RANDOM SAMPLES

edited by CONSTANCE HOLDEN

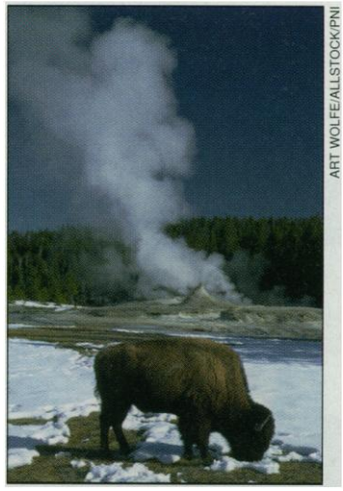
Research at Last for Yellowstone Bison

Ever since the harsh winter of 1989, bison from the burgeoning herd in Yellowstone National Park have been wandering out of the park in search of forage. That has been raising fears among neighboring Montana ranchers that bison-borne disease could infect their cattle, and has led to controversial shootings of hundreds of errant bison by park and state officials.

Now, the federal government is finally giving the park enough money to launch what many say is a long-overdue research program into how better to manage the bison. The action has been triggered by the unpopular shootings, as well as a lawsuit brought against the park last year by the state of Montana. Some of the bison carry a bacterium, *Brucella abortus*, which can cause cows to abort. Although there are no confirmed cases of bison-to-cow brucella transmission, the state sued to force the park to manage its errant bison, under pressure from federal agriculture officials who have threatened to yank certification that Montana cattle are disease-free.

Peter Gogan, a former park scientist now at the U.S. Geological Survey (USGS), says chronically tight funding causes the parks to rely on crisis management. Now, thanks to the lawsuits and six winters of out-of-park migrations, bison are the crisis. In response, the park service is shelling out $900,000 over 3 years, and the USGS is kicking in another $1.28 million over 5 years for intensive studies.

There is plenty to do: Currently, there are no hard data on how many of the herd—now halved to 1700 by winter shootings and die-offs—are infected, the risk of transmission between bison and cattle, and the effectiveness of new vaccines. Also in question: the carrying capacity of the winter range, and even whether closing snowmobile trails might help keep bison in the park.



ART WOLFE/ALLSTOCK/PNI

Needs managing. The park's bison are doing too much roaming.

Without data, the political clout of winter recreationists and cattlemen is pitted against that of bison advocates. Says Mark Peterson, Rocky Mountain director for the National Parks and Conservation Association: "Until we have the science, politics will dominate the issue."

Kennewick Man Still in Play

A prehistoric American skeleton that was scheduled for reburial without scientific study may soon be back in the lab. Or at least some of its DNA may be. That's the hope of a group of scientists who last November sued to prevent the Army Corps of Engineers from handing over the 9300-year-old bones to Native American tribes before the research was completed. Last week, a federal judge in Portland, Oregon, ruled that scientists have a right to challenge the corps's decision to hand over "Kennewick Man," as the skeleton found on the banks of the Columbia River is known.

JAMIE CLAIRE CHATTERS

What sort of man? Skull of disputed skeleton.

The embattled skeleton may hold clues about the peopling of the Americas, researchers say. "It's extremely well preserved and the skull has an archaic form" suggestive of Caucasoid features, says Rob Bonnichsen, director of the Center for the Study of the First Americans, at Oregon State University in Corvallis. He is one of the scientists who filed suit. "Kennewick Man could have been part of a different migration"—that is, his forebears may have come not from North Asia like those of other Native Americans, but from other parts of Asia or even Greenland. Indeed, the bones are also being claimed by the Asatru Folk Assembly, a religious group with links to ancient Vikings.

Last fall, researchers in David Glenn Smith's lab at the University of California, Davis, began to analyze the DNA from a sliver of bone provided by the corps. But then a group of Northwest tribes, saying this was desecration of their heritage, laid claim to the skeleton under the 1990 Native American Graves Protection and Repatriation Act. The corps responded by calling a halt to the research and pledging to return the bones to the tribes.

Bonnichsen's group, however, argued that denying scientists access to the skeleton violates their First Amendment rights. The corps's attempt to dismiss the scientists' suit failed last week when the judge ruled that federal courts could intervene in the dispute. "I expect the next step will be to determine what [scientific] studies [would] take place," says the scientists' attorney, Alan Schneider.

Meanwhile, researcher Smith can only look longingly at the small bit of Kennewick Man in his lab. "Every day, I look at that bone, and I'd sure like to grind a little of it up—all I need is a tenth of a gram. Then we'd know so much more about these early people."

New Members for NAE

The National Academy of Engineering (NAE) has announced the election of 85 new members and eight foreign associates. The academy now has 1893 U.S. members and 153 foreign associates. This year's class includes six women. Election—which entails nomination by a member, a review by NAE committees, and a mail ballot—honors those who have made "important contributions to engineering theory and practice ..." or who have pioneered "new and developing fields of technology." Information on the new members is available on the World Wide Web at http://www2.nas.edu/whatsnew/.

NSF Honors Academic Innovation

Last fall, Duke University tried a new approach to teaching undergraduate biology. It split up its large, one-size-fits-all course into small sections guided by a faculty member and a graduate student, had students focus on a handful of major themes, and instituted research-intensive labs.

The approach caught the eye of the National Science Foundation (NSF), which last month chose Duke as one of 10 universities to receive $500,000 each for successfully integrating research and education. The new 3-year awards are part of a campaign by the foundation to raise the status of teaching while preserving the role of research. "I think this is probably the most important thing that we're doing," says NSF director Neal Lane.

The new award winners emerged from a competition in which more than 100 research-intensive universities were asked to show what they were doing to pull together research and teaching. "I hope this sends a message to our faculty that they need to think about communicating their science to a broader audience" than just the readers of scientific journals, says Dean

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Zollman, a physicist at Kansas State University in Manhattan and another award-winner. Along with his regular research program, Zollman has spent the past decade helping middle and high school teachers incorporate basic ideas about quantum mechanics and solid materials into their classroom lessons.

NSF has no plans to repeat the competition, but officials hope that other institutions will learn from the winners. For more information, check the World Wide Web at http://www.nsf.gov/od/osti/ire

ESA

Hot stuff. The European and U.S. space agencies have recently released an "action-packed" movie from their solar spacecraft SOHO. It shows the sun blowing out solar wind, swallowing a comet, and emitting a big puff of gas. This image from SOHO (the Solar and Heliospheric Observatory), located 1.5 million kilometers sunward of Earth, shows the sun last Christmas, in front of the Sagittarius constellation and the Milky Way, and in the company of a "sun-grazing" comet that soon disappeared into its interior. The image was obtained with visible-light coronagraphs (known as LASCO), instruments that function like a solar eclipse, eliminating the light from the sun's surface and admitting only the glow from its corona. "There is no comparison whatever with coronagraph pictures obtained from Earth," where light from the atmosphere obscures most of the glow, says LASCO team leader Guenther Brueckner of the U.S. Naval Research Laboratory in Washington, D.C. The instruments' lenses are so pure they reflect no light. "When you put them on a table, you cannot see them," says Guenther.

SOHO has enabled astronomers to witness the huge ejections of billions of tons of coronal gas—visible as streaks leaving the sun—in unprecedented detail. The pictures also are yielding new information about the solar wind, says Serge Koutchmy of the Institut d'Astrophysique de Paris; it is turning out to be "much more turbulent than we had imagined." Movies can be found on the Web at http://sohowww.nascom.nasa.gov.

Fingering Ancient Greek Potters

Scientists have been analyzing fingerprints left almost 2400 years ago on fragments of the famous black- and red-painted vases uncovered at Metapontum, a noted archaeological site near Taranto in southern Italy. The prints, they say, can help identify individual pots' creators and illuminate the division of labor at urban workshops in the 5th century B.C., when southern Italy was part of the Greek world.

FINGERPRINT: ITALIAN MINISTRY OF THE INTERIOR/KRATER: BIBLIOTHEQUE NATIONALE DE FRANCE

Artisan's hand. Image of fingerprint in clay. Inset: Kalix krater by the so-called Dolon Painter at the Cabinet de Medailles et Antiques in Paris.

The team has uncovered kilns, jugs, and vases as well as a large haul of shards at a location known as the "Dolon Painter" dump. Many of these fragments bear prints, and some are also decorated in the distinctive style of this artist, who worked at Metapontum in the late 5th century B.C. and whose vases now sit in museums around the world.

Fingerprints have been used before in archaeology—for example, to track the scribes who wrote on ancient clay tablets. But the idea of using them to identify pot makers was only introduced last year, when, at the suggestion of the science park director in nearby Brindisi, fingerprint experts from the Ministry of Interior joined the University of Lecce team that has been working in Metapontum for 2 decades.

At a Brindisi press conference in December, the researchers announced that they have found some 400 fingerprints and analyzed 70 of the best preserved—some left in damp clay, others in paint—on fragments from about 40 vases. Four different pot-makers were identified: One was a modeler, leaving prints in the wet clay; two painted the vases; and the fourth touched up damaged items.

From the scale of the operation—judging from the number of prints, about 10 workers in addition to these specialists—the Lecce team deduced that the workshop was probably a city-owned manufacturer. Better yet, says Lecce archaeologist Francesco D'Andria, the workshop was probably headed by the Dolon Painter himself.

"These results are extremely exciting," says D'Andria, who hopes to flesh out the picture at other Greek workshop sites. "We can now set up an archive for attributing the vases to their individual painters, not only on the basis of style ... but on the unintentional signatures they left." The next phase of the project will involve looking for prints on vases in museums. First up: prints on a krater in an Orvieto museum, attributed to the Dolon Painter, which will be compared to prints on shards from Metapontum.

Culturing Young Japanese

Japanese educators are trying to relax the country's notoriously rigid educational system in hopes of giving a boost to gifted students, especially those in the sciences. But a proposal that would allow advanced students to enter universities early, a fairly common practice in the rest of the industrialized world, is running into some resistance.

In mid-February, a subcommittee to a panel of academics and leading citizens which advises Monbusho, the education ministry, recommended relaxing the current requirement that university entrants be at least 18, so that 17-year-olds advanced in mathematics or physics can skip their last year of high school. Other subject areas are also being considered.

The Mathematical Society of Japan has greeted the idea with pronounced coolness. In a nine-page letter to the subcommittee, it expressed concern about possible "distortions" to a person's education that could result from skipping one-third of the 3-year senior high school curriculum. Mathematician Yukihiko Namikawa of Nagoya University notes that, at present, there are no alternatives that would expose students to the coursework in humanities or even the other sciences they would miss. "This is not desirable from the standpoint of educating the total human being," he says.

Tsutomu Kimura, president of the Tokyo Institute of Technology and the head of the subcommittee that made the recommendation, says the group will look into alternatives, such as compressing the 6 years of junior and senior high school into five. More crucial, though, he says, is loosening Japan's "stifling" custom of giving age more consideration than ability in both education and employment. "All of Japanese society is dominated by seniority," he says.

Kimura and others believe, however, that the rules will be changing. Says a Monbusho official: "From the standpoint of promoting education that values individuality and of softening various rigidities in the system, probably everyone will agree to relax the age requirement." The group is expected to make a final recommendation by June.