

## Dinner in a Mound

Hominids living in South Africa 1.8 million years ago were traditionally believed to be vegetarians, chomping coarse plant matter with their large, flat teeth and powerful jaws. But it now appears that termites were high on the menu, based on microscopic analysis of bone tools found in two South African caves. The conclusion fits with recent carbon isotope evidence from hominid bones indicating they had diets rich in protein, possibly

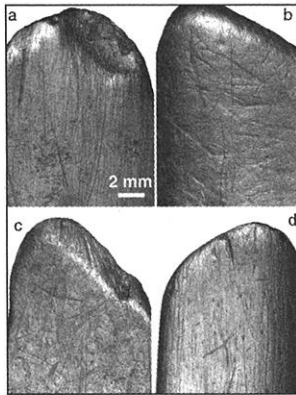
from flesh eating.

Francesco d'Errico of the Institute of Quaternary Prehistory and Geology in Talence, France, and paleoanthropologist Lucinda Backwell of the University of Witwatersrand in Johannesburg,

South Africa, looked at replicas of the world's oldest bone tools, found in the caves of Swartkrans and Sterkfontein near remains of *Australopithecus robustus*. They compared markings on the tools with those on devices used to dig, to break into termite mounds,

and to prepare animal hides, as well as bones marked by weather and animals. They report in the 16 January the *Proceedings of the National Academy of Sciences* that scratches show the bones weren't used for tuber-digging, as had been thought. Rather, they look like marks on experimentally made tools used for opening up the hard outer crusts of termite mounds.

Paleoanthropologist Julia Lee-Thorp of the University of Cape Town, who has been involved in the carbon isotope studies of bones (*Science*, 15 January 1999, p. 368), says that insects and other invertebrates do seem a more likely source of high-quality hominid chow than meat. "The concentration on meat is really somewhat ethnocentric—or 'modern diet'—centric," she observes.



A and D look like termite probes; B and C are for tubers.

## Fossil Flapper Informs Flight Plan



Model of "Nightingale."

Man has dreamed of flying like a bird at least since Leonardo da Vinci designed a winged contraption 5 centuries ago. But so far no one has succeeded in building an ornithopter—a flapping flying machine—that will take off and stay up unaided.

Now one aeronaut is looking to the ancient, leathery-winged pterosaur in hopes of becoming the pilot of the world's first successful ornithopter. For 4 years, Patricia Jones-Bowman has been the test pilot for University of Toronto researchers who have been laboriously fine-tuning an engine-driven craft named Big Bill, which has a joint at the base of each airplane-style wing.

Jones-Bowman is now aiming to break through the flapping-flight barrier in a craft of her own design, taking her cue from a large (11-meter wingspan) pterosaur. Her "Nightingale" will have "wrist" and "knuckle" as well as "shoulder" joints. The wings will be made of saillike membranes, and the pilot will be able to tilt them various ways, which Jones-Bowman hopes will minimize the jouncing caused by once-a-second flapping. She has the help of Tennessee engineer Jim Cunningham, who has been analyzing two fossil pterosaurs to figure out how their wings worked. They are easier to mimic than a bird wing, weigh less, and give better aerodynamic performance over a larger range of positions, he says. Jones-Bowman plans to launch a radio-controlled model this month and hopes to start testing the real thing before year's end.

## Physics Texts Found Wanting

How good are the textbooks that teach physics to our nation's middle schoolers? Deplorable, according to a 2-year study of 12 commonly used texts, funded by the David and Lucile Packard Foundation of Los Altos, California.

The study, headed by North Carolina State University, Raleigh, physicist John Hubisz, concludes they are plagued with "a very large number of errors, many irrelevant photographs, complicated illustrations, experiments that could not possibly work, and diagrams and drawings that represented impossible situations." One experiment, for example, depicts a pin attached to a tuning fork to reveal the fork's oscillations. But the pin is oriented incorrectly and is supposed to be attached with candle wax, which wouldn't work. Another text confuses

"force" and "acceleration" in describing gravity's effect on an object. The report (at [www.psrc-online.org/curriculum/book.html](http://www.psrc-online.org/curriculum/book.html)) also says textbooks try to cover too much material and contain too much distracting fluff, including irrelevant career information, attempts at multiculturalism, and photos of pop stars.

Uri Haber-Schaim, a theoretical physicist and textbook author, says that all these ailments reflect a fundamental problem: Most books are composed by in-house teams, with no individual accountable for the final product. In fact, Hubisz found few of those listed as authors actually considered themselves as such. He and Haber-Schaim agree that better educated selection committees would force publishers to clean up their act.

Theropods—carnivorous dinosaurs such as *Tyrannosaurus rex*—are famous for their sharp, curved, and wickedly serrated teeth. But no theropod has teeth as strange as this one, discovered in Upper Cretaceous rocks in Madagascar and reported in the 25 January issue of *Nature*. The front teeth flare out from the jaw, which suggests that the 1.8-meter-long dino, called *Masiakasaurus knopfleri*, may have used them to capture insects or small vertebrates, says lead author Scott Sampson of the University of Utah in Salt Lake City. Blade-like back teeth chopped up the food. "It shows there's still more to theropod lifestyles than we thought," says dino expert Tom Holtz of the University of Maryland, College Park.

## Flycatcher?

