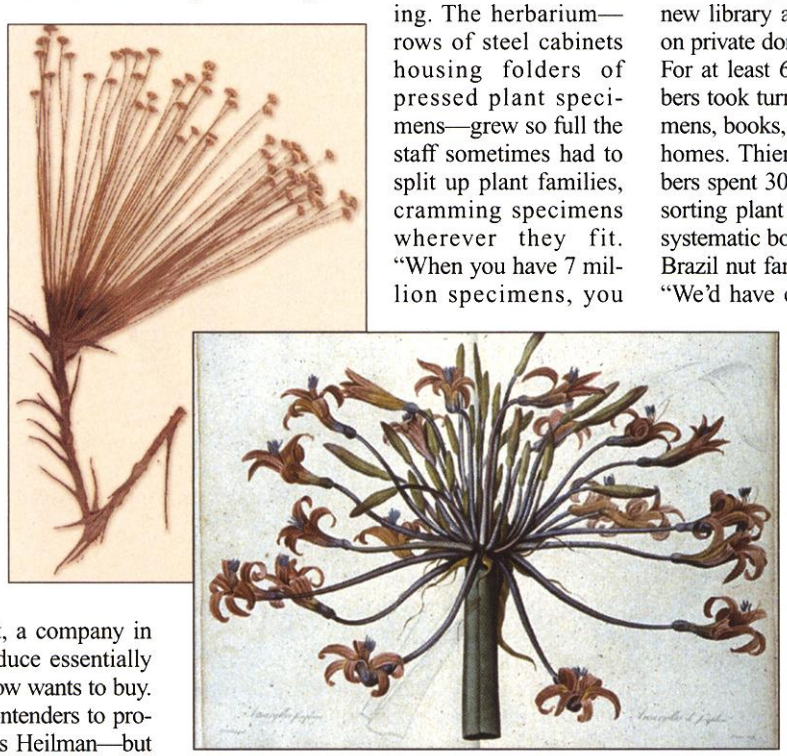
munotherapeutics, a company in Needham, Massachusetts, that is developing an oral, one-dose anthrax vaccine. This vaccine, made from a weakened cholera bacterium that produces PA, would be a better way to protect the civilian population because it acts rapidly, Ryan contends. And she claims it could be tested quickly.

But others support NIAID's decision. Stephen Leppla, an anthrax researcher at the National Institute of Dental and Craniofacial Research in Bethesda, says vaccines like AVANT's that deliver PA in a new way are intriguing but not yet ready for prime time. They might pan out in the long run, Leppla says, "but there's pretty wide agreement that, if we want to have something within a few years, recombinant PA is the way to go."

The military also wants to replace AVA with a new vaccine, and its Joint Vaccine Acquisition Program has contracted with DynPort, a company in Frederick, Maryland, to produce essentially the same vaccine that HHS now wants to buy. DynPort is also one of the contenders to produce the civilian vaccine, says Heilman—but she says several other companies have already expressed interest in the contract as well, and the government could end up with two vaccines made by two different manufacturers.

–MARTIN ENSERINK AND ELIOT MARSHALL



A bit of botany. The New York Botanical Garden houses history, including this 1969 Brazilian plant specimen, *Paepalanthus incanus* (*left*), and an image of Amaryllis Josephinae, a flower named for Josephine Bonaparte, taken from the 19th century book *Les liliacées* (*above*).

CREDIT: NYBG

MUSEUMS

In New York City, a Building Blooms

BRONX, NEW YORK—The New York Botanical Garden is forever changing. Riots of color—fiery tulips, lush roses, golden maples—rise and fade across its 100 hectares as the seasons change costume. But next week, the grand old garden unveils some scenery that's here to stay: the $100 million International Plant Science Center. The new center houses a one-of-a-kind collection of plants and books and opens the door to a new era of plant science.

Founded in 1891, the New York Botanical Garden (NYBG) has the richest herbarium in the Western Hemisphere, with 6.5 million plant specimens, from a Pleistocene-era gnarl of moss to a rare orchid recently found in Borneo. Its library boasts 775,000 rare books, seed catalogs, and other exotica—an estimated three-quarters of the world's systematic botany literature and published floras. "This is one of the greatest botanical collections in the world," remarks Neotropical plant specialist William Anderson, a curator at the University of Michigan Herbarium.

Like a celebrity closet bursting at the seams, however, the garden long ago outgrew its original limestone-and-brick building. The herbarium—rows of steel cabinets housing folders of pressed plant specimens—grew so full the staff sometimes had to split up plant families, cramming specimens wherever they fit. "When you have 7 million specimens, you don't want to lose something," jokes Barbara Thiers, director of NYBG's herbarium. "We were absolutely full." What's more, the original building is classic turn-of-the-century architecture: high ceilings, huge windows, and drafty rooms. Lovely, but not exactly a pristine environment for preserving rare dried plants and timeworn books.

Like its collections, plant science at NYBG could use some updating to join the molecular revolution sweeping the field. So NYBG has launched a 15-year, $225 million effort to modernize. "While we remain committed to traditional studies of plant systematics, we're also very interested in using new molecular techniques to learn more about plants than ever before," says garden president Gregory Long. Next year, NYBG plans to break ground on a new plant science lab, funded primarily by Pfizer. To that effect, the garden recently formed a genomics research consortium with Cold Spring Harbor Laboratory and New York University. And in coming years, Thiers hopes to post NYBG's entire specimen collection online in a virtual herbarium (www.nybg.org/bsci/cass), with digital images and brief biographies of the plants, including finds by Charles Darwin, British captain James Cook, and western explorer John Fremont.

As part of its makeover, the NYBG 5 years ago began renovating the top of its original building and adding a west wing for the new library and herbarium. The effort relied on private donations, public funds, and sweat. For at least 6 months, dozens of staff members took turns wheeling carts of plant specimens, books, and other materials to their new homes. Thiers estimates that 50 staff members spent 3000 hours pushing, stacking, and sorting plant fragments alone. Scott Mori, a systematic botanist at NYBG who studies the Brazil nut family, calls the effort a marathon. "We'd have competitions to see who could move the greatest number of specimens," Mori laughs.

The result is a rare example of botany in avant-garde surroundings. "Such a magnificent structure should provide a great setting for the best possible research in our field," says Missouri Botanical Garden director Peter Raven, who will speak at a 1 May symposium to launch the plant center's public opening. Outside, the new wing, wearing a limestone surface and copper trim, reflects its historic neighbor. Inside, the herbarium is spartan and cool, like a modern loft, with bare floors, exposed ductwork, and angled windows overhead. Banks of coral, compact steel cabinets—expanded and contracted with the turn of a wheel—line the well-lit space, leaving room for desks and microscopes down the middle. Each cabinet is only half-full, says Thiers, with space for 25 years of expansion.

Atop the new wing and renovated museum space, the library offers dappled light and geometric lines, with gray hues offset by cherry wood and a brightly lit reading room. A new gallery showcases the library's treasures, including one of the earliest known versions of *Circa Instans*, an A.D. 1190 formulary of medicines, listing plants and other ingredients in popular remedies of the day. Just down the hall, the rare books room holds 5000 other pre-Linnaean titles, published before 1753—shelves of botanical adventures and ideas, often penned in Latin and German, resembling huge family bibles or thumbed-through journals dressed in colorful spines. "These are the original descriptions of some plants, so they're very scientifically valuable, and now they're more accessible," says John Reed, director of the library.

Indeed, accessibility may be the renova-

tion's biggest reward. NYBG loans scientists worldwide up to 50,000 plant specimens and 5000 works every year. And thousands more researchers come to visit, joining about 170 NYBG staff scientists and graduate students. Paleobotanist Judith Skog of George Mason University in Fairfax, Virginia, predicts the herbarium will become an even greater draw as researchers unravel the genomes of plant specimens. Says Skog, "One can always return to the exact specimen which yielded that set of genes, the place it was collected, the time of year, and in what conditions it was growing." Indeed, more scientists may find themselves lingering at the garden—purely for pleasure.

–KATHRYN BROWN

SPACE STATION

NASA's O'Keefe Tangles With Texans

When he was deputy of the White House budget office, Sean O'Keefe took a dim view of both the space station and congressional earmarks. But those outspoken opinions are harder to hold when you are a NASA chief dependent on lawmakers for funding your programs. Last week, O'Keefe's views underwent their first close scrutiny when an influential congressman declared his plans for the orbiting facility "timid and anemic."

O'Keefe responded to the unusual public attack by Representative Tom DeLay (R–TX) with a mixture of defiance and obsequiousness. Appearing before a House appropriations panel, O'Keefe repeated his intention to hold the space station crew to three until the current program is further along, has clearer cost estimates, and is guided by better scientific goals. He also refused to back down on plans to halt work on a rescue vehicle and to cut funds for a Houston research institute. But to smooth things over, he apologized for any "miscommunications" in his first months on the job.

O'Keefe's position on the station is also likely to grate on members of other NASA oversight panels. Many members of Congress, researchers, and the U.S. international partners in the space station effort are keen to complete the orbiting lab so it accommodates a crew of six or seven. Texans figure prominently in that coalition: Houston's Johnson Space Center—an important economic mainstay in that area—manages the program.

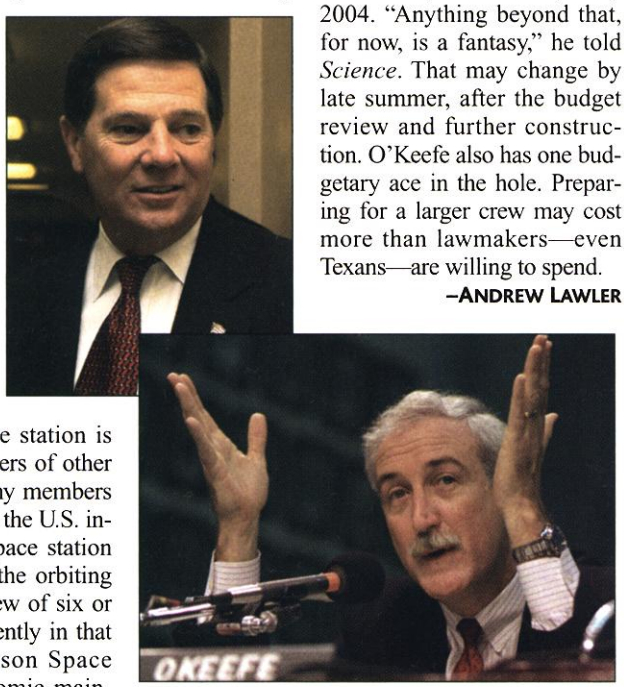
DeLay is particularly incensed with the administrator's move to halt $40 million in Johnson work on the X-38, which would allow the larger crew to evacuate the station in the event of an emergency. The current Russian Soyuz capsule can hold only three. O'Keefe says that project isn't terminated; he just wants to consider other options as well, like providing a safe haven aboard the station or buying more Soyuz capsules. But station supporters worry that more studies mean further delay—and a three-person crew for the indefinite future. DeLay chastised O'Keefe for what he called a "blatant disregard for congressional intent"—a serious charge coming from an influential appropriator.

Lawmakers also are skeptical of O'Keefe's commitment to research. In a 12 April speech at Syracuse University, where O'Keefe taught business, he insisted that NASA must be driven by science. But the agency has proposed a $7 million cut in the $17-million-a-year budget for Houston's National Space Biomedical Research Institute. DeLay said, "in spite of your commitment to science … it just doesn't make sense to me."

At a meeting the next day with reporters, O'Keefe noted that he recently assembled a blue-ribbon panel to set a clearer research agenda for the station and told them not to be constrained by the availability of crew or facilities. In the meantime, he says three astronauts can do far more research than NASA studies indicate. "Not a single astronaut I know carries a union card," he said, predicting that crew members will put in more than 40-hour workweeks.

O'Keefe insists that NASA's priority must be to complete the core space station by early 2004. "Anything beyond that, for now, is a fantasy," he told *Science*. That may change by late summer, after the budget review and further construction. O'Keefe also has one budgetary ace in the hole. Preparing for a larger crew may cost more than lawmakers—even Texans—are willing to spend.

–ANDREW LAWLER



Texas two-step. Rep. Tom DeLay (*top*) had harsh words for NASA's Sean O'Keefe at last week's budget hearing.

CREDITS: (TOP TO BOTTOM) KENNETH LAMBERT/AP; AP

SCIENTIFIC MISCONDUCT

Hall Probe Continues; No 'Willful' Fraud

SYDNEY, AUSTRALIA—A preliminary investigation has cleared a prominent medical researcher and clinician at the University of New South Wales (UNSW) of "willfully" perpetrating scientific fraud and mismanaging government funds. But UNSW vice chancellor John Niland, who announced the findings last week based on two internal inquiries, said that an "unsatisfactory" working environment and "poor working relationships" within the laboratory of renal transplant physician Bruce Hall led to "intermittent lapses" in accurate reporting of data as well as instances of errors in attribution of authorship. Niland also announced an independent inquiry to "address any issues of scientific misconduct and scientific fraud it considers unresolved" by the first investigation.

Hall, who had been accused of misconduct by three members of his laboratory (*Science*, 19 April, p. 449), was ordered by the university to apologize for errors and transgressions of acceptable workplace behavior, correct inaccuracies in abstracts and other published material, clarify authorship procedures in his laboratory, and undergo management training. In a statement, Hall said he is "absolutely confident an independent [review] will accept that there is no misconduct."

The complaints against Hall were submitted last fall to the university and the country's leading biomedical research funding agency, the National Health and Medical Research Council. They were made public earlier this month in a report aired by an Australian Broadcasting Corporation radio show. The research council, which has supported Hall's work on the role of CD4+ and CD25+ cells in organ acceptance and rejection as well as experiments involving monoclonal antibodies, froze one of Hall's grants in January while the allegations were investigated. A council spokesperson says the freeze remains in effect, noting that "we can't, on the basis of what we've seen in the Niland report, be assured that the matter has been satisfactorily resolved." One of the complainants, Clara He, said that she is "shocked" that the new inquiry will be limited to allegations of scientific misconduct.

Next week the university's governing council is expected to consider the administration's ability to handle allegations of various sorts of wrongdoing, including a pending case of possible nepotism within its Education Testing Centre. "We should regard the whole matter as a work in progress," says one councilor who requested anonymity.

–LEIGH DAYTON

Leigh Dayton writes from Sydney.