Babylonian Teaching Aid

One of the most celebrated artifacts in mathematics is a palm-sized cuneiform tablet from the Old Babylonian period, 2000 to 1600 B.C. Known as Plimpton 322, it was initially thought to be just a record-keeping tablet. It gained its fame in 1945 when the renowned mathematics scholar Otto Neugebauer recognized the sexagesimal (base-60) numbers for what they really were: a table of "Pythagorean triples"—the integer lengths of the sides and hypotenuse of a right triangle. P322 is one proof that knowledge of the Pythagorean theorem predated the man himself by at least 1000 years.

Mystery tablet is a textbook.

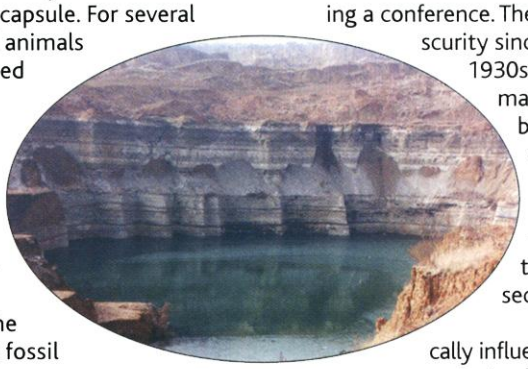
But what was it for? Mathematicians have speculated for years that it might be an early trig table for astronomical calculations, or the number-theoretic work of some lone genius. But Eleanor Robson of the Oriental Institute at the University of Oxford, U.K., says the answer is more mundane: It probably was a teacher's guide, used to provide workable numbers for student exercises involving right triangles.

Robson, whose findings are in press in *Historia Mathematica*, reached this conclusion by comparing P322 with other mathematical tablets of the period, using knowledge of cuneiform writing accumulated in the last 50 years. The tablet "would have enabled a teacher to set his students repeated exercises on [a] mathematical problem and to check their answers without repeating the calculations himself," she says. "We can admire the organizational and arithmetical skills of its ancient author but can no longer treat him as a farsighted genius."

Fossil Trove Preserved

Some 25 million years ago, a lake in China's Shandong province apparently lost its circulation and became a time capsule. For several million years, plants and animals fell into its oxygen-starved waters and were entombed by blankets of fine sediment.

Much of this paleontological treasure has been destroyed by miners in search of material for brickmaking. Now, however, one of the world's richest Miocene fossil localities—which has been compared with Germany's famous Solenhofen Limestone site—has been saved for science.



Fossil-rich Shanwang Basin.

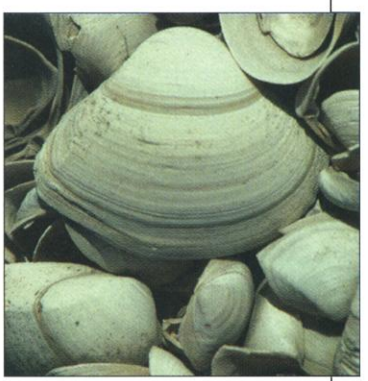
The crusade began in October 1999, when marine geologist Bilal Haq of the U.S. National Science Foundation visited Shanwang Basin during a conference. The site had fallen into obscurity since its discovery in the 1930s. But more than 500 animal and plant species have been documented there, and Haq says, "I've never seen anything so prolific." The ground was littered with debris containing well-preserved insect and plant fossils.

With the help of a politically influential Chinese scientist—marine biologist Zheng Shouyi of the Institute of Oceanology in Qingdao—Haq appealed to provincial and national officials to preserve the site. By last July, mining was halted and the quarry fenced off. The provincial government has since promised to pump water out of the basin and establish a park for research and education.

The surprisingly quick action is a sign of the Chinese government's newfound respect for the PR value of its paleontological resources (*Science*, 12 January, pp. 232–241). "Genuine scientific concern may also be there," adds Haq, "especially at the professional and national level."

Foreigners Fuel S&E Enrollment Growth

After bottoming out at a little over 98,000 in 1996, the numbers of foreigners enrolled in U.S. science and engineering graduate programs has been climbing again, to almost 110,000 in 1999, according to figures released last month by the National Science Foundation. The big draw is computer science, where enrollments increased by 12%. Enrollment by U.S. citizens, meanwhile, continued a 6-year decline—from about 330,000 in 1993 to 301,404 in 1999.



Isotopes Track Silence of the Clams

Geoscientist Karl Flessa continues to "put the dead to work," as he describes it. Last year, the University of Arizona academic's team counted clam shells in the Gulf of California to quantify a precipitous decline in the Colorado River delta's biological richness after the river was dammed in the 1930s (*Science*, 15 December 2000, p. 2045). Now, Flessa has again enlisted the mollusks' remains, this time to confirm why the clams crashed.

Comparing old, predam shells with those of living clams, Flessa's team looked for the incidence of a type of oxygen isotope that reflects the salinity of the water in which each clam grew. At the annual meeting of the American Association for the Advancement of Science this month in San Francisco, Flessa reported finding far lower levels of the isotope, reflecting fresher water, in the predam shells. Because the clams had flourished prior to the dams' construction, he now infers that their decline is the direct result of the drop in the quantity of fresh water flowing to the delta. "This is the smoking gun," says Flessa. The scene has now been set for the next step: calculating just how much fresh water would be needed to support a clam rebound.