SCIENCE NEWS of the week

Late Maya Culture Gets an Island Lift

Archaeologists excavating a site on a coral island off the coast of Belize have uncovered evidence of shared cultural influences and widespread trading networks among Maya settlements more than two centuries after the collapse of the "golden era" of Maya civilization.

Their work supports recent contentions that, after the demise of Classic Maya society around A.D. 900, social structure and economic practices in the lowlands of Yucatán and Belize were far more organized than scientists traditionally thought (SN: 9/10/88, p.165).

"The way I see it, the 12th and 13th centuries were a time when many communities were actively trading and establishing an economic base up and down the coast of central America," says Elizabeth Graham of the Royal Ontario Museum in Toronto. She and David M. Pendergast report on their work at the Marco Gonzalez site – named after an island boy who led them to the remains in 1984 – in the newly released spring JOURNAL OF FIELD ARCHAEOLOGY.

The 16-acre site sits on the southern tip of Ambergris Cay, one of numerous coral islands near Yucatán and Belize. In May and June 1986, the researchers identified 49 structures at Marco Gonzalez, all consisting of low platforms that once supported perishable construction materials. The platforms are made of compacted, dead coral mixed with seashells.

Pottery and other artifacts excavated around the structures indicate the Maya occupied the site from as early as 100 B.C. up to the beginnings of contact with Spanish explorers around A.D. 1544.

Most striking, the researchers say, is evidence of a cultural link between Marco Gonzalez and Lamanai, a large Maya site in Belize that flourished after Classic-era cities vanished. Pendergast has directed work at Lamanai since 1974 (SN: 10/5/85, p.214). Large amounts of ceramics unearthed at the island site share the same design motifs, forms and colors as a well-documented pottery tradition at Lamanai extending from A.D. 1150 to 1300, he says.

Marco Gonzalez pottery, including incense holders, bowls and jars, is smaller than its Lamanai counterparts and some of its designs are less complex. Potters at the cay settlement apparently used the general patterns set down at Lamanai but freely executed their own variations, the investigators say.

Evidence of extensive trading emerged at the site. The researchers found many items unobtainable on the cay, such as gray obsidian, jade, chert, granite and mainland limestone. Furthermore, they found a large number of vessels used in rituals at Lamanai, which may have been brought to the cay for redistribution through a trade network.

Excavations also uncovered 11 human burials. Two burials lie just below a structure probably dating to the early 16th century, say the scientists. The burials are less elaborate than those of the Classic Maya, but they do contain objects – such as stingray spines – that suggest the interred individuals held an elevated social status.

Fieldwork will resume next year, and the researchers hope to address several questions at that time. For example, they do not know whether the range of ritual objects used at Lamanai is present at Marco Gonzalez. If so, the inland city may have exerted considerable political influence over the cay community, Pendergast says. Marco Gonzalez may turn out to have served as Lamanai's main trading port, he adds.

"The cays remain largely unexplored by archaeologists, so Marco Gonzalez may be an atypical site," Pendergast remarks. "But it still tells us that the substantial activity at Lamanai after the Classic period ended didn't occur in a vacuum." – *B. Bower*

Misconduct cases probed

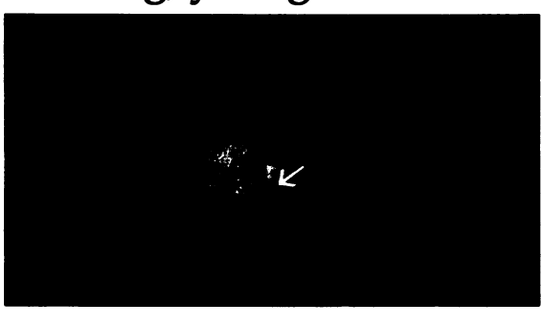
Officials representing three federal agencies funding nonmilitary research told Congress last week they are investigating 87 cases of scientific misconduct.

The National Institutes of Health's Office of Scientific Integrity is investigating 77 cases of misconduct in research supported by either the NIH or the Alcohol, Drug Abuse, and Mental Health Administration, according to Brian W. Kimes, the office's acting director. And the National Science Foundation is investigating 10 cases, with eight nearly completed and two others in progress, says Robert M. Andersen, NSF's deputy general counsel. NSF has promised to give a House government operations subcommittee a general report characterizing its first eight cases without naming the scientists involved or their institutions.

Federal officials, scientists and editors of science journals say there is no way to tell yet if the numbers should be a major cause for concern. But at a recent congressional hearing and in meetings with science organizations, Drummond Rennie, associate editor of the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, proposed a method to find out – a one-time-only, in-depth audit of research papers selected randomly from journals. The auditors, selected from scientists in the field, would examine raw data to check accuracy if needed, Rennie says.

His proposal has received mixed reactions from scientists and editors, some of whom fear a never-ending system of supervision by Big Brother. Notes Rennie, "I have a lot of convincing to do." □

Windy setting for a big, young star



Adair & Bally

Young stars grow up in turbulent environments, as seen in the intricate and unusual structures found in the gas clouds where they form. This photograph, obtained at infrared wavelengths by Adair P. Lane of Boston University and John Bally of AT&T Bell Laboratories in Holmdel, N.J., reveals for the first time details of the complicated flow patterns associated with jets of gas streaming out of a young, massive star. The arrow indicates the star's approximate location. A dense molecular cloud hides the star itself, which is within a star-forming cloud in the constellation Cepheus, about 2,380 light-years from Earth.

The image, a mosaic of 28 high-resolution frames, shows the heating effects of high-speed winds emerging as two jets from the left and right sides of the star. The bright region to the left of center represents emissions from excited hydrogen molecules and reflected infrared light from a buried cluster of young stars. To the right, one jet has run into and been deflected by a dense clump of gas. A patch of color in the upper left may represent a dense "bullet" of matter ejected by the newly formed star at some earlier time. In visible light, such clumps of matter appear as small nebulas called Herbig-Haro objects.