traditional plant-breeding methods in these and other studies. But an ELF spokesperson has criticized Bradshaw for accepting research funds from tree-farming companies, saying that the results could be used to genetically engineer trees.

The apparent attempt to snuff out Bradshaw's research claimed some of the greenest research on the UW campus. In addition to Bradshaw's work on poplars, projects at the center focus on restoring damaged wetlands, conserving rare and endangered plants, charting life's recovery following the 1980 eruption at nearby Mount St. Helens, teaching people to grow their own food in backyard gardens, and understanding the genetics of how new species develop. "All of that is collateral damage to my work on poplars," Bradshaw says.

Certain items lost to the fire were irreplaceable. One, a tissue culture collection of 100 endangered showy stickseed plants, was particularly distressing to lose, because only about 300 plants are believed to exist in the wild. In a library adjacent to Merrill Hall, about 20% of the books—many of them rare and out of print—were also destroyed, according to Tom Hinckley, an ecosystem scientist and head of the horticultural center.

Despite these losses, the university has made it clear that the attacks won't stop research and outreach efforts. Hinckley says officials have promised to "do what it takes to get us back on our feet." Merrill Hall's research and office space will be rebuilt, he adds; in the meantime, faculty members and students are moving into temporary research and office space. "Even though [the fire] was intended to slow or stop work, it won't have that effect," says Bradshaw.

As for future attacks, Brouelette says that his office will likely step up security at agricultural research sites. But he and others say that the value of additional protection must be weighed against the need for a public institution to remain accessible. "A fortress mentality doesn't serve academic freedom well," says Hinckley.

Welcome or not, such a feeling is already beginning to permeate agriculture science, says Strauss. "It's terrible. There is less openness, less willingness on the part of researchers to discuss their work, and "therefore less ability to discuss merits and concerns to others," says Strauss. Teaching suffers as well, he adds, because concerns about security have curtailed the presence of undergraduates at field sites. Still, he and others believe that the work must continue. "The alternative is to let terrorists dictate what we do," says Strauss.

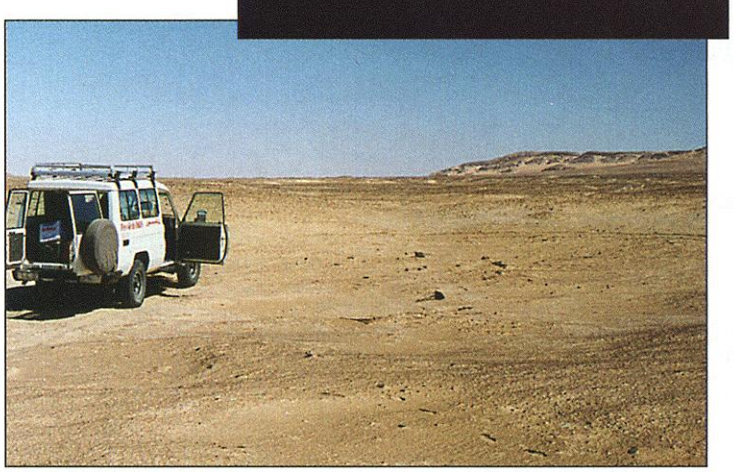
–ROBERT F. SERVICE

CREDITS: (TOP TO BOTTOM) U. PENN; J. SMITH

PALEONTOLOGY

New Dig at Old Trove Yields Giant Sauropod

When Allied bombers descended on Munich in the spring of 1944, they destroyed much of the city—including the Bayerische Staatssammlung museum. Among the treasures reduced to rubble were Cretaceous bones collected from Egypt by Ernst Stromer von Reichenbach. More than 50 years later, when Josh Smith, a grad student at the University of Pennsylvania in Philadelphia, was casting about for a Ph.D. topic, he drew up a wish list—places to dig that weren't being actively excavated but had a history of interesting discoveries. Topping his list were the sites discovered by Stromer.



Luck. While driving through the desert, the team came across a partial skeleton, including this 1.7-meter upper-arm bone, from a new sauropod.

In February 1999, Smith set out to find Stromer's sites. It required sleuthing and luck, but on page 1704, Smith and his colleagues describe the first land vertebrate to be excavated from the sites since Stromer published his last monograph in 1936. Their find, *Paralititan stromeri*, is a new genus of sauropod dinosaur, estimated from its incomplete skeleton to be the second most massive known. It also marks the first time a sauropod has been linked to a mangrove-rich habitat. The locality was highly diverse during this part of the Upper Cretaceous, about 95 million years ago. So even more important than the sauropod itself is the reopening of Stromer's sites: Experts say that having more land species from this part of Africa will help nail down ideas about the breakup of the supercontinent of Gondwana.

Stromer first arrived in Egypt in 1911. After trekking 390 kilometers southwest of Cairo by camel, his field party searched a broad expanse known as the Bahariya Oasis. During the Upper Cretaceous, the area appears to have been a coastline bordered by mangrove swamps and tidal channels. After a few field seasons, Stromer had found as many as 40 genera of fish, crocodiles, dinosaurs, and other creatures. But all of the terrestrial vertebrates he brought back to Germany were destroyed in World War II, except for two skulls smuggled out by curators.

Smith and his party faced a problem in trying to find the source of the fossils: Stromer hadn't left directions or even published any maps or photos of the sites he quarried. Still, they had one clue: A friend of a team member located old scientific literature in Cairo with descriptions of prominent landforms in the Bahariya Oasis and geographic coordinates of one of Stromer's quarries.

Then came a stroke of luck. Smith entered the wrong coordinates into his Global Positioning System receiver. So when the scientists set out in their 1998 Toyota Land Cruiser—no camels for this group—they ended up far from the landmarks. To get oriented, Smith stuck his head out the passenger window and spotted a large sauropod bone.

"It was total serendipity," he says. Smith snapped some photographs, noted the location, and kept searching.

The next year, Smith and his fellow grad student Matt Lamanna assembled a crew to excavate the sauropod remains. They pulled out 6.5 tons in 3 weeks. Based largely on features of the vertebrae, they identified the incomplete skeleton as that of a titanosaurid, the dominant group of sauropods during the Cretaceous. They also came across a dig site about 10 kilometers away that may have been worked by Stromer. In a spoils pile they uncovered old boots, pieces of tin cans, and a piece of German newspaper printed in what looked like a pre–World War II typeface.

Stromer himself had discovered a titanosaurid in the area, which he named *Aegyptosaurus*. But the pronounced ridges on the freshly excavated 180-kilogram humerus, as well as a bony projection on the shoulder blades, suggested that the specimen belonged to a new genus. Smith's team named it *Paralititan*, after the term "paralic," which describes tidal environments like mangrove swamps.

To figure out how large *Paralititan* was in life, the researchers stacked its 1.7-meter-long humerus against that of *Argentinosaurus*, a South American titanosaurid that's the largest on record. Because the humerus isn't preserved in *Argentinosaurus*, the team first had to estimate its length from comparisons with other titanosaurids. *Argentinosaurus*'s humerus, estimated at 1.81 meters, makes *Paralititan* the next heaviest known titanosaurid, perhaps twice the size of Stromer's adult *Aegyptosaurus*.

The thought of *Paralititan* weighing as much as 100 tons raised a concern: Would it have sunk into the mangrove swamp? Team member Kenneth Lacovara, a coastal geologist at Drexel University in Philadelphia, crunched some numbers. Given feet 1 meter in diameter, there was no problem—a relief for the paleontologists, who didn't think the massive carcass could have floated in or been dragged there by predators. "I'm confident that this sauropod may have spent a fair amount of time in the mangrove," Lamanna says.

The researchers have also found new specimens and taxa of fish, sharks, turtles, marine reptiles, lizards, and other dinosaurs. They plan to go back next year to look for even more. Ultimately, a diverse array of Upper Cretaceous fossils from North Africa could help determine the relative positions of Africa, South America, and Europe.

Decades ago, Stromer first discovered that diversity, only to see his collection blown to pieces. "It's a great shame it was lost," says Paul Upchurch, a sauropod expert and biogeographer at Cambridge University, United Kingdom. "But now that Josh Smith and colleagues have shown that there still is material to be found there, at least we have a second bite at the cherry."

–ERIK STOKSTAD

CREDITS: (LEFT TO RIGHT) R. KOENIG; KEVIN LAFFERTY/USGS

AUSTRIAN UNIVERSITIES

Scientists Spar Over Reform Plan

VIENNA—The Austrian government earlier this week approved plans for a major shakeup of the country's university system. Proponents say the proposal, if approved by Parliament, would infuse fresh blood into a system that has become sclerotic. Some critics, however, are angry over a loss of permanent jobs, while others charge that the reforms will be half-hearted and underfunded.

Most Austrian researchers agree that the university system is ailing. Over the past few decades, it's been "too easy to get permanent positions without a real assessment of the achievements of the candidates," says University of Vienna quantum physicist Anton Zeilinger. Adds University of Innsbruck physicist Peter Zoller, "there are essentially no positions left for young people." Compounding the problem, most professors and assistants are civil servants, or *Beamte*, a status that confers lifetime employment and regular raises not tied to job performance.

Reform-minded. Minister Elisabeth Gehrer wants to overhaul university hiring practices to bring in fresh blood.

Particularly acute is the plight of young researchers. Whether they are allowed to do independent research is largely up to the senior professor supervising their work, says University of Linz physicist Reinhard Folk, who says "there is a lot of misuse of people." Arnold Schmidt, president of the Austrian Science Fund, the country's main granting agency, points out that many researchers are "too old" by the time they are permitted to do independent research. Such disheartening conditions, if allowed to fester, will cause Austria "to lose a whole generation of scientists," warns University of Graz neuropharmacologist Peter Holzer.

In response to these widespread complaints, education and science minister Elisabeth Gehrer last December proposed legislation that would abolish civil servant status for

ScienceScope

Endangered Abalone U.S. officials this week added the white abalone, a California mollusk prized for its taste, to the government's endangered species list. Four years ago, biologists warned that the abalone was on the verge of becoming the first totally marine organism known to have been driven to extinction by overfishing (*Science*, 25 July 1997, p. 486). In an unusual move, the National Marine Fisheries Service declined to identify the mollusk's "critical habitat," fearing that poachers might use the information to clean out the estimated 3000 abalone that remain on deep-water reefs off California.

Meanwhile, biologists are trying to raise the creatures in captivity. The Abalone Restoration Consortium last month reported that it had coaxed three captive abalones into producing 6 million fertilized eggs. Eventually, the group hopes to release 10,000 young abalones a year into the wild.

Whose Genome Next? These days, genomics—study of an organism or biological system by looking at many genes at a time—is considered cool by hip biologists. But with researchers jostling to get their favorite organism decoded next, the National Human Genome Research Institute (NHGRI) has decided it's time for a sequencing summit. NHGRI director Francis Collins says he has invited an array of experts to the National Institutes of Health campus near Washington, D.C., on 9 to 10 July "to develop rational guidelines [for sequencing priorities], instead of responding to the group yelling the loudest."

Large-scale international sequencing centers are currently busy polishing the human genome sequence and completing work on biomedically important species such as the mouse, rat, and zebrafish. But once those chores are done, says H. Robert Horvitz of the Massachusetts Institute of Technology in Cambridge, the sequencers should take on species that have clear relevance to evolutionary biology, biomedicine, and comparative genomics. That might put some obscure animals at the head of the line.

But don't forget an organism's PR appeal, says NHGRI adviser Maynard Olson of the University of Washington, Seattle. He would sequence primates next, even if they are not the scientific community's first choice, because the animals capture the public's imagination.

Contributors: David Malakoff, Elizabeth Pennisi