

Western Hemisphere. As in most multidisciplinary, labour-intensive, and generally long-term research activities, archaeology in 1982 was not immune from the fiscal and political perturbations that rocked the countries of North and South America. This was true especially in countries important both as centres of pre-Columbian development and as foci of national and international research efforts. Within the U.S. inflation and general fiscal uncertainty left both state and federal preservation programs uncertain about their future and financial solvency. In Mexico and South America high inflation rates, heavy foreign debts, recession, and political upheavals forced the curtailment or cancellation of many planned or even ongoing government-sponsored surveys and excavation projects. Finally, the civil wars in Guatemala and El Salvador all but stopped archaeological research in much of Central America.

TECHNICAL STUDIES. Despite these fiscal and political limitations, 1982 was marked by several significant breakthroughs in applied technology that greatly expanded the ability of archaeologists to identify and define buried and vegetation-obscured archaeological sites. Radar equipment carried aboard the U.S. space shuttle demonstrated the capacity to see features below the surface of sand-covered desert regions in both Africa and the Americas. Scientists were able to identify the presence of ancient rivers and landforms buried as much as 4.5 m (15 ft) below the desert sand. Because prehistoric peoples commonly worked or lived next to rivers, this new space-born radar technology held the promise of helping to locate and identify deeply buried archaeological sites, which previously had been unrecognized and undetectable.

The penetration of sand-covered desert regions with airborne radar followed similar breakthroughs with the long-standing problem of site detection in heavily forested areas, such as the almost impenetrable Maya lowland jungles of southern Mexico and Guatemala. Between 1977 and 1982 airborne radar surveys provided scientists with the first glimpses through this heavy overgrowth and, with them, some major new insights into the extent and economic foundations of

ancient Maya culture. Using synthetic aperture radar (SAR), Walter E. Brown of the Jet Propulsion Laboratory, working with archaeologist Richard E. Adams of the University of Texas, identified an extensive system of between 1,250 and 2,500 sq km (500 and 1,000 sq mi) of prehistoric raised fields and canal networks in lowland swamp areas previously thought to have been uninhabited wastelands. The extent and magnitude of these previously unknown canal networks suggested how the Maya could have supported their large populations with an adequate agricultural food base.

Another major development of the past year based on applied technology was the symbiotic use of archaeology to aid other sciences concerned with nonarchaeological issues, such as the study of past environmental change, animal and plant extinctions, and climatic shifts. For example, until recently the Hawaiian Islands had been perceived as an apparently harmonious balance between man and nature, with environmental degradation and animal extinctions taking place only in the last several hundred years as a result of European settlement. However, recent combined research by archaeologists and biologists severely altered this assumption with the discovery that long before the arrival of the Europeans, the native Polynesian settlers had both drastically altered their island environments and caused the extinction of large numbers of animals and plants.

HISTORICAL ARCHAEOLOGY. The realization that the written record often is not as thorough as was once thought and is, in fact, often a biased reflection of past events, combined with recent legislation stressing the need to address both recent and ancient archaeological remains as part of the overall cultural fabric of the past, precipitated a shift in emphasis over the past several years to a more broad-based coverage of relatively recent 16th-20th-century remains. The results often either were at odds with or simply were not reflected by the written record.

With this change in understanding among archaeologists of the potential of the unwritten historical record to refine and even redefine history came the realization that, although the contempo-



The discovery of human skeletons at the ancient site of Herculaneum was announced in February. The people were killed in the eruption of Mt. Vesuvius in AD 79, which also buried the city of Pompeii.

rary landscape has been heavily altered by urban development and industrial growth, even modern cities may contain a wealth of unsuspected data. In 1982 perhaps the most dramatic example of the archaeological value of even heavily developed urban centres was demonstrated by an unexpected discovery in one of the most heavily developed cities in North America, New York. Work initiated by the New York Landmarks Commission to salvage an area of 18th- and 19th-century settlement beneath the modern pavement of a parking lot destined to become the site of a 30-story office complex in lower Manhattan resulted in the discovery of a 25-m (85-ft)-long hull of a buried wooden ship sunk to expand the shoreline in 1747-55. The ship was excavated and removed for preservation.

MESOAMERICA. In Mexico, despite the continuing economic crisis that curtailed or caused the cancellation of numerous programs, work continued on the exposure of the Aztec Great Temple, which had been found by chance in 1978 during the installation of a power transformer by the Mexico City Light and Power Co. From 1978 Mexican archaeologists under the direction of Eduardo Matos Moctezuma continued to clear and stabilize the massive temple complex in what became one of the most energetic examples of New World urban rescue archaeology. The first look at the entire temple layout revealed seven major stages of construction and a total area indicating that the previous hypothetical reconstructions were at least 30% larger than the actual structure.

In the southern Mayan area continuing work in Belize by Norman Hammond of Rutgers University revealed what could be the earliest lowland Maya stela yet discovered. The 80-cm (32-in)-long rectangular and undecorated stela was dated to the 1st century AD, contemporary with the earliest Mexican stone monuments found off the Pacific

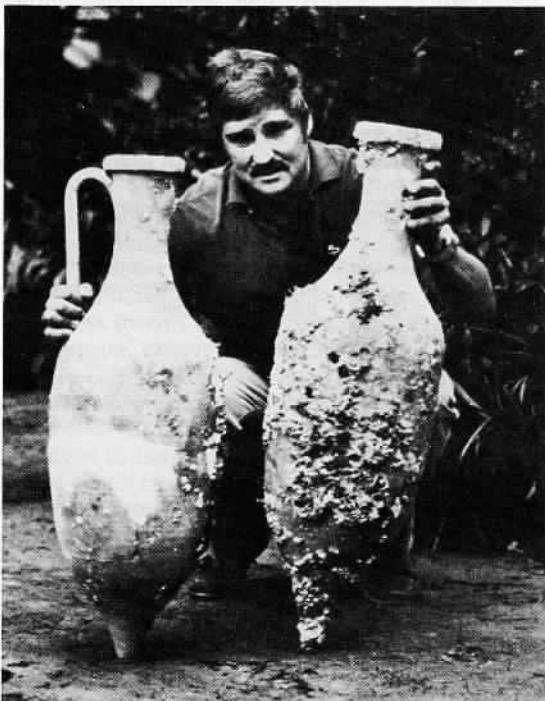
coast but several centuries earlier than the most ancient examples of stela construction in the Maya lowlands.

SOUTH AMERICA. In addition to a number of foreign expeditions to Latin-American countries, 1982 was noteworthy for an upsurge in survey and excavation programs undertaken by professional Latin-American archaeologists. For example, in Peru National Institute of Culture field teams made two significant discoveries in the highland drainages of Cuzco and Ayacucho. In Cuzco, centre of the 15th-century Inca empire, a National Institute team discovered an entire buried and previously unknown sector of the otherwise well-known Inca site Orllantaytambo in the Urubamba Valley to the east of Cuzco. This sector consisted of a matrix of well-preserved buildings and courts with intricate fountains and baths buried below the fields. What appeared to be randomly deposited boulders protruding from the valley-bottom farmlands proved to be carefully engineered elements in a multilevel subterranean nonirrigation canal system for open-air baths and fountains.

Approximately 800 km (500 mi) to the north a second team of Peruvian archaeologists under the direction of González Carre of the Universidad de Huamanga in Ayacucho completed the excavation and stabilization of a large ceremonial complex at the 8th-century pre-Inca Huarí capital. This find abruptly altered archaeologists' understanding of the development of pre-Inca architectural and cultural history. The excavation cleared a large segment of a buried temple complex consisting of rows of multistoried rectangular rooms facing a central courtyard having a circular building with cut stone columns in its centre. The walls were decorated with incised three-dimensional Huarí-style motifs and painted in at least three colours. The shape and composition of this complex differed markedly from previously known Huarí structures and helped link a continuum of development in Andean architecture from the 1000 BC Chavin civilization to the elaborate stone workmanship characteristic of the 15th-century Incas.

NORSE CONTACTS. The old controversy over transatlantic Norse contact with the Americas was shifted to a new perspective with the assertion that not only did a group of weather-stranded Norse explorer-refugees arrive in eastern Greenland about AD 981 but also, while there, they conducted the first New World archaeological excavations. Ralph Rowlett of the University of Missouri cited a recently translated semiofficial medieval account of the settlement of Iceland in which two 10th-century Norse refugees from marital problems passed the winter by conducting excavations at a coastal Dorset mound site that reportedly yielded valuables that were both noted and fought over. Rowlett observed that since the Arctic Eskimo Thule culture postdates the arrival of the Icelandic explorers in Greenland, the "mound" excavation probably took place in a stone-lined Dorset pit house of the type that commonly yields elaborate artifacts such as carved bone animal forms.

(JOEL W. GROSSMAN)



A large number of Roman amphorae were discovered in a bay near Rio de Janeiro. The jars were of the type carried by Roman ships in the 2nd century BC.

THE MIAMI HERALD

See also Anthropology.
[723.G.8.c; 10/41.B.2.a.ii]