

Briefings

edited by CONSTANCE HOLDEN

New Cancer Data From Oak Ridge

Workers exposed over many years to amounts of radiation well below U.S. guidelines may nevertheless be more likely to die from leukemia than the rest of the American population. This surprising new finding comes out of a study of workers at Oak Ridge National Laboratories by epidemiologist Steve Wing, of the University of North Carolina at Chapel Hill, and colleagues. It has challenged findings from previous surveys indicating that workers at radiation labs suffer no increase in cancer mortality.

The unexpected result, published in the 20 March *Journal of the American Medical Association*, is the first to associate increased leukemia death rates with lifetime exposures of less than 50 milliSieverts (mSv)—well below permissible levels. Furthermore, it suggests that the cancer takes longer to develop than had been thought. All the earlier studies of nuclear installations had followed workers for up to 21 years after their first radiation exposure; the new study followed 8318 white male workers an average of 26 years.

As for deaths from cancers other than leukemia, overall rates for the workers were, if anything, lower than for the general population. But when looking at differences within the worker group, the authors found a strong correlation between exposure levels and cancer rates two decades after exposure began: For every 10 mSv radiation received, a worker was about 5% more likely to die of cancer. This is another effect not seen in a previous study of Oak Ridge workers.

The new study leaves a number of unresolved questions, including whether toxic chemicals or other nonradioactive carcinogens could have caused

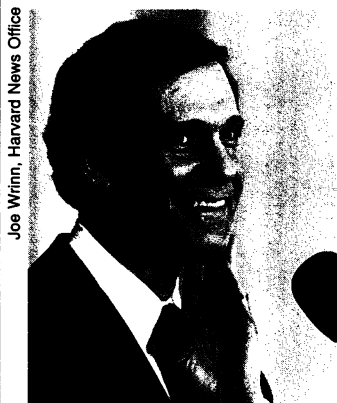
the higher leukemia death rates. More important, says Wing, the findings make it clear that even longer term studies must be done to clarify how cancer mortality rates change over time.

Bok Successor Named

Phil Leder won't be the next president of Harvard. The world-renowned Harvard Medical School geneticist and sole candidate from the world of science was beaten out—as were other prominent candidates Harvard economist Martin Feldstein and University of Chicago provost Gerhard Casper—by Neil L. Rudenstine, former Princeton provost and executive vice president of the Andrew W. Mellon Foundation. Rudenstine will succeed Derek Bok, who steps down in June after 20 years in the post.

Rudenstine, 56, is a Princeton graduate and former Rhodes scholar with a doctorate in English from Harvard, where he did his dissertation on the poetry of Sir Philip Sidney.

The new president, whose appointment has been enthusiastically hailed by his old friend



Neil Rudenstine

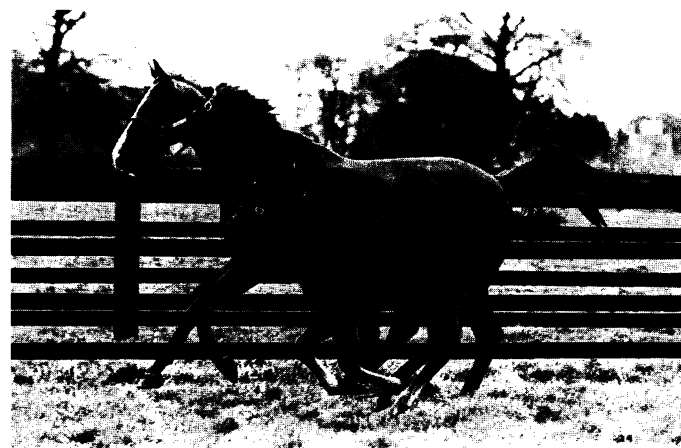
Bok, seems to combine a Renaissance orientation with thoroughly modern concerns: At Princeton he was the affirmative action officer and was directly involved in turning the university coeducational. Best of all, he's a proven fund-raiser—a crucial consideration for Harvard, which is starting a \$2-billion campaign.

Cleaning up Thoroughbred Stock

Thoroughbred racehorses are fast and beautiful, but they are also a degenerate lot. As breeders over the past 2 centuries have focused on traits like speed, stamina, and conformation, they have overlooked the genetic costs of intensive inbreeding. As a result, thoroughbreds are afflicted with a host of disorders,

In 1960, Irish researchers calculated from a sample of 60 mares that the coefficient of inbreeding was 12.9%. That means that thoroughbreds, on average, are more closely genetically related than are half-siblings—for which the coefficient is 12.5%.

Through the Tufts project,



Tim Hannan

Thoroughbred mare and foal. *What defects has she passed on?*

says W. Robert Cook of the Tufts University School of Veterinary Medicine. More than 95%, for example, have some degree of "recurrent laryngeal neuropathy," partial paralysis of the larynx that affects breathing. And more than 80% of yearlings show signs of cartilage degeneration at the joints.

But surprisingly, considering the financial incentives at stake, horse breeders have remained largely ignorant about the genetics of their animals. Unlike livestock breeders, says Cook, "our knowledge of hereditary diseases of horses is at a very primitive level...the industry is at about the same position as dog breeding was 40 years ago."

Which is why Tufts is embarking on an unprecedented project to analyze the genetic structure of the thoroughbred breed, using a new computer program and a data bank of 12-generation pedigrees from 30,000 horses. The primary object is to come up with a coefficient showing how inbred the population actually is. Researchers already know it's high:

says Cook, breeders will for the first time be able to "read" the stud book," the classic manual started in 1793 and based on a few dozen horses from which all subsequent thoroughbreds have sprung. That in turn will help identify inherited diseases—Cook believes there may be 100 that affect the horses' heads alone—as well as show relationships between inbreeding and performance on the track.

The first phase of the project is being funded by the Dorothy Russell Havemeyer Foundation, an equine research outfit. In the future, Cook hopes to expand the database to 200,000 thoroughbreds from North America and Europe, and to establish it as a permanent resource for improving genetic management of thoroughbreds.

Hubble Bashing on Prime Time

Many months of scientific and political damage control by NASA—and some pretty darn

good photos in the world's newspapers—have failed to dissuade Hollywood writers from giving the struggling Hubble Space Telescope a very public kick in its ... shall we say, lens?

In the 21 March episode of NBC's well-watched "L.A. Law," a defendant was standing trial for refusing to pay his taxes. How to explain such behavior to a jury of taxpayers? The defendant argued that too much of his money was being consumed in wasteful government spending. Take those familiar \$600 toilet seats. Take those less familiar expensive studies on the effect of cow belches on global warming. Now came the punch line to the jury, delivered by the defendant's attorney: "When [my client] stood up and said 'I won't be soaked for more useless Hubble Telescopes and rockets that explode,' [he] was being a true patriot."

How does NASA feel about this peculiar brand of patriotism? "We've been assaulted by almost every comic around," says Michael Braukus, a public affairs officer at NASA headquarters in Washington, D.C. "This sort of thing just rolls off our shoulders." Especially so since, in the end, the screenwriters seemed to have regained

their senses: The jury found the defendant guilty.

Apples for Eternity

Will people still eat golden delicious apples centuries from now? The answer may depend on how well their buds survive at -150°C .

Space at the National Germplasm Repository in Geneva, New York—which preserves more than 3000 types of apple trees—is running short, and curator Philip Forsline thinks he has found an alternative: freezing apple buds in liquid nitrogen to save space on trees.

Unlike most garden vegetables, specific varieties of apples and other fruits cannot be preserved by storing seeds since individual seeds vary genetically; thus the Department of Agriculture has had to preserve them in orchards. Buds, however, *do* contain the exact genetic makeup of their parent trees, a fact that prompted Forsline and several Colorado State University horticulturists to embark on a 25-year cryogenic project to see if buds will grow after being frozen for many years—something no one has tried on such a large scale before. Using tech-

niques they developed themselves, the horticulturists dehydrate buds as much as possible, then place them in the vapor directly above a container of liquid nitrogen. Each spring they rehydrate the buds and see if they grow.

Preliminary results—this is the project's third year—look promising: fruits native to northern regions, like the Siberian crabapple, have had nearly 100% survival rates. Rates for others range from 10% to 100%. If all goes well, the freezing program will not only save money and space, it will provide a backup in case trees die from disease or disasters.

NIH Finds Misconduct at Georgetown

Scientists accused of misconduct are taking a battering at the hands of NIH's Office of Scientific Integrity these days. Shortly after a toughly worded OSI draft report on the Baltimore case was leaked to the press (*Science*, 29 March, p. 1552), another draft report was obtained by *Science* that accuses Margit Hamosh, a pediatrics professor at Georgetown University, of having made false statements and submitted false data in grant applications to NIH and the Department of Agriculture.

One finding concerns an NIH grant application in which Hamosh allegedly stated she was using a model for total parental nutrition based on newborn rabbit studies. Under questioning, Hamosh reportedly admitted that no such model had ever been in use. OSI also found that Hamosh had supplied data from "initial experiments" on the gastric emptying times of different dogs in a USDA grant application, later determined by OSI to be "worthless and [apparently] fabricated or falsified."

The report, which was first described in *The Washington Post*, also faults Georgetown's initial investigation of accusations made against Hamosh by Lois Freed, a former research assistant in her laboratory. It

Was John Sununu Joking?

Scientists who sleep easier at night knowing physicist D. Allan Bromley is in the White House may wake up sweating over a recent remark by the other technologist in residence, former mechanical engineer John Sununu, now White House chief of staff. In a *Scientific American* profile (April issue), Sununu is asked for his reaction to the recent highly publicized alarms over basic research funding raised by Nobel laureate Leon Lederman. Sununu's response: "I don't know who Leon Lederman is."

points out several instances in which the university not only failed to interview obvious witnesses but repeatedly took questionable statements at face value. Like the Baltimore report, this document is not official: Hamosh and Georgetown have 30 days to comment on its findings.

Chronicle Online

The Chronicle of Higher Education is being used as a stalking horse for future scholarly publications that will be as close as your computer terminal (*Science*, 1 March, p. 1021). Starting next fall, the full text of the newspaper will be made available on the campus-wide computer network at the University of Southern California (USC). The service is part of an 18-month pilot project to explore the demand for and use of online information.

The experiment will include separate databases on university-related statistics and on job openings, as well as access to the paper's contents by a variety of means, including word combinations. USC plans to incorporate the research into a larger project already under way on how people use electronic resources.

Japan Prize confers \$750,000



John J. Wild

The Japan Prize, Nippon's answer to the Nobel, has been awarded to an American and a Frenchman. John Julian Wild, 76, director of the Medico-Technological Research Institute of Minneapolis, is being honored for pioneering contributions to medical imaging technology. Jacques-Louis Lions, 62, chairman of analysis and systems control at the Collège de France and president of CNES, the French NASA, is cited for his work in applied mathematics.

Each prize carries with it 50 million yen, equivalent to \$375,000, which will be bestowed at a 25 April ceremony in Tokyo. Of the 19 winners since the award was established in 1985, 12 have been American and one Japanese. The Japan Prize is administered by the Science and Technology Foundation of Japan.