ASSYRIA

Bringing a Long-Lost Library Back to Life

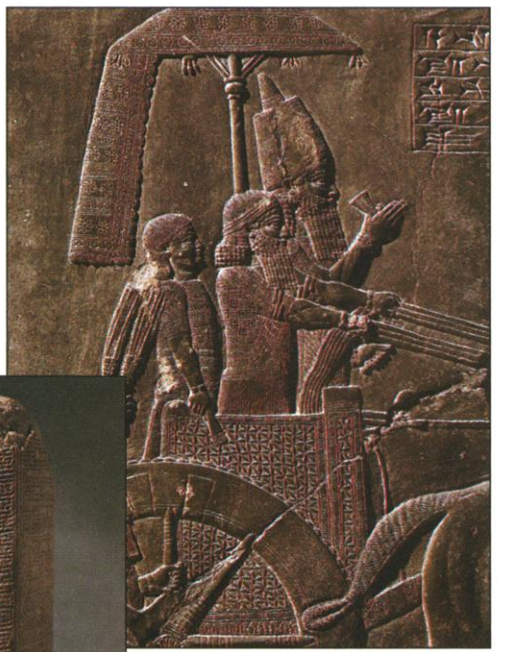
A stone's throw from the ancient city of Nineveh, Iraq intends to erect a center for cuneiform research. Many scholars, however, are dubious about the scientific payoff of a tablet-based project in a digital age

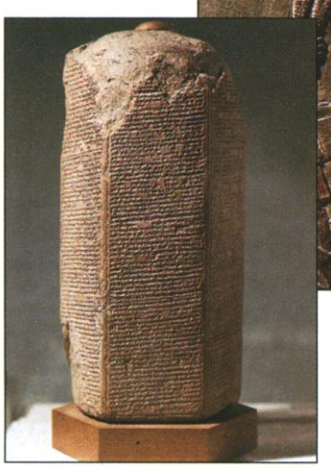
MOSUL, IRAQ—More than 2500 years after the fiery destruction of the world's first major library, Iraqi scholars are hoping to see a Mesopotamian phoenix rise from the ashes. Work is slated to start soon on a research center and museum at Mosul University devoted to the study of cuneiform, the wedge-shaped writing system used across Mesopotamia for 3 millennia. It's "a real Renaissance project," beams Frederick Mario Fales, a specialist on Assyria at Italy's Padua University. But he and other experts worry that, in an age of digital libraries, the tablet-based project could become a scholarly white elephant.

Modern-day Iraq is the heartland of the ancient Assyrian empire, whose King Assurbanipal created the world's most impressive repository of knowledge in its day. Although his empire soon collapsed, the flames that engulfed his capital city of Nineveh failed to destroy the library's clay tablets. In 1850, British archaeologists stumbled over the trove (including the famous Sumerian Great Flood story, *The Epic of Gilgamesh*) and carted it off to London. Iraqi officials hope their new center, dubbed the Saddam Institute after Iraq's president, will boost the country's reputation as a hub for research into the ancient texts that originated here.

Along with housing casts of tablets found at the nearby ancient capital of Nineveh, the institute would link to various international databases, as well as archive archaeological reports and other materials. Iraq's minister of higher education and science, Humam Abdul Razzak, told *Science* that his government will spend "whatever it takes" to complete the complex within 5 years. He has grand aspirations for the project: "We hope it will be bigger in size and money than the Alexandria Library," a $200 million complex just completed in the Egyptian coastal city of Alexandria.

Everyone agrees that there is an urgent need to fire up interest in cuneiform tablets and their unparalleled insights into Mesopotamian life—particularly with new finds in the offing. A dam project south of Mosul threatens to inundate dozens of sites, including the original Assyrian capital of Assur; salvage projects in the next several years are expected to unearth numerous tablets (*Science*, 22 March, p. 2189). In addition, archaeologists may resume excavations in nearby Nineveh to search for undiscovered remains of the torched Assurbanipal library.





Riding high. King Assurbanipal, shown here in a stone frieze, was patron of the world's first great library; his annals are described in this cuneiform column (*left*) found in his Nineveh palace.

Many scholars argue that the Saddam center could leave a lasting legacy if it were to encourage preservation and cataloging of the thousands of tablets languishing in the Iraq Museum in Baghdad, as well as prepare for an onslaught of new ones. Researchers also hope that the center will put texts in digital form. "Ultimately the most useful thing would be to digitize images of tablets, so they could be studied anywhere," says John Curtis, head of the British Museum's ancient Near East section. But digitizing is expensive and technologically challenging, particularly when dealing with the smaller script used in Assyrian times. And Iraqi officials appear at present to be more concerned with architectural plans and obtaining casts of Assurbanipal tablets stored at the British Museum.

The apparently narrow focus worries some observers, who fear that the project might benefit Iraqi scholars and museum-goers but not the international community. Retrieving casts of the Assurbanipal texts would boost Iraqi pride, and politicians the world over prefer dedication ceremonies to funding preservation or conservation. Moreover, it's unclear whether the tablets in the Iraq Museum or even new finds would end up in the institute, given a strong rivalry between Baghdad and Mosul. The project's main value, laments one scientist, will be "political and diplomatic" rather than scholarly.

At the core of the million or so cuneiform tablets recovered so far are the holdings of the Assurbanipal Library, founded some 400 years before its more famous cousin in Alexandria. Ruling at the height of the Assyrian empire, Assurbanipal (668–628 B.C.) sent his scribes to scour the Near East for religious, scientific, diplomatic, and literary works. They gathered more than 25,000 tablets: "hidden treasures of all the knowledge of the scribes," the king wrote, that allowed him to "resolve the persistent problems of division and multiplication … and decipher the inscriptions written on stones at the time before the Flood." Assurbanipal claimed to have been the first king to write in cuneiform, citing, with more than a touch of academic arrogance, his own "vast intelligence" and "penetrating acumen for the most recondite details."

Sixteen years after the proud king's death, Babylonian and Mede armies overwhelmed the Assyrian Empire. When scholars recovered the tablets nearly 2500 years later, they found invaluable reference works, dictionaries, compendia of omens and rituals, and mathematical texts that opened a new window on Mesopotamian life. Archaeologists say large numbers of tablets likely remain untouched at Nineveh.

Foreign scholars visiting Mosul University were recently shown models of the proposed institute and museum. The site is on the edge of campus, less than a kilometer from Nineveh's ancient walls. One floor of the institute will be devoted to publications on ancient Mesopotamia. A second will contain computer terminals with access to

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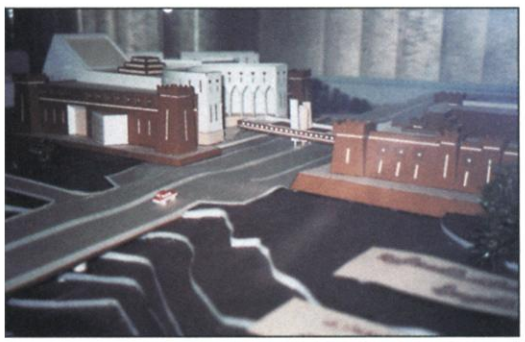


Model institute? The Saddam Institute in Mosul would house a research center and museum.

cuneiform databases—a potential boon to Iraqi researchers now mostly cut off from colleagues abroad. The grounds will include five houses for visiting scholars.

Humam is eager to obtain resin casts made from the British Museum's Assurbanipal collection. Curtis, who met with Humam in Baghdad in March, says the museum is happy to make casts, although he notes that the Iraqis will have to provide funding for the expensive work. It takes one technician a whole day, on average, to produce a single cast. But although Assurbanipal casts may be fine to showcase in a museum, they would be of limited value to scholars, as the texts already have been studied intensively.

The real need within Iraq, experts say, is for better care, conservation, and cataloging of current finds and preparation for a wave of incoming texts. A recent attempt at preserving important tablets discovered in the tombs of Assyrian queens in Nimrud, for example, went awry when the oven malfunctioned, apparently due to power outages, and turned the writing to dust. And even for preserved text, "they use some primitive methods for conserving tablets," notes Robert Englund of the University of California, Los Angeles. He estimates that there are about 70,000 tablets cataloged in the Iraq Museum—and an equal number not yet tagged.

But although Englund worries that the project may end up being little more than "a Saddam tourist center," Iraqi officials imagine the institute serving a much loftier purpose, as a gathering place for scholars to explore all aspects of cuneiform studies. "We are talking about human heritage, not just Iraqi civilization," Humam says. That notion will be put to the test this fall, when Mosul University holds an international conference to kick off the project. Iraqi officials are betting that, if they resurrect the Assurbanipal Library, the scholars will come.

–ANDREW LAWLER

MEETING AMERICAN ASSOCIATION OF PHYSICAL ANTHROPOLOGISTS

Humans' Head Start: New Views of Brain Evolution

BUFFALO, NEW YORK—About 1200 researchers converged here for the 71st annual meeting of the American Association of Physical Anthropologists (10 to 14 April), where brain evolution was one of the hottest topics, including reports on the diet needed to support an expanding brain and a new tool's view of how the human brain took shape in evolution.

Something Fishy About Brain Evolution

Illustrations of human ancestors routinely show brawny hunters bringing home the wildebeest, butchering meat with stone tools, and scavenging carcasses on the savanna. But a more accurate image might be ancient fishermen—and fisherwomen—wading into placid lakes and quietly combing shorelines for fish, seabirds' eggs, mollusks, and other marine food.

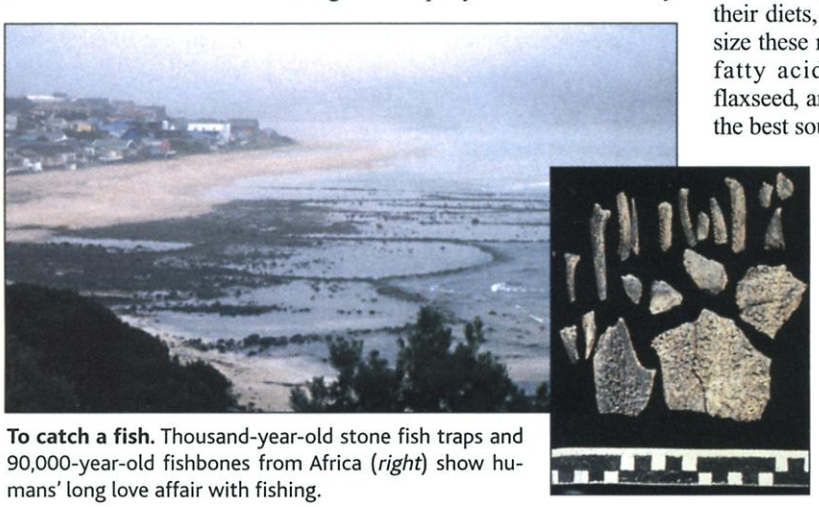
At a symposium on nutritional constraints on brain evolution, an unusual mix of anthropologists, neurochemists, nutritionists, and archaeologists debated the kind of diet that must have supported humans' dramatic brain expansion, focusing on how our ancestors consumed enough of the omega fatty acids essential for brain development. Although a few researchers suggested that the source was brain and other organ meat, most agreed that our ancestors must have relied on fish or shellfish. "A shore-based diet was essential for the evolution of human brains," says nutritional scientist Stephen C. Cunnane of the University of Toronto.

That's because humans, intelligent though we may be, are literally fatheads: About 60% of the brain's structural material is lipids, almost all of it in the form of two long-chain polyunsaturated fatty acids, docosahexaenoic acid (DHA) and arachidonic acid (AA), respectively known as omega-3 and omega-6 fatty acids. So when a fetus's brain is developing, a lack of DHA or AA is "catastrophic," says Cunnane.

These acids are vital to brain growth and function after birth, too. Infant humans and other mammals that lack these fatty acids show reduced cognitive ability and vision problems. (The retina has the highest concentration of DHA.) In adults, new data suggest that depletion of these acids may be linked to attention deficit disorders, dyslexia, senile dementia, schizophrenia, and other problems, according to a review by geochemist C. Leigh Broadhurst of the U.S. Department of Agriculture's Environmental Chemistry Laboratory and Michael Crawford of the University of North London in the April issue of *Comparative Biochemistry and Physiology Part B*.

People must consume DHA and AA in their diets, because the body cannot synthesize these molecules fast enough from other fatty acids found in vegetables, nuts, flaxseed, and other sources. Although by far the best source of DHA is shellfish and fish, particularly cold-water fish such as bluefish and herring, these acids are also found in brain meat and in the liver of some animals, says physiologist Loren Cordain of Colorado State University in Fort Collins.

But our ancestors couldn't support an expanding brain by eating brain alone: Crawford calculated that a 350-gram brain from a 1-ton rhinoceros would barely feed a party of hunters,



To catch a fish. Thousand-year-old stone fish traps and 90,000-year-old fishbones from Africa (*right*) show humans' long love affair with fishing.

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