

that makes queens of some of her daughters, though they receive no benefit of it themselves.

This apparent production by bees of a hormone that can influence the development of mammals and other vertebrates is a new piece in a modern biological puzzle that becomes increasingly com-

plex. Female animals produce male hormones, male animals produce female hormones, and animal hormones characteristic of both sexes have been found in plants, even in some of the lowest forms. Physiologists still have a lot of explaining to do.

Science News Letter, July 29, 1939

ARCHAEOLOGY

More Than 50 Expeditions Will Uncover American Past

Archaeologists Plan Busy Summer With Pick and Shovel; Nearly Another 50 Parties Will Explore Foreign Sites

By EMILY C. DAVIS

SEE ancient America first! This is the present American trend in the big scientific adventure of digging up prehistory. Out of nearly 100 American archaeology expeditions taking the field this summer, more than 50 will make the dirt fly within the states.

A current slump in American eagerness to explore foreign lost kingdoms and buried civilizations is partly due to economic considerations. Long-distance expeditions are costly. Partly, too, there is a canny desire to skirt around international danger zones.

But there is no slump in digging up ancient America. The Indian panorama, which left its mark on our roads, agriculture and other highly important developments, is being unearthed at unprecedented speed.

Partly responsible for the attack on American prehistory on so many fronts—that is to say, in so many of the states—is the WPA program, financing 32 of the archaeological expeditions, in 22 states. In each project the government provides the labor, giving 2,500 men and women work. A museum, university, or scientific institution sponsors each expedition, and supplies archaeologists to direct it.

May Find Men

This summer of 1939 may prove the big year revealing the long-sought men who first took America. The trail of their weapons and bones of great beasts they slew have tantalized archaeologists long enough. They are increasingly eager to find bony remnants of the hunters themselves. Modern America would like to meet personally the first inhabitants,

who apparently came before the last Ice Age ended, a good many thousand years ago.

The only archaeologist that the Smithsonian Institution in Washington is sending out to dig, this summer, will pursue the manhunt for the missing Folsom hunters. Digging in Colorado, at the one known campsite of Folsom Man thus far discovered, Dr. Frank H. H. Roberts, Jr., of the Smithsonian, has in previous seasons found a variety of their stone tools and the red paint they used for art, as well as dinner remains and the debris of their tool-making. All this provides the most varied picture of the mystery man yet unearthed, and Dr. Roberts still hopes that, if any of the hunters were unlucky enough to die while camping at this place, he may have the luck to find the bones.

Cooperative Venture

Meanwhile, a hunt for Folsom Man's remains and relics is being organized into a cooperative venture under WPA auspices in universities in Montana, Wyoming, and neighboring states. By pooling resources and knowledge, these searchers expect to make greater progress than would be possible alone, in tracing routes and experiences of the earliest immigrants who came via the Siberian-Alaskan route to live in the New World. There is even the possibility of detecting earlier and still more shadowy arrivals than the Folsom hunters, judging by recent findings in California of more primitive and apparently more ancient tools than Folsom Man's own.

Bestirred by the building of the dams in the Tennessee Valley and other regions, archaeologists are now working against time to rescue relics of the past buried

in each new era marked for inundation. Indian mounds and settlements are now being explored in Texas and the TVA area where landscape will soon become a lake bottom, lost forever for further investigation.

Many of the shell ornaments and Indian belongings coming to light in Alabama mounds, in this race to rescue prehistory, are providing valuable missing links in the story of the Southeast. They may eventually show what was the connection, centuries ago, between centers of high Indian culture in the Mississippi Valley and those in the deep south.

To study a little-known type of Indian life that thrived in the Southwest over a thousand years ago, three different museums are sending out expeditions. The Mogollon culture is the name archaeologists have bestowed on this distinctive pattern of Indian life, detected by some of its relics.

Study Mogollon Culture

The only archaeological expedition sent out by the Field Museum of Natural History this summer will investigate this Mogollon culture in New Mexico. Digging in early ruins near Glenwood, the explorers hope to find out whether the little-known Mogollons had anything to do with the well-known Basket Maker Indians who made homes in the Southwest in centuries around the turn of the Christian era.

At another ruin not far away the same Mogollon Indians will be investigated by scientists of the Logan Museum of Beloit College, with the idea that these elusive ancients might have some connection with Pueblo Indians, who succeeded the Basket Makers.

In Arizona, south of Showlow, a Mogollon village occupied apparently about 700 or 800 A. D. will be explored by the Arizona State Museum, for any light on these Indians and their role in America's past.

Confident that they can actually date prehistoric events in the middle west, archaeologists of the University of Chicago are now putting final touches on two master charts of tree rings. These charts, which have been built up by matching and overlapping older and older series of annual growth rings formed in midwestern trees, can be linked with calendar dates in which distinctive series of rings formed. Like the tree-ring calendar which has restored to Southwestern pueblos and cliff-dwellings their "ages," the two new tree-ring calendars will help date events in the lives of the Mound Builders in the northern



IN THE SOUTHWEST

A number of expeditions are probing America's past in this region. Chaco Canyon, New Mexico, typical Southwestern scene of ruins and rocks, is getting some repair work done. Ancient Indian walls are being propped up for safety.

Mississippi Valley and the central area, including northern Georgia and eastern Oklahoma.

Midwestern tree rings are telling tales of ancient America's economic worries. Both oak and pine trees of Tennessee and southeastern Missouri indicate severe droughts between 1684 and 1708, and between 1725 and 1738, the research reveals. These times of dryness, it is believed, must have caused great privation to the Indians, and there must have been considerable moving of the population to escape it.

American luck at striking archaeological treasure abroad starts out well, this year of 1939.

Discovery of a palace in Greece, right out of Homer's "Odyssey," is already announced, and also new light on King Solomon's "Pittsburgh" by the Red Sea.

In Athens, for the ninth season, Americans are persistently clearing the famous Agora, or market place. The greater part of the market place is now cleared. Many public buildings have been identified, providing thrills for the discoverers who are the first moderns to see these forgotten scenes out of Greek history.

But still sculptures, inscriptions, and building ruins continue to be uncovered in the famous Agora. An early discovery this year is the great drain of the market area. Unused since 86 B. C., apparently, it is being cleared and will again carry rain water off the site.

Antioch, which rated as one of the "big four" cities of the early Christian era, is another scene for 1939 discoveries. In 1932, American and French institutions banded to work together, to unearth this famous city in Syria, giving themselves five summers for the work. But buried Antioch has proved far richer in ruins and history than they expected.

In this ancient Antioch, where St. Paul walked and Christian history was made amid scenes of extravagant luxury and beauty, archaeologists are now seeking the Forum of Valens. They hope to identify it, and the buildings nearby and the main cross street. They are digging also at the suburban Daphne, and in a third century villa they have already found such art objects as silver vessels, a statuette of Hera, and mosaics that were a favorite decoration of Antioch's wealthy homes. Later in the season, the searching will be transferred to Antioch's ancient port, where for two years they have been bringing to light the markets, shops and docks of a great city's sea trading.

Archaeologists boldly declare that the Greek world is still far from fully revealed, and so long as they can make discoveries such as Nestor's Palace, unearthed this spring, the claim will stand undisputed. This palace, in which the wise Nestor of Homer's tales welcomed and counseled the Greeks, turns out to be a large residence facing the Ionian Sea.

But for Prof. Carl Blegen of the University of Cincinnati, who found it while working with the director of the Greek National Museum, the Palace of Nestor is far more than an impressive home, with strong stone walls and spacious painted walls. For in a small room in the palace, the discoverers encountered stacks of hundreds of archives written on clay.

Bookkeeping Records

Here, for the first time, is writing by the Greeks of Homer's age. Their script proves to be borrowed directly from the isle of Crete. The tablets resemble those found in Crete. Those first examined are mainly bookkeeping records, long lists of goods and men. The writing of early Greece, like that of Crete, becomes one more problem for scholars to solve. A few signs can be deciphered; otherwise this kind of script is still unreadable.

At Ezion Geber, where last year Dr. Nelson Glueck found King Solomon's seaport, he has resumed digging and has already announced finds. It is clear now that the ambitious King Solomon built this industrial and shipping town from the ground up. Thousands of laborers worked on it, and the brick walls after 3,000 years are still in many places standing almost to original height.

Here were great smelting and refining plants working the copper and iron brought from mines not far away. The metal goods, as archaeologists can readily see, were economically handled in this way, for Ezion Geber was well located. From it Solomon's own ships sailed down the Red Sea carrying trade goods, to exchange for the always desirable gold and ivory, spices and fine woods of Africa and the east.

The American School of Oriental Research, in Jerusalem, which is exploring Solomon's port, is one of the few agencies now trying to work in the neighborhood of Palestine. Solomon's port is east

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of Palestine, and Transjordan has heretofore been unaffected by Arab uprisings. But when sudden disturbances broke out east of the Jordan in March, British officials held up permission for digging at the Solomon port. For a time, all Prof. Glueck's arrangements for convoys, camps, and supplies seemed likely to end in no expedition at all.

Strife in Palestine has not stopped the digging at the place most closely associated with wars—ancient Armageddon. The Oriental Institute of the University of Chicago has just finished six months work there, though the road from Megiddo—as it is called today—to Jerusalem is traveled only when armored cars lead and follow private automobiles that travel the highway. On the last day of digging, an ivory “protective instrument” belonging to a woman of 1400 B. C. was found.

Before summer is over, Americans may be telling of discoveries in Iran, in Turkey at the site of ancient Van, in Cyprus, Egypt, Bulgaria, to name other regions where archaeological news may break, in the determined search for the forgotten past.

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The exact tone required for automobile horns is specified in Argentina.

The Chinese 4,000 years ago realized that goiter generally attacked people who lived inland, and they treated it with seaweed and other sea medicines many of which contained the helpful iodine.

● Earth Trembles

Information collected by Science Service from seismological observatories and relayed to the Jesuit Seismological Association resulted in the location of the following preliminary epicenter:

Monday, July 17, 10:26.6 p.m., EST

In North Pacific Ocean, 300 miles west northwest of Vancouver, B. C. Latitude 49 degrees north. Longitude 130 degrees west.

For stations cooperating with Science Service in reporting earthquakes recorded on their seismographs see SNL, June 17.

AERONAUTICS

New Air Route May Link Philippines and East Indies

Airway Would Have Terminals in Manila and Batavia, Capital of Java; Political Complications Considered

A SERIES of agreements under which a new air route linking the Philippines and the Netherlands East Indies would be operated by Pan American Airways and K.L.M., the Royal Dutch Air Lines, is expected to be successfully negotiated during the next few months.

Terminals of the airway would be Manila and Batavia, prosperous capital of the island of Java. Several alternative routes could be flown. To Pan American, the line would represent a further extension of its transpacific service, which now goes to Hong Kong. To K.L.M., it would be a side branch of their Amsterdam to Australia run, which goes to Sydney, Australia, via Penang and Port Darwin.

Considerable difference of opinion about the wisdom of admitting the Dutch to Manila exists in Federal government circles, but necessary landing rights will be granted, it is understood, with the proviso that an American concern be entitled to operate into the East Indies. Political complications brought about partly by coming Philippine independence are feared by those opposing the grant.

If Pan American and K.L.M., whose full name is Koninklijke Luchtvaart Maatschappij voor Nederland en Koloniën, thus connect, it will be possible to fly around the entire world in American airplanes, as K.L.M. has long used American ships exclusively.

Pan American expansion plans actually under way feature a route from San Francisco to New Zealand via Hono-

lulu. A U. S.-Australia line, which might be an extension of the present transpacific service, has also been discussed by Pan American officials, as has a U. S. operated link between Australia and New Zealand across the Tasman Sea. The proposed Manila-Batavia service could fit into the Australian route as the direct flight passes over a group of colonial islands which would not provide profitable stopping points. Imperial Airways is about to launch New Zealand-Australia service.

The proposed route to Batavia, which might stop over at Saigon, capital of French Indo-China, landing rights at which the French would probably grant upon request, brings up the vision of a round-the-world airline entirely under the American flag. Pan American, whose lines stretch from Hong Kong to Marseilles via the United States, already spans a larger portion of the earth's surface than any other commercial air company.

The agreements necessary before the Manila-Batavia line could become a reality include landing rights for the Dutch at Manila and for an American company at Batavia, and for intermediate points as well. An agreement between Pan American and K.L.M. on operating questions might also be necessary. A Panam official has already stated that needed airplanes and other equipment are available.

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PHYSICS

Molecular Activity Likened To Mountainous Terrain

IF YOU think of chemical molecules as having “populations” of atoms, you can picture chemical reactions between molecules as the interchange of various members of these populations. These interchanges are accomplished over a barrier of electrical force between molecules which can be likened to a mountain range between two valleys in which the atom populations dwell.

Prof. Victor K. LaMer of Columbia

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