

all but skilled pilots using high-grade equipment.

American soaring has progressed to the point where minimum contest standards in effect for the national soaring meet next summer equal those in effect in Germany, homeland of motorless flight, Lewin B. Barringer, general manager of the Soaring Society of America, told its national convention.

Summarizing progress made during the past year, Mr. Barringer revealed that sailplane pilots must conform to

minimum flight standards of five hours' duration, 3,500 feet for altitude or 35 miles for distance. The provision will eliminate all but high performance sailplanes from the meet.

A Soaring Society expedition will be based at Wichita Falls, Texas, from April 10 to May 8 to test flight conditions over the great Southwest plains area. The period of testing will be climaxed by a goal flight contest from Wichita Falls to Tulsa, Okla., a distance of 215 miles.

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ARCHAEOLOGY

Dead Men's Heads Carved On Ancient Temple in Peru

See Front Cover

DEAD men's heads on a prehistoric temple wall!

This is grim evidence of religious head-hunting in ancient Peru, reported by Donald Collier, young archaeologist, who has returned from making some remarkable discoveries in company with Peru's most noted archaeologist, Dr. Julio Tello. Mr. Collier, son of Commissioner of Indian Affairs, John Collier, is preparing his report for the Institute of Andean Research, which he represented.

The weird art subjects were discovered, Mr. Collier said, when the expedition unearthed a remarkable ceremonial terrace of stone on the coast of northern Peru. On some stones, they found carvings of warriors making vigorous gestures. Other portraits had no bodies but were mere cadaverous-looking faces "all cut off obviously under the chin."

"The supposition is that they had human sacrifice," he explained, "and one form was to take human heads—whether heads of their own people or those of enemies, we don't know."

Mr. Collier describes the stone temple, its art, and the cemetery nearby as all revealing a new kind of culture, unlike that of other Indians who lived in Peru before the great Incan Empire was formed. These ancient Indians who built the stone temple lived perhaps 600 A.D., or around 900 A.D.—dating them is mere guesswork, Mr. Collier says. Aside from three kinds of pottery buried in strata of earth, there is nothing to suggest passage of time, or any particular era.

This is the first discovery of a temple of giant stones on the coast land of Peru. Such temples were built in Peru's

mountains, but coast tribes used adobe architecture.

"This is the first indication," he said, "that some of the highland people came to the coast to live and built a temple, because it must have taken several years to construct the terraced pyramid with these blocks ten feet high and several feet thick."

The mysterious stone workers had a highland background. But where they got their art ideas, and their plain style of pottery making, and their simple ideas of burial—very different from the elaborate mummy-wrappings of some Peruvian graves—is still to be traced, so that science may fit these unknown Indians into the pattern of Peru's prehistory.

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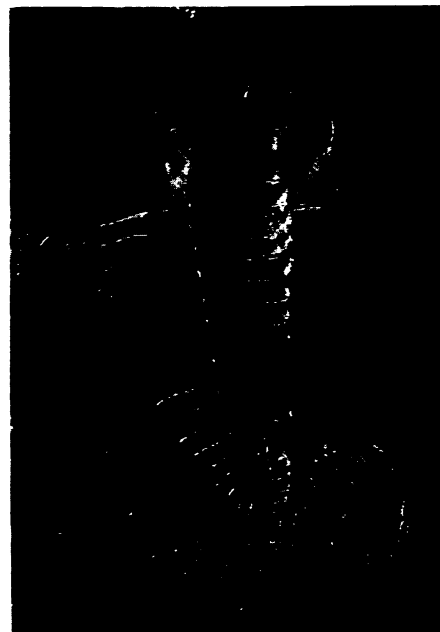
GEOLOGY

Ancient Rocks Identified By Two Trilobite Genera

ROCKS of a geological formation half a billion years old, scattered from Alabama to Labrador, have been identified as belonging to the same system by fossils they contain, of two genera of trilobites, which are distant relatives of lobsters and crabs, long since extinct. The rocks, of early Cambrian date, have also been shown to be similar to others in Scotland and Greenland.

The investigations were carried on by Dr. C. E. Resser of the U. S. National Museum and Dr. B. F. Howell of Princeton University. The key trilobites, whose flattened external skeletons were found in the rocks, belong to the genera *Wanneria* and *Olenellus*.

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CALENDAR MARKER

One of the trilobites that made possible the dating of widely separated sandstones as of the same age.

ETHNOLOGY

Pueblo War Songs Link Indians With Far East

EVEN in their music, American Indians have preserved small clues suggesting Oriental ancestry.

Not that Indians are to be thought of as descendants from Chinese or Japanese civilization. Their stemming off from an ancestral tree goes far back to Mongolian-type tribes that roamed to the northeast tip of Siberia and thence, from time to time, crossed into the northwest tip of Alaska. After that they were Americans, and their descendants "Indians." They brought some crafts and customs with them. They learned many new ones in America, and some groups like the Mayas evolved high civilization.

Anthropologists are greatly interested to detect what Indians owed to Asia, and from what parts of that homeland they gleaned their old culture.

Now, it develops that Indians in the Southwest had a psychological trick in war songs, of raising the song a semitone as it progressed and keeping it there to the end. It was exciting. And remarkably enough, Japanese used the same device in stirring warriors by song.

Miss Francis Densmore, who has studied music of many Indian tribes, first noted this similarity when Pueblos were singing old war songs recently for her to record. Reporting this and other similarities between Indian and Old

World music, Miss Densmore disclaims any intent to theorize on the Indians' past. She is merely presenting facts, which may have significance.

From an authority on Oriental music, Miss Densmore learned that Japanese got the idea of raised pitch in war singing

from Chinese priests, who brought it from India in the seventh century. If Pueblo ancestors got the idea from a common source—or invented it—in the Old World, that must have happened far earlier. Pueblos were well established in the Southwest by that time.

GEOLOGY

Iron Masses Under Meteor Crater Shown Magnetically

Modern Prospecting Method Indicates Presence of Five Deeply Buried Fragments of Original Projectile

SCIENTISTS now have real evidence, for the first time in over 30 years of exploration, that there exist beneath Arizona's famed Meteor Crater large masses of what well may be parts of the giant meteor itself. Despite the name of the baffling giant pockmark in the earth's crust, scientists have not always been sure of this fact.

Yet scattered tiny surface fragments indicated that a meteor, containing 92 per cent. iron and 8 per cent. nickel, probably struck in that spot. And the veritable treasure of a tremendous deposit of almost pure iron buried beneath was an economic incentive which has attracted mining engineers to the spot.

Electrical Prospecting

New measurements, by electrical prospecting, have disclosed five giant masses of magnetic material—probably iron—lying 1,200 feet beneath the crater. Hans T. F. Lundberg, Canadian geologist, told of his discoveries at the recent New York meeting of the American Institute of Mining and Metallurgical Engineers.

Recurrently, through the years, drilling operations have sought to strike the supposed underground iron deposits which would bring wealth to the finder. But the fractured underground rock structure and swift currents of underground water hampered the work. Indeed, in 1931, drilling at the site was abandoned and geologists were about to place the mystery of the crater's origin among the unsolved problems of science.

Mr. Lundberg's new technique was to plot the area for more than a mile around the crater for its magnetic variations. If large masses of magnetic materials were buried deep underground

they would produce magnetic anomalies in the observable magnetic field. Systematically plotting the whole area, Mr. Lundberg finally detected two anomalies directly under the crater and three others slightly south of it.

To explain previously the absence of large masses of the meteor geologists have suggested that the great meteor blasted out the crater and then—when it struck water underground—exploded into small fragments which were scattered about the neighboring region. Now, however, it appears that at least five large parts escaped this explosion and have penetrated to great depths.

Further electrical prospecting, suggests Mr. Lundberg, may now make it feasible to plan the exploitation of these rich iron deposits. Such prospecting would particularly seek to fix the paths of the underground streams hampering mining operations.

Indirect Approach

It might be best to sink a shaft away from the crater itself and then—at the proper depth—make a horizontal drift into the iron masses. Such drift operation is easier in water-carrying ground than is shaft sinking, says Mr. Lundberg. Work of this nature has been accomplished elsewhere by new sealing methods. "Is it now hoped," he adds, "that by this method the long searched-for meteor will be reached and the mystery of Meteor Crater solved."

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Beaver hats aided in exploration of America—the search for beaver pelts to make these fashionable hats led trappers and traders into various wilderness regions.

PHYSICS

New Swedish Process Freezes Salt From Ocean

SWEDEN has no salt and no fuel; the latter fact being significant because one can evaporate salt water if an abundance of fuel is at hand for a fire. Yet Sweden has an abundance of hydroelectric power and thereby has one key with which to unlock the doorway which guards the salty waters of its majestic fiords.

Sweden is now building an experimental factory on Gullmar Fiord in which salt will be produced by freezing. The U. S. Bureau of Mines reports that Gullmar Fiord contains a very high percentage of salt in its waters. At the experimental plant this water will be frozen by the abundant electric power in mechanical freezing units and a very concentrated salt solution thus obtained. This salty brine is then evaporated by heat, but much of the work of getting the final salt crystals has already been done by the freezing.

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EVOLUTION

Animals of Cooler Regions Larger Than Warm-Land Kin

SCIENCE now provides support for the common observation that races living on mountain heights or in northern latitudes are on the whole larger than those living at low levels and farther south. This opinion, usually held only as regards human beings, is extended to include animals as remote from man as birds and insects, in studies made by Prof. Theodosius Dobzhansky of the California Institute of Technology.

Prof. Dobzhansky bases his conclusions both on studies of specimens collected in the field and on the growth of a number of different kinds of organisms in the laboratory.

Races of mammals inhabiting cooler regions, although they may be in general larger, have shorter body appendages (tails, legs, ears) than races of the same species from warmer regions. Among birds the same is true for the relative lengths of beak, legs, and wings. Races of mammals and birds and some invertebrates living in cooler climates are larger in body size than races of the same species in warmer climates. In mountain countries races from higher elevations are larger than those from the lower ones.

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