

One skeleton found this year, that of a middle-aged man, displays severe swelling on the leg bones and on one forearm. This type of bone thickening and distortion usually results from any of several related bacterial diseases, including syphilis, Hammond notes. Another individual buried at Cuello, previously dated to nearly 1100 B.C., shows similar bone swelling. Whether or not Spanish explorers spread syphilis throughout New World populations in the 16th century A.D., as some researchers argue, syphilis-like conditions afflicted the Maya long before Columbus entered the scene, the Boston archaeologist contends.

Another grave discovered at Cuello this year contained a young woman approximately 15 years old holding a 1-year-old baby in her right arm. The child's head rested against the woman's cheek; the youngster's fingers curled under the woman's chin.

All the skeletons except for that of the baby were placed in the same posture, with the knees drawn up to the stomach. In addition, all had their heads oriented to the north, the direction of the heavens in Maya cosmology.

Few associated artifacts, or "grave goods," accompanied these early Cuello burials. Excavation yielded a couple of pottery bowls inverted over two skeletons and a jade bead.

The number of grave goods increases dramatically among Cuello burials that date to between 900 B.C. and 600 B.C., including three unearthed this year, Hammond says. At that time, upper and lower segments of society developed, he maintains. A woman's skeleton found in March, which dates to at least 650 B.C., includes an elaborate necklace made of a tapering, narrow mollusk shell. And a child's burial from the same period, excavated in 1992, features strings of beads that marked royal or noble rank 1,400 years later among the Classic Maya.

Cuello survived into the Classic period, growing from a small village into a town of perhaps 3,000 people, but it failed to evolve into a major urban center, Hammond says.

"The paradox is that Cuello and the few other sites that are nearly as old were probably the least successful Preclassic Maya settlements," he holds. "Other very early Maya sites probably lie underneath structures erected during one or more building phases at major sites of the Classic period."

Cuello's distinctive pottery styles appear even among its oldest remains, Hammond adds. This suggests that the Maya may have first occupied the lowlands of Central America as early as the 16th century B.C., in his view.

For now, evidence from Cuello "shows for the first time the early origins and rapidly developing complexity of the society that evolved into Classic Maya civilization," Hammond contends. — *B. Bower*

Run-down labs hamper federal research

Earlier this year, backup electrical generators failed during a power outage at the Beltsville (Md.) Agricultural Research Center (BARC). The weekend loss of power to freezers destroyed samples of blood, urine, and stool from a major nutrition study.

While BARC scientists spent \$240,000 to collect these specimens, "the cost of repeating this human trial may be prohibitive," according to BARC Director K. Darwin Murrell.

Moreover, he testified before the congressional Joint Economic Committee (JEC) last week, such incidents are not that unusual at BARC. Damaged roofs, a steam-line problem, and a burst water pipe forced a closing for two months last fall of the BARC lab that studies cellular and ecological responses of crops to climate stress. Indeed, "complete building shutdowns are increasingly frequent," Murrell said, owing to the deterioration and obsolescence of BARC facilities — 77 percent of which are at least 50 years old.

Nor is BARC's situation unique. According to a new General Accounting Office (GAO) study, decades of widespread underinvestment in the nation's federal research infrastructure have allowed major facilities across the United States to deteriorate badly.

GAO studied 220 labs owned by eight federal agencies, including NASA, the National Institutes of Health (NIH), and the Departments of Agriculture, Defense, and Energy. It found that most of the space devoted to research was at least 30 years old and that needed repairs could cost more than \$3.8 billion.

Some labs — a former Army barracks or converted cow barn — never were more than makeshift. Others evolved into makeshift operations, such as a Wright-Patterson Air Force Base lab in Ohio, where scientists finally solved the problem of a 10-year roof leak by building a second, indoor building — complete with roof and walls — around their instruments.

In some instances, the design of the deteriorating structure limits needed improvements. For instance, air-exhaust capabilities at NIH's 38-year-old clinical center in Bethesda, Md., "cannot satisfy even current user demands," notes Stephen A. Ficca, associate director of NIH. So the center cannot add new fume hoods — which limits research there. Moreover, Ficca told the JEC, deficiencies in the current system "result in potential exposure of NIH personnel to hazardous fumes."



Top: BARC lab slated for repair. Bottom: Advanced equipment crowds NIH lab designed for simpler studies.

"Infrastructure deterioration is not a problem limited to just one or two of these government-owned facilities, but appears to be a system-wide problem," observes JEC vice chairman Sen. Paul S. Sarbanes (D-Md.), whose state contains the largest concentration of federal labs. "We hope to use this new study as ammunition to help [labs] defend budget increases for research infrastructure investments — both within their agencies and before the congressional committees that oversee federal spending," he told *SCIENCE NEWS*.

But "let's look at each lab and see whether it's even needed before we fix its roof," argues Joseph P. Martino, a senior scientist at the University of Dayton (Ohio) Research Institute.

A spate of studies indicates that many federal labs do "very poor research," says Martino, who has been analyzing research management. Even among quality programs, he notes, many — like NASA's aeronautical studies — exist merely to support civilian industries. Why, he asks, shouldn't industry consider picking up the costs of these labs?

— *J. Raloff*