



Dow Corning

**SILICONE REPLICA**—David Villasenor, California sculptor, cleans the 12-foot fiber glass replica of the Aztec Calendar Stone. To make this perfect reproduction he poured liquid silicone rubber, made by the Dow Corning Corporation, Midland, Mich., over a hand carved duplicate in wood.

## TECHNOLOGY

## Silicone Molds for Art

► **AN AMAZING NEW** kind of rubber is making it possible to reproduce exact copies of ancient works of art.

Silicone rubber is being included more and more often in the tool kits of archaeologists and experts on ancient art.

The rubber molds helped reproduce the famous Aztec Calendar Stone and the Altamira cave paintings. The originals are in Mexico and Spain, respectively, the copies, in the United States and Germany.

David Villasenor, authority on Indian art and culture, studied the Aztec Calendar Stone, on display in Mexico City, for four years. He measured every figure on the face of the 12-foot monolith and carved a small scale duplicate in wood.

He then poured liquid silicone rubber, made by the Dow Corning Corporation, Midland, Mich., over the

carving. A fiber glass "stone" was cast in the mold.

Next he made a full-size casing.

After making 1,000 copies of the stone in smaller molds, Mr. Villasenor found the silicone rubber in good shape. It apparently has the durability of the quartz rock it is processed from.

To reproduce the famous cave painting at Altamira, Spain, German archaeologists stereo-photographed the rough, eroded cave wall, and guided by these photographs, built a copy. A silicone rubber mold was made and was sent to the Deutsches Museum in Munich. There, a copy was cast and painted with stone age pigments to simulate the painting.

Altogether it took eight years and 800 pounds of silicone rubber to reproduce this ancient painting.

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## ARCHAEOLOGY

## Ancient Pottery Dated By Light From Heating

► **BY HEATING** pieces of ancient pottery from the dry coast of Peru, scientists have been able to tell how old they are.

This method of dating, called thermoluminescence, has been used for several years as a dating technique for rocks and minerals, reported Drs. Richard B. Mazess and D. W. Zimmerman of the University of Wisconsin, Madison.

Thermoluminescence is the release of stored energy in the form of light from a substance when it is heated, they reported in *Science*, 152:347, 1966. The phenomenon occurs in many crystalline nonconducting solids. Radioactive elements that occur naturally in these materials are a nearly constant source of ionizing radiation. Some electrons excited by this radiation become trapped, but when heated they are released, emitting light.

Pottery accumulates such trapped electrons with time. By heating the pots from the coastal areas, where aridity reduced the effect of chemical and physical changes, the scientists were able to find a ratio that closely corresponded to the independently assessed archaeological age.

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## ANTHROPOLOGY

## Indian Cradle Board Strengthens Papoose

► **THE ANCIENT INDIAN** papoose cradle board actually strengthens a growing infant by inducing isometric exercise.

The North American Indian practice of strapping babies to boards for as much as 20 to 23 hours a day develops the same strength and skills in growing children as free exercise and active exploration.

The reason is simply that the cradle board is an isometric device, reports Dr. Charles Hudson, University of Georgia.

In isometric exercise, no limb movement occurs and the length of a muscle remains constant as tension develops, he stated in *American Anthropologist*, 68:470, 1966.

The other, more familiar kind of exercise, called isotonic, involves active limb and body movement.

An infant can therefore achieve maximum effect in training muscles from a daily contraction lasting only one or two seconds as he strains against the swaddling cloths binding him tightly to the board.

North American Indians such as the Navahos claim the cradle boards possess magic qualities to make their infants strong. In actual practice, says Dr. Hudson, the board does succeed in doing what it is intended to do.

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