

ARCHAEOLOGY

Ancient Aztec Capital Being Dug Out Beneath Mexico City

Excavations Rushed During Disagreeable Rainy Season Reveal Striking Ruins of Pre-Cortes Aztec Glory

THE IMPORTANT excavations unexpectedly begun by Mexican government archaeologists at the site of the great Aztec teocalli, or god-house, adjoining Mexico City's national cathedral have already yielded ancient remains. Human bones, remnants of plaster walls and floors, pre-Spanish pottery, were among the first discoveries.

The excavations are directed by Emilio Cuevas. Eduardo Noguera, chief of the department of archaeology at the Mexican National Museum, is making stratigraphic explorations.

The site, judging from old maps, was the heart of the Aztec city of Tenochtitlan. Here stood the greatest Aztec temples. So important are the possibilities which may lie beneath the ground here that the archaeologists are excavating in spite of the handicaps of the rainy season. Their chance to dig here is unexpected and must be seized. Modern building plans have just removed the old tumble-down shops and houses which for four centuries stood in the way of explorations at the site.

Twenty years ago, when another old colonial building was razed on the opposite corner, Dr. Manuel Gamio found such important Aztec ruins that the "ugly hole in the ground," as unsympathetic real estate dealers call it, has been left open. Street car riders passing the corner can see some of the big stone serpent's heads that once formed a sort of fence around the great Aztec public square. A corner of the foundations of the war-god's temple is seen in the hole, and sculptured figures of Aztec priests and warriors have been placed in the tiny local museum. These lined the stairs of the ruined pyramid, long hidden under the cellar floors of colonial homes.

Little is known of Aztec history, except from tangled Indian legends. Sr. Noguera's stratigraphic excavations at the downtown corner may reveal whether or not other civilizations prior to the Aztec occupied the island city.

The wall of a small white "temple"

has proved a puzzling find. To locate the bottom of the ancient structure, excavations have been pushed 20 feet below street level. In spite of the depth, no potsherds of any native culture except Aztec have so far been found.

Three floors, which were probably former street levels of the Indian city, have been superposed at different heights. The two upper ones were laid with large stone slabs, but the third, and lowest, is of concrete. Water-level has been reached, for the area was originally part of a swampy island in a lake. As there are few fires in the modern stone-built Mexico City, the municipal firemen, with little to do, pump water out of the excavations while archaeologists work.

The stone "temple" goes down much deeper than was supposed. It is massive in structure, but with its sloping wall and cornices it is not plain. Although the top cornice is like those on certain Maya buildings in Yucatan, so few samples of Aztec architecture survived Span-

ish destruction that it cannot be said that it is not Aztec. In fact the structure may help to determine just what "Aztec" architecture is.

Some of the archaeologists in Mexico City do not think that the structure is really a temple, but believe it more likely a solid platform, perhaps that on which the ritual of the gladiatorial sacrifice took place. The circular stage for combat faced the great pyramid on which the temple of the war god stood. The victim was tied to a pillar in its center by one leg, and allowed to fight for his life against four untrammelled warriors. If he won in the uneven battle he did not need to be sacrificed.

Discovery of a stone stairway beginning on the left end of the "temple," however, has strengthened the theory that the structure is part of the great temple. If the little "temple" was really the end of a wide stone balustrade of a former stairway, then the stairway and the pyramid it ascended must have been gigantic. How wide the stair actually was cannot be seen, for it goes under the street.

The ruins of the Aztec city dug up from beneath the sub-soil of the present Mexican capital are not the same ones that Cortes saw.

The native city had temples, pyramids and streets which had been many times rebuilt, new constructions being made on top of old ones. As the original Aztec city was on a swampy island in a lake, the Indian buildings sank

CHEMISTRY

Valuable Chemical To Be Extracted From Seawater

BROMINE, a chemical valuable in warfare and industry, can now be extracted cheaply from seawater, although only one pound exist in 2,000 gallons of water.

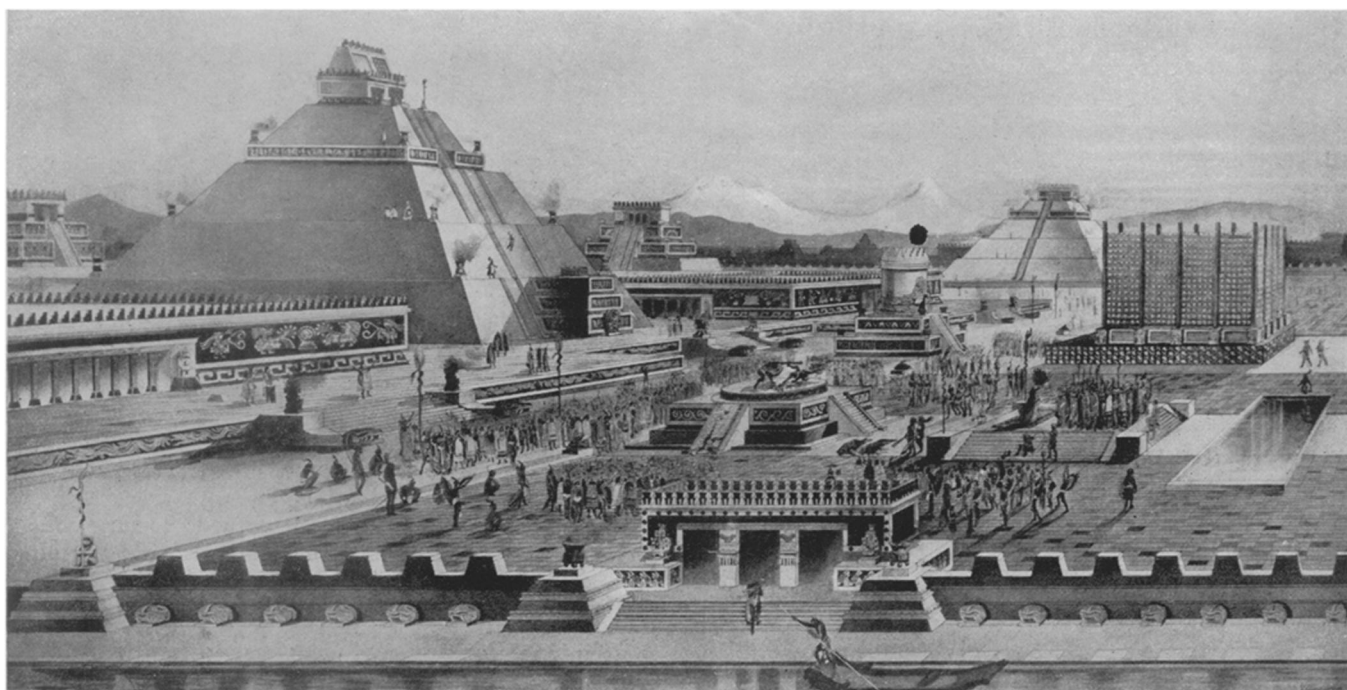
A large commercial extraction plant is being built at Kure Beach, N. C., by the Ethyl-Dow Chemical Co. to take advantage of a commercially practicable scheme recently developed by the Dow Chemical Company. Each unit of the new plant will produce 250,000 pounds of bromides each month by treating 13,000 gallons of seawater every minute of a 24-hour day.

The water passes through the ex-

tractor in less than a minute. It is treated with a small amount of a cheaper chemical, chlorine, to free the bromine in the water. Compressed air then blows the free bromine out of the water and sends it over a soda solution to concentrate the bromide.

A world shortage of bromine is now impossible because a cubic mile of seawater contains about 600,000,000 pounds of bromine. This chemical, which is the only liquid non-metallic element, is particularly useful in photography, medicine, and in the manufacture of tear gases and anti-knock gasolines.

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AS IT LOOKED IN AZTEC DAYS

A rare chance to dig in this sacred area of the Aztec capital is being seized by Mexican government archaeologists. In this temple enclosure you see at the left the lofty temple to the war god Huitzilopochtli, with the famous Aztec calendar stone vertical against the platform at the pyramid base. It is here, in a patch of ground once a part of the great temple's foundation, or close to it, that the present excavations are being made. Two other lofty temples are shown, and a round temple to Quetzalcoatl, god of the wind. In front of the round temple is a circular stone on which sacrificial combats were staged. At the extreme right is a skull rack—one of the seven in the temple enclosure. A corner of Montezuma's palace a low, rambling structure, is shown in the center, surrounded by the temples. This reconstruction, which shows only a portion of the extensive temple enclosure, was made by Ignacio Marquina, chief of the Direction of Prehispanic Monuments, at Mexico City.

(as modern Mexican ones still do) so that floor levels had undoubtedly to be raised from time to time.

The Spaniards came along, levelling the city with its buildings, leaving older inner portions of Indian structures exposed to view. The mysterious little white temple discovered in the cathedral lot is believed by archaeologists to be some such anterior structure.

Water-level has been reached in the perforations Mexican archaeologists are making, but man-made remains continue. Pumps are working and excavations will continue until virgin soil is reached in order to reveal the antecedents of the Aztec capital.

The street that now runs west across the back of the present cathedral was the Aztec causeway along which Cortes escaped out of the island-city one "Sad Night" in 1519 before the Conquest. It was also that street down which the great twin temples of Huitzilopochtli and Tezcatlipoca looked from the top of their high pyramid which was erected at right angles to it.

It has been proved lately that Indian

temples and pyramids were built to look straight into the setting sun on the Indian New Year's day, which was July 26, the day the sun goes back from its wanderings in the northern hemisphere into the southern. In order to face in that way, the buildings had to be set a little north of true astronomical east and west, the angle varying with the latitude. The east-west streets of modern Mexico City, which follow the former Aztec causeways, are similarly askew.

In order to test out the hypothesis that the Aztec capital was itself oriented in accordance with the Indian New Year's day, and the modern Mexican capital also as a result, measurements are being made on the ruins of an Aztec pyramid unearthed fifteen years ago by Dr. Manuel Gamio, just across the street from the present excavations in the cathedral lot.

Mexican archaeologists are also studying maps of Mexico City from earliest colonial times to modern ones in order to locate the limits of the Aztec city within the modern one that covers it.

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GEOLOGY

Free of Ice, Northern Lands Appear to Be Tilting

NORTHERN lands that bore the vast ice load of the Glacial Age for a million years now appear to be slowly rising, as one end of a raft rises in the water when weight has been removed.

This is the interpretation of apparent changes in land levels in the northern United States, Canada, and the Baltic regions of Europe, by Dr. B. Gutenberg of the California Institute of Technology. Dr. Gutenberg's study, appears in the *Journal of Geology*.

The tiltings examined by the California scientist are very slight, as measured by the year—only about two-fifths of an inch annually between Chicago and the northeastern part of the Great Lakes region. But if they have been going on for the past hundred thousand years or so they would amount to a good deal in the aggregate.

Dr. Gutenberg's suggestion is based