washington. The pyramids are tombs for Mayan priests or rulers. This illustration and the one on the facing page are official photographs of the Carnegie Institution.*



**FOR INCENSE**

*From the mouth and armpits of the odd figure issued incense when it was used in the rites of ancient Mayas.*

"Apparently the highland region was much more of a highway for trade and migration than the densely jungled lowland country. Consequently intensive work on the sites of the region can be expected to provide extremely valuable information as to the chronological interrelation of the various ancient cultures, particularly as it is probable that stratified remains will be discovered." *Science News Letter, August 29, 1936*

MEDICINE

# Heart Failure Explained By Deranged Cell Chemistry

**S**TUDY of the chemistry that goes on in the individual muscle cells of the human heart has suggested and supported a fundamental explanation of heart failure.

This important advance in medical knowledge was made in research by Drs. George Herrmann, George Decherd, and associates at the University of Texas School of Medicine, in Galveston.

Heart failure, these investigators reported to the Southern Medical Association and the American Heart Association, is fundamentally a disturbance in the breaking down and rebuilding by the individual heart muscle cells of a chemical called phosphocreatine. This biochemical derangement makes the heart muscle cells less efficient engines of contraction, with the result that the heart fails at its job of pumping blood out through the body.

Inadequate supply of oxygen to the individual heart muscle cells may start these serious chemical changes in the heart muscle cells. In patients with chronic heart disease, anoxemia or deficiency of oxygen content in the blood is the chief causative factor of the pathological chemical changes that weaken and finally exhaust the heart muscle. The administration of oxygen may temporarily postpone these chemical changes.

The chemical basis for contraction of skeletal muscle, previous investigators

have found, is a phosphocreatine compound. When this chemical is built up in the muscles from potassium, phosphates and creatine, it becomes a powder barrel of energy, which when touched off is transformed into muscle contraction.

The Texas University investigators have gone into this fundamental problem and have made a study of the chemical makeup of hearts from patients who had died in heart failure. They corroborated the evidence that there is in such hearts a great decrease in creatine, from which it is logical to conclude that during life the phosphocreatine content was abnormally low. Potassium and phosphate were likewise found to be decreased.

The problem was then attacked from the experimental point of view and damage to the heart muscle was produced in various ways and the effects of the damage on the creatine content, as well as the other chemical constituents, was determined. Tying off one of the large arteries which supplies the heart, a condition which experimentally reproduces the effect of coronary thrombosis in human beings, showed conspicuous losses of glycogen, phosphate and creatine in the heart muscle from the area to which the blood supply was cut off.

Heart damage was furthermore produced by injections of combinations of

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