

Those who did not follow Chinichinich's teachings were avenged, he told. He said: "Him who obeyeth me not, I will send bears to bite him, rattlesnakes to sting him, sickness, calamities, and death."

Indian traditions say that this Indian god is still alive and existing. He is chief of the Happy Hunting Grounds and Captain of the Dead. Mr. Harrington hopes to recover more details of this mysterious Indian teacher and his influence.

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## ARCHAEOLOGY

## Skeleton Guards Relieved Of Duty at Monte Alban

**S**KELETONS that have guarded Tomb 14, Monte Alban, for centuries have at last been relieved of their duty.

Mexican archaeologists exploring the cemetery of the ancient Mexican city have entered Tombs 13 and 14. Above the latter they found two guardian skeletons buried. Inside the small flat-roofed stone chamber was the skeleton of the Indian whose attendants lay overhead.

In another part of Monte Alban, the excavators have been exploring the interior of the Southwestern Pyramid which stands on the North Platform. They have found a large debris-filled room inside the pyramid. Vestiges of stucco indicate that the room was once painted red. This red room, long hidden under the pyramid shell, is pronounced by the archaeologists to be the temple room of a smaller and older place of worship.

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Michigan scientists find that the grit cells in pears vary greatly with different varieties.

## PHYSICS-ARCHAEOLOGY

# Modern Laboratory Duplicates King Tut's Purple Gold

**B**EAUTIFUL purple surface films on golden sequins found in the tomb of Tut-Ankh-Amen have been proved to be due to the presence of iron in the gold, by Prof. R. W. Wood of the Johns Hopkins University. Prof. Wood reported on his examination of these ancient ornaments before the American Association for the Advancement of Science.

The sequins have been the subject of much discussion ever since they were first discovered. Some scientists have claimed that the Egyptians knew an art for coloring gold surface purple, while others have believed that the purple sheen was a kind of patina due to the great age of the ornaments, Prof. Wood, using the methods of a physicist, has shown the color to be due merely to the presence of iron in gold which has been first hammered and then heated. He even made duplicates of the sequins by hammering out a gold-iron alloy into the thin flakes and heating the latter over a flame. One of his modern purple-gold sequins has been sent to the Cairo Museum, to be displayed along with the originals.

A modern beauty aid helped in the solution of the riddle of the purple film. Prof. Wood found he could remove the film by coating the gold ornaments with celluloid varnish such as is used in fingernail polish, and then peeling off the varnish, leaving the underlying gold of a bright yellow color. There was no

sign of the film on the peeled-off varnish layer, but the film could be made to reappear by redepositing gold on the side to which the film was attached by vaporizing gold in a vacuum. Then the purple could again be seen by reflected light. The problem in physical optics presented by this phenomenon is still under examination, Prof. Wood stated.

Subjected to spectroscopic examination, the stripped-off film proved to be principally iron, probably an iron oxide. Prof. Wood then suspended one of the sequins from which the purple film had been removed between the poles of a strong electromagnet. It was attracted toward one of the poles, demonstrating the presence of iron in the gold.

Etching the surface of the gold with acid showed a very marked crystalline structure, such as is found only when rolled or hammered sheet gold is subsequently heated to nearly a red heat. Microscopic examination showed on the surface numerous small globules of gold standing out in high relief, conclusive evidence that the sequins had been heated to a high temperature after having been hammered into shape. It was after having learned these facts that Prof. Wood took gold and iron and duplicated the product of the "lost art" of the ancient Egyptian court jewelers.

The microscopic globules Prof. Wood believes to be due to melting of the gold out of a gold-orpiment mixture experimentally tried by the Egyptian artist. Orpiment is a bright yellow arsenic-sulfur compound known to the Egyptians and used by them in tomb wall decorations. Lumps of it were found in Tut-Ankh-Amen's tomb, some of which Prof. Wood received from the Cairo authorities.

Melting gold with this orpiment, and rolling the resulting bead out into a plate, Prof. Wood heated it over a flame and obtained gold globules exactly like those on the sequins. He also hammered out small nuggets of California gold, which had been in his family since '49, and on heating the resulting plates he again obtained the globules. No purple film appeared, however, for the California gold is free from iron.

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