

ASTRONOMY

Brown University Astronomer To Study Zodiacal Light

Photographs To Be Taken on Expedition to Eclipse Of Sun in South America On Next October 1

PHOTOGRAPHS which, it is hoped, will help explain some of the mystery of the sun's "zodiacal light," are the principal item on the program of an expedition from Brown University to South America to observe a total eclipse of the sun on October 1.

The expedition, co-sponsored by the Skyscrapers, amateur astronomical society of Providence, R. I., will be headed by Dr. Charles H. Smiley, chairman of the Department of Astronomy at Brown, and director of the Ladd Observatory. They intend to set up their high-speed cameras at Quixeramobim, Brazil, on the eastern shoulder of South America, about 100 miles northwest of Recife (formerly Pernambuco). At this location the moon will hide the sun about 10:00 a.m., (Recife time) for nearly five minutes.

The zodiacal light is seen, in the west after sunset or in the east before sunrise, as a wedge or cone of light extending along the ecliptic, the line in which the sun seems to move around the sky during the year. Best seen in the tropics, it is occasionally visible in North America, and is considerably brighter than the most brilliant parts of the Milky Way. Astronomers believe it is caused by reflection of sunlight by myriads of tiny particles arranged in a disc around the sun, and extending

out well beyond the orbit of the earth.

Three astronomers have reported seeing it during eclipses, and photographs made by Dr. Smiley from the Peruvian Andes during the eclipse of June 8, 1937, showed a similar effect. However, doubt has been expressed that the sky at an eclipse ever gets dark enough for it to appear. Dr. W. H. Steavenson, an English astronomer, recently said in speaking before the British Astronomical Association:

"I have seen both the Zodiacal Light and a total eclipse separately, and I am sure that the Zodiacal Light would be quite invisible under such conditions, as the sky never gets nearly dark enough."

Dr. Smiley hopes to verify his findings of 1937, and to obtain better and more convincing photographs on his 1940 expedition. He will be accompanied by Mrs. Smiley and Arthur A. Hoag, a junior at the University. They anticipate good weather conditions, for it seldom rains or even is cloudy at Quixeramobim in October. They will leave here August 15. On account of disruption of steamer routes by the war, they may have to go first to Rio de Janeiro, then retrace their route along the Brazilian coast, by land, air or water, to their destination.

Science News Letter, July 13, 1940

small indeed, but the change would (1) improve the accuracy of temperature determinations, (2) fix by definition the values of the constants for converting ordinary Centigrade and Fahrenheit temperatures to Absolute temperatures, and (3) the change would eliminate revisions of previously determined temperatures as new determinations are made of fundamental coefficients of thermometric gases.

The possibility of the new standard was foreseen by the famous English physicists, Joule and Thomson, later Lord Kelvin, in 1854 when standards of the present temperature scale were being set. They recognized that when the temperature of the ice point became known sufficiently accurately, it would be desirable to use it alone to fix the scale. This time is believed to have arrived.

Dr. F. G. Brickwedde, chairman of the Committee on Low Temperature Scales of the National Research Council, points out (*Journal of Applied Physics*, June) that the definition of the temperature scale now in use is the result of an evolution and that it will continue to be changed to meet demands for greater accuracy and precision in the measurement of temperatures: Dr. W. F. Giauque of the University of California has proposed that steps be taken to bring about the adoption of the suggested change.

Science News Letter, July 13, 1940

ARCHAEOLOGY

Old Panama Graveyard Reveals Ornamented Chief

BEDECKED in exquisite golden ornaments, surrounded in death by his wives and slaves offered up as human sacrifices, the remains of a high Indian official or chief of pre-Columbian Panama have been unearthed in a vegetation-covered graveyard on a Coclé province plantation.

This important burial of an American leader who ruled his part of the world some time between 1300 and 1500 A.D., was discovered by an expedition of the University of Pennsylvania's University Museum.

In his first revelations of the discovery, Dr. J. Alden Mason, of the museum's staff, leader of the expedition, stated that the chief was buried in a large, bowl-shaped pit 11 feet deep. In this, mourners laid the resplendant chief decked in gold and surrounded by more shining gifts.

Outstanding were five golden plaques big as dinner plates, believed to have

STANDARDS

Propose New Definition For Temperature Scales

ONE of the most fundamental standards of science and industry, the temperature scale, will have a new definition if suggestions now being put forth are adopted.

Now the essential points on thermometers, whether they be the familiar ones filled with mercury or colored alcohol or the more precise electrical and gas kinds used for greater temperature ranges and more exact measurements,

are set by temperature of melting ice (0 degrees Centigrade and 32 degrees Fahrenheit) and the temperature of steam (100 degrees C. and 212 degrees F.).

Under the suggested change only the ice point would be standard and the steam point would be determined experimentally, just as the boiling points of liquids other than water are now determined. Actually the difference between the two systems would be very



AN AMERICAN "TUT"

Recalling beauty and glitter of the Egyptian Tutankhamen's burial gifts, the golden burial of an Indian chief has been found in Panama. Shown here as it appeared when first uncovered by archaeologists, it reveals gold medallions, at top, probably from the headdress, ornamented gold plaques worn on the chest, a gold crocodile pendant set with an emerald, gold cuffs, a bead girdle, and many earrods.

been sewed on the front of his war costume. There were also smaller gold plaques, gold cuffs and anklets, ear clips, bells, and beads.

A pendant which Dr. Mason calls "one of the most beautiful and extraordinary gold objects found in America" was on his breast, and it gleamed with an emerald an inch in diameter. The emerald, however, is less interesting than beauty of the goldwork, being pronounced of no great commercial value. Interesting also are earrods, which telescope curtain-rod fashion.

From thick layers of broken pottery, Dr. Mason concludes that those present must have danced or trampled clay dishes into the grave in some ancient and forgotten rite. A crocodile god was worshipped by these Indians, and went to war with them in decorative symbols on the chief's regalia.

Only a small part of the cemetery, which is believed to cover four or five acres, has thus far been excavated. A trench dug by the archaeologists encountered about 30 graves containing hundreds of pottery vessels, and skeletons so fragile from the long-soaking in

rainy seasons that they could not be preserved for study. Digging the big graves must have been a tremendous task, Dr. Mason says, for people with no iron tools.

What Indian people these were, in a region 100 miles west of Panama City, is not yet learned. They are unlike the

famous Mayas or Aztecs and are believed to have had South, rather than North, American culture.

The expedition was undertaken with permission of the Panama government, which will place a share of the discoveries in its national museum.

Science News Letter, July 13, 1940

PHYTOPATHOLOGY

New Method Aids Search For Elms With Dutch Disease

A NEW and cheaper method used in the search for trees afflicted with Dutch elm disease is described by W. E. Ahrens of the U. S. Department of Agriculture. (*Phytopathology*) It has the further advantage of being usable at any time of year, instead of only when the trees are in leaf, as at present.

Mr. Ahren's method depends on the fact that Dutch elm disease causes a marked discoloration of considerable areas in the sapwood, just beneath the bark. Samples of this wood, to a depth of from two to five annual rings, are ob-

tained by driving in a half-inch hollow punch at six-inch intervals all around the trunk. The small wounds thus made are protected against other infections by squirting in a little paint, from a pump-type oilcan.

The thin disks of wood are clipped in two, and if any of them show the discoloration symptom they are taken to the laboratory, where cultures are made to show if the deadly fungus is present.

A high percentage of dependability is claimed for the new method.

Science News Letter, July 13, 1940

RESOURCES

Collection of Scrap Metals Enforced by Death Penalty

WITH a death penalty to enforce it, the German government is now gathering articles made of copper, brass, tin, bronze, nickel, lead and other heavy non-ferrous metals, the U. S. Bureau of Mines has learned from diplomatic representatives in the Reich. Zinc, however, is expressly excluded because the domestic production has greatly increased in recent years. Part of this has been due to the acquisition of extensive zinc mines in Polish Upper Silesia. Neither are light metals, such as aluminum and magnesium, nor precious metals, desired.

Another decree has enabled the government to requisition, for the lead they contain, all storage batteries from automobiles not in regular use, especially those from private motor cars. These have suffered enforced idleness for some time in order to conserve gasoline. Prices paid vary from .90 mark (36 cents) for a 6-volt 50-ampere battery to 6.40 marks (\$2.56) for one of 12 volts 150 amperes.

Though the German government emphasizes that the campaign is not to be construed as evidence of any dangerous shortage of these metals, officials here believe that even with conquered territory they will still have difficulty in acquiring ample supplies. All German tin has been obtained from overseas countries. The chief European source of nickel has been northern Finland, which also supplied copper. Yugoslavia and Norway have also furnished copper, but it is doubtful whether these countries can supply enough to offset the reduced supply from abroad.

The decree announcing the death penalty to enforce the collection, signed by General Goering, is as follows:

"The collection of metals represents a sacrifice by the German people for the endurance of the war forced upon them.

"Whoever enriches himself by means of these metals, which have been collected or are destined for collection, or