### Breaking the rules

Although she is quick to identify problems, Healy isn't relentlessly critical of everyone around her—and she can be forgiving. Before she entered the administrative world, Healy was a practicing cardiologist, and by all accounts a darn good one. So it's not surprising that she tends to cast problems in human terms. When it comes to scientific misconduct, for example, she says it is important for people to remember that scientists are human and can make mistakes. "I think the scientific community has been duly humbled by some of the events of the last several years. Anyone who doesn't recognize the vulnerabilities that any scientist has, and the human failings that can infiltrate research even unexpectedly or inadvertently, hasn't had a very good feedback control loop."

But even here, Healy displays her tough side: Like a doctor scolding a patient for unhealthy habits, Healy says scientists must adhere to the highest standards of conduct, or ruin not only their own health but the health of the entire scientific enterprise. At the same time, scientists who do err should be dealt with as individuals. "There is no humanity in this process," complains Healy. She says there are different levels of misconduct—she uses the analogy of venial sins and mortal sins reflecting her Catholic upbringing—and there should be different levels of punishment that will deter but not stigmatize the offender.

### Strong stands and big ears

Everyone who knows her expects Healy to continue to take outspoken positions on the issues facing NIH. She has made it clear that the agency will be paying closer attention to women's health and plans to lobby equally hard for greater attention to minority health programs (*Science*, 31 May, p. 1242). She will have more to say about how federal grant money is used to pay universities' overhead costs. And she is developing a strategic plan for NIH—expected to be made public this fall—that will give an indication of where she intends to lead the agency in the next decade.

"Bernie is a very principled person," says Keyworth, her former boss at the Office of Science and Technology Policy, where Healy was deputy director in 1984-85. "Although she's definitely flexible—she has big ears and she listens well, and she learns—nevertheless, she develops strong positions."

Which means she will continue to take hits. But to Healy that's part of getting the job done: She is not interested in making nice, she is interested in accomplishing things. "If reports that my honeymoon is over are true, I celebrate that. I think a fifth anniversary is much nicer than a honeymoon. ■ JOSEPH PALCA

# BA Meets in Plymouth on Dinosaurs' Birthday

*In the week the communist dinosaur went extinct in the Soviet Union, 3000 scientists gathered in Plymouth at the annual meeting of the British Association for the Advancement of Science to celebrate the 150th anniversary of the day the dinosaur got its name. Also on offer were some 500 lectures on a vast range of topics.*

## Dinosaurs' Changing Image

*Plymouth*—In 1841, Richard Owen invented the dinosaur. Owen, a comparative anatomist, coined the term during a lecture at the BA meeting in this city—a bit of history that provided an excuse for a miniature dinosaur festival at this year's meeting, involving local museums and including 15 lectures and debates.

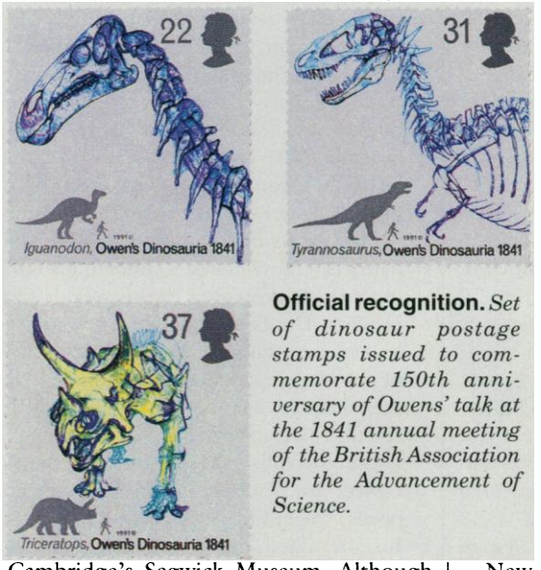
"Invention" may seem too strong a word, but the reality is that when Owen described the Dinosauria as a new group during his two-and-a-half-hour talk, he had remarkably few fossils to go on. But he had enough confidence in his own skills as a comparative anatomist to stick his neck out—a gamble that won him a place in the scientific history books.

That wasn't his only motivation, however. Owen's lecture clearly shows that he also had a political agenda, says David Norman, director of the University of Cambridge's Segwick Museum. Although in 1841 neither Charles Darwin nor Karl Marx had written the books that were to change the century, ideas of biological evolution ("transmutation" as it was then known) and, along with it, inevitable social progress, were already in the air. Owen, weighing in against the "progressionists," on the side of God-given order and the fixed social hierarchy, pointed to the dinosaur as a symbol of how the present was only a shadow of the past. He argued, says Norman, that dinosaurs were far superior in their anatomy and physiology to the "degenerate" reptiles alive today.

Since then, Darwinians have won the day and the dinosaur has been viewed not as a symbol of past perfection, but of stupidity and lumbering bureaucracy. Until recently, that is. Now, Owen's view of the dinosaur is making a comeback of sorts. "Some of the most successful animals of all time" was how Michael Benton, a geologist from the University of Bristol, described the beasts in the BA's prestigious Lyell Lecture. Certainly, the dinosaurs' 165-million-year reign merits that title—and with the global environment deteriorating rapidly there's good reason to doubt that it will be matched by humankind.

Others went further in trying to recast the dinosaurs' image. John Horner, professor of paleontology at Montana State University, even argued that dinosaurs were cute and "would make excellent pets"—at least in the first months of life when they were only a few feet long. They were cute for a good reason, says Horner—they were helpless when born and needed to beg for food from their parents as do modern baby birds. The new view of adult dinosaurs as caring parents comes from Horner's astonishing discoveries of fossilized dinosaur nests in western Montana. In some are newly hatched babies and in others are groups of juveniles—surely demonstrating, Horner says, that growing youngsters were in no hurry to leave the nest and a supply of parental food.

New evidence from the Gobi desert emerged at the meeting to support Horner. Since the 1921 U.S. expedition that found the first dinosaur eggs in the Gobi, Soviet and Mongolian expeditions have found many more eggs and surveyed several nest sites. Konstantin Mikhailov, from the Paleontological Institute in Moscow, described




**Official recognition.** *Set of dinosaur postage stamps issued to commemorate 150th anniversary of Owens' talk at the 1841 annual meeting of the British Association for the Advancement of Science.*

one recently discovered carnivorous dinosaur nest site that contained broken egg shells and numerous very small bones from herbivorous dinosaurs. As the site appears undisturbed, Mikhailov concludes that it provides clear evidence that "small animals were brought in by adult predators to feed the babies."

As scientists come to view the dinosaur as a caring creature they are also reconsidering the old dogma that the dinosaurs were cold blooded. Few, however, have gone so far as to embrace the view that dinosaurs were warm blooded. At the BA, a debate on this normally divisive issue ended with a consensus that dinosaurs must have had very high metabolic rates when young (elegantly charted by Horner with comparative studies of the rapidly growing bones of young dinosaurs) and switched to slower rates as they grew large. If they did not, said Horner, they would have risked a "melt down" as heat from muscles and digesting food built up in their vast bulk.

It was thus agreed that dinosaurs were neither hot-blooded nor cold-blooded but "somewhere in the middle"—a very British compromise for a debate that closed the final day of a very British meeting.

## Video-Tunneling to School

"These students," says Professor Tim O'Shea, displaying a video of his educational technology laboratory at the Open University, "are working in a space that doesn't exist in the real world." He may sound like another virtual reality freak, but O'Shea is actually trying to be practical: With 200,000 students and 10% of Britain's bachelor degrees to its credit, the Open University—the world's most advanced institute for learning-at-a-distance—constantly needs new ways to make students in their living rooms feel as if they're in class.

When the Open University was set up 20 years ago, its teachers could assume only that students had a black-and-white television to see the instructional programs broadcast from the university. Now, says O'Shea, 16,000 students use home computers and electronic mail as a part of their studies and the search is on for more sophisticated modes of interaction.

On show at the BA meeting was a system that creates a new kind of space in which students can simultaneously work face-to face and side-by-side. Although still at the experimental stage, telecommunication lines have already enabled tests in which users 600 miles apart were brought into the same "virtual world."

Face-to-face interaction is simple enough: It comes through an audio link and a "video tunnel," a pair of television screens and cameras arranged for intimate communication. Beam splitters line up the axes of each camera and screen pair so that if you look into the eyes of the person on screen, that person will be looking straight back into your eyes.

Side-by-side interaction at a distance is a little more complex. Alongside each person's video screen is a conventional computer allowing access to a shared workspace—a "boundless two-dimensional plane." All that means is that people at each end of the telecommunications link can scroll over the same plane in any direction and use any area of it to make notes, or run calculations, or do anything else the computer can do. If the two people scroll to the same area of the plane they will see the same view and can work together (just as though they have physically moved to the same part of a large table), if they scroll to different areas they can work apart (as though they have moved to opposite ends of a table). In addition, a "radar" at the top of the screen provides a set of smaller images of the more distant parts of the plane—a quick glance there is like a quick glance to see what your colleague is up to at the end of the table.

The end result, of course, should be to make the users feel they have all the benefits of working side-by-side in the same room while also having immediate face-to-face eye contact—a combination that is impossible in the real world.

The hard bit, says O'Shea, was not designing the system, but the hours and hours of analysis needed to see how people behaved when combining side-by-side with face-to-face interaction. The general verdict is that something like this is coming, with screens that allow groups of students and teachers to work together while talking on multiple video tunnels. As the only nation with sufficient backing to drive such educational innovation (individual U.S. states that have planned Open University-style projects have given up because of lack of central funding, says O'Shea), the future may—for once—arrive first in Britain. ■ ALUN ANDERSON

# UK Diabetics Plan Insulin Suit

*London*—In a move that will be closely watched by the pharmaceutical industry, British diabetics are preparing to sue suppliers of the genetically engineered "human" insulin that keeps them alive. Ironically, however, just as 31 lawyers, representing more than 500 diabetics, met here last week to coordinate their multimillion-pound claims, a new clinical study that casts doubt on the scientific basis of the diabetics' complaints was published in *The Lancet*.

The diabetics say they have suffered severe side effects since switching from cattle or pig insulin to the laboratory-made human version, which became available in England in the mid-1980s. Most worrying, they say, is that they no longer feel the bodily signals that warn of hypoglycemia (low blood sugar) that can lead to unconsciousness and coma. Insensitivity to signs of low blood sugar has resulted in more episodes of unconsciousness, the diabetics allege. They also complain of headaches, confusion, poor concentration, anxiety, and fear, and many have subsequently switched back to animal insulin as a result.

Medical evidence, however, is mixed. Some studies find that one-third of all patients who switched to human insulin were adversely affected. But others, including a study presented in this week's *Lancet*, find no difference among the various insulins. The *Lancet* study, by Alan Patrick and his colleagues in the Liverpool area, looked at seven patients who had returned happily to pig insulin after complaining of negative experiences with human insulin. But in a blind hospital trial to compare their responses to human and pig insulin, the patients' physical and psychological reactions were identical.

Gareth Williams, a consultant at the Royal Liverpool Hospital and member of the *Lancet* study team, nevertheless separates their medical research from patients' needs. "Scientifically," he said, "we believe there is no difference in the response." But, he added, diabetics may in fact feel better taking porcine insulin, and "there is no reason for patients to be made anxious while doctors are squabbling over this."

The two companies that make human insulin, Eli Lilly and Novo Nordisk, assert that there is no evidence that human insulin is unsafe. Lilly has concluded, from it's own and others' investigations, that "there is no significant difference in the frequency or severity of hypoglycemia, or in the awareness of symptoms experienced by individuals being treated with either human or animal insulin." Neither company will comment on the possible lawsuits. ■ JEREMY CHERFAS