Briefings

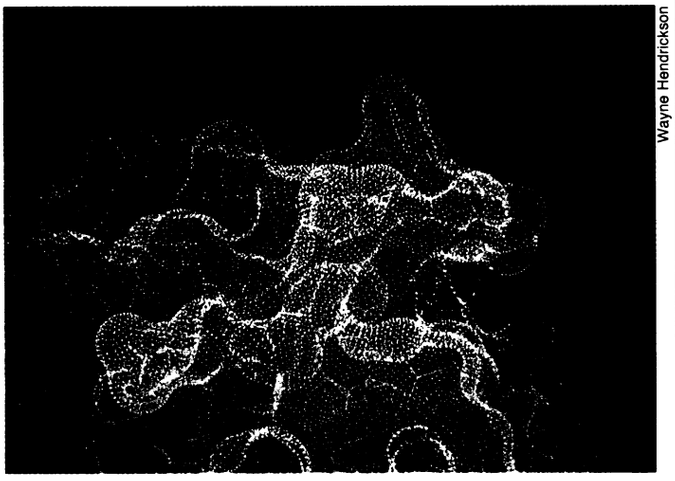
edited by CONSTANCE HOLDEN

Now Even Mummies Go Digital

New frontiers in mummy research are being probed at the University of Illinois at Urbana-Champaign, where the secrets of a 2000-year-old mummy are being exposed noninvasively by advanced technology.

In addition to x-rays and CAT scans, says archeologist Sarah Wisseman, supercomputers—which have not been used before in this kind of work—are being brought into the act. David Lawrence of the university's National Center for Supercomputing Applications is using two of them to construct rotating three-dimensional images from two-dimensional CAT scan slices of the head and torso beneath the mummy's wrapping.

Computers have also revealed in unprecedented detail such features as organ placement and details of the packing and embalming process—including the fact that the board under the mummy was bevelled and tapered to fit the body. But even supercomputers couldn't achieve clear enough images of the pelvic area to determine the sex of the mummy, a child who died of unknown causes at around age 8.



Wayne Hendrickson

AIDS virus target. *In order to enter and infect cells, the AIDS virus must bind to a cell surface protein called CD4. Now, two independent groups, led by Stephen Harrison of Harvard University and Wayne Hendrickson of Columbia University, have determined the three-dimensional structure of the portion of CD4 to which the virus attaches. Efforts have been made to treat AIDS patients with soluble forms of CD4 in hopes that they would bind to the virus and block its spread, but they have not been successful. Hendrickson says the new knowledge of the CD4 structure may help researchers design improved AIDS virus blockers. The structural determinations, supported by the Howard Hughes Medical Institute, were published in the 29 November* Nature.

Congress Hungry for NAS Advice

The National Academy of Sciences (NAS) and its siblings—the National Academy of Engineering (NAE) and the Institute of Medicine (IOM)—pride themselves on staying above the partisan fray. But their ability to tiptoe around political minefields is being increasingly tested as Congress is assigning the academies a growing number of studies, often on highly charged issues.

Although most academy studies are still done for executive branch agencies on topics that are usually carefully negotiated, the number of reports mandated directly by Congress grew from nine from the 96th Congress (1979-1980) to 24 from the just ended 101st. At the same time, relationships between Congress and the academies have been getting very chummy, with monthly lunches for congressional staffers and occasional weekend retreats for members of Congress.

But along with prestige and money, congressional interest brings pressure to play Congress's game. Take, for example, an IOM study for the Department of Energy, due this month, on a proposal to resurrect a dormant energy research reactor near Idaho Falls. Idaho wants $26 million from DOE to convert it into a cancer treatment center. DOE doesn't want to fund the project at this time, and its opinion has been supported by two advisory panels (*Science*, 13 April, p. 156). But the proposal is backed by Idaho's senior senator, James McClure (R), who wields substantial clout over the DOE budget. He has been hovering over the IOM and has instructed it to keep him abreast of "each phase" of the review.

Another delicate case involves the decision by the National Science Foundation to select Florida State University as home for a new magnet research center. The losing contender, the Massachusetts Institute of Technology, cried foul (*Science* 21 September, p. 1367), and MIT's friends in Congress ordered up an academy study of the fracas—later modified into a general report on NSF's peer-review system.

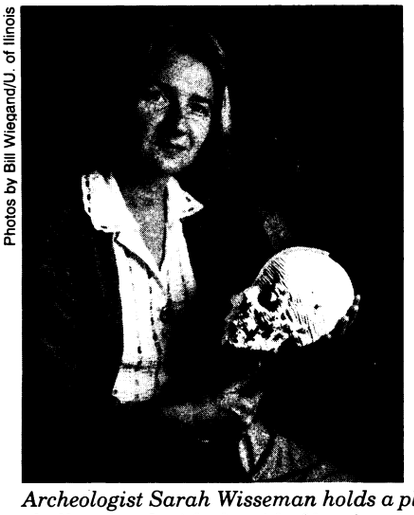
NAS President Frank Press insists that the academies know how to steer around the political shoals and can get legislators to rewrite charges if necessary to ensure that every project has "a sufficient technical basis" and a "minimum of value judgments or politics." While the broth served up by the academies is bland stuff by Washington standards, Congress's appetite for it grows ever larger.

French Genome Project

The French government has decided to launch a national genome research project. Hubert Curien, minister of research and technology, has announced that 50 million francs ($10 million) will be spent on the project next year and 100 million francs in 1992. That's in addition to the 150 million francs a year that the government is already spending on genome work. The United States, by comparison, is putting $136 million into genome work in fiscal year 1991.

The French human genome program will have three components. The largest will consist of mapping and sequencing genes that are expressed in humans. The second part will focus on the genomes of yeast,

Photos by Bill Wiegand/U. of Illinois



Sculptural interpretation of the head of a 7-to-9-year-old Egyptian who died around A.D. 100.

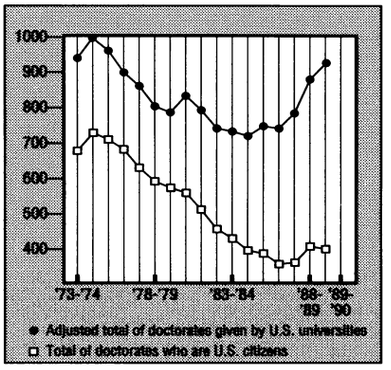
Archeologist Sarah Wisseman holds a plastic model of a mummy's skull, created with the aid of head scans and a computer.

bacteria, and mice. And the third objective will be to develop computerized data bases to store all this information.

The research will be coordinated and funded through a new organization called GIP (Groupement d'intérêt public). The GIP president, its board of directors, and scientific advisers may be selected by next month, according to observers in Paris.

Domestic math Ph.D.'s hit all-time low. *United States citizens received only 43% of the math doctorates awarded by U.S. institutions this year—the lowest percentage ever reported, according to the American Mathematical Society. The total number of doctorates rose to 933 after a decade-long dip. But only 401 went to Americans, and, said AMS officials, "The increases in awards to women and blacks reported last year were not sustained." Eighty-nine doctorates went to American women, and only four—compared with nine last year—to blacks. Median starting salaries were slightly higher for women: $32,500 compared with $32,000 for men.*

American Mathematical Society-Mathematical Association of America Survey



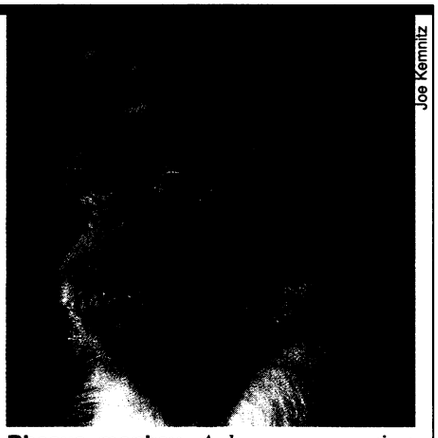
Darwin Back on the Books

As goes Texas, so goes the nation—at least when it comes to coverage of evolution in high school biology textbooks. As the nation's single biggest buyer with 9% of the market, Texas is in a position to dictate what a large portion of the nation's teenagers get in biology class. So it was good news for science education when the Texas State Board of Education voted last month to approve a new generation of eight major biology texts. The books give extensive coverage to evolution and none to creationism. "Evolution is back in biology books in an unabashed and uncompromising way," trumpeted People for the American Way, a group that has been battling creationism in the schools.

The Texas textbook battle has been raging since 1974, when the state restricted coverage of evolution in science texts. In 1984, the old school board was deposed as a result of a school reform movement led by Dallas billionaire H. Ross Perot. Last year, the board voted to require for the first time that all texts—which are issued in 6-year cycles—teach evolution. Despite a "massive" last-ditch lobbying effort by creationists, according to a spokesman for the People group, the board voted 11-14 on 10 November to approve the new texts for use in Texas schools next fall.

Primate Secret to Longevity

The fountain of youth may be as simple as cutting calories—at least in monkeys. A study of 30 middle-aged rhesus monkeys shows that those who ate 30% less monkey feed appeared to be healthier in several measurable ways than brethren who gorged themselves.


Joe Kemnitz

Rhesus monkey. *A lean, mean aging machine.*

According to preliminary data from an ongoing, 5-year study at the University of Wisconsin, the monkeys who ate less had less fat and insulin in their blood. They also used less oxygen, which leads primatologist Joseph Kemnitz to point out that, "If you slow down the metabolic rate, you reduce wear and tear on the system." And that means "the process of aging may be slowed."

The results are consistent with studies of rodents whose lives also were prolonged when they ate less. These data are more interesting because, says Kemnitz, "Rhesus monkeys are very much like humans." Both species are highly social omnivores who tend to put on weight with age and to be vulnerable to similar diseases of aging. In fact, says psychologist Donald Ingram of the National Institute on Aging, which has launched its own monkey diet study: "They develop little paunches."

TV Attachment Inherited?

Research in behavioral genetics has uncovered strong genetic influences for traits ranging from extraversion to abstract thinking ability. But TV-watching? Researchers in the Colorado Adoption Project, a long-running study of adopted children and their families, say yes, your genes may affect how much you like to watch TV.

The analysis, by Robert Plomin of Pennsylvania State University and colleagues at the University of Colorado's Institute for Behavioral Genetics, reports data from 459 families, half with adopted children. The children averaged 15 hours a week in front of the tube, with individual viewing times ranging from 5 to 25 hours.

The investigators compared viewing habits between pairs of adopted (genetically unrelated) siblings, between pairs of biological siblings, and between children and parents—including biological parents of adoptees. The result? Among children aged 3 to 5, the researchers assert that TV time is "significantly affected by genetic factors" as well as by the family environment.

In their paper, published in the November *Psychological Science*, the researchers profess surprise that even among these very young children, where family environment would be expected to be the major determinant, only 20% of the variation in TV viewing was ascribable to family influence. They call the strength of the genetic influence "remarkable." Indeed, comparisons between siblings suggested that as much as 45% of the overall variation in viewing habits is due to genetic factors. Comparisons between parents and offspring yielded much lower heritability estimates—partly because of factors related to the age gap. Nonetheless, the authors say the "most impressive genetic evidence" is "the significant resemblance between television viewing of biological parents and their adopted-away children," which showed that genes were just as influential as the family environment for young adoptees. Since TV-watching genes don't exist, researchers say the findings may tap an underlying trait such as passivity.

Plomin says the study is noteworthy because it adds TV-viewing to the list of influences that are commonly viewed by psychologists as environmental, but which in fact are also partly genetic.