Briefings

edited by DAVID P. HAMILTON

AID

No second shot. *Nonreusable syringes may prevent infection.*

AID Aids AIDS Efforts with New Syringes

Some ideas leave you wondering why no one ever came up with them before. The U.S. Agency for International Development (AID), concerned because health workers in its immunization programs sometimes spread infectious blood diseases, such as AIDS or hepatitis B, with imperfectly sterilized needles, just had one: why not distribute syringes that can't be used more than once?

Within the next year or two, AID should be doing just that. A new syringe, developed by the medical supply company Becton Dickinson in conjunction with AID and the World Health Organization, incorporates a sharp metal flange that prevents withdrawal of the plunger once it is depressed. AID and WHO just completed field trials of the syringe in Pakistan, where health workers were "quite receptive," according to an AID spokesman.

But even this better mousetrap may have a weakness: the one-shot syringe may be safer, but it could also make life harder for health clinics that currently reuse disposable syringes in order to save money. AID has not yet made final plans, but will likely either increase its aid or cut a deal with Becton Dickinson to supply more syringes at a lower cost.

Director Contenders Just Say No to NIH

The search goes on, and on, and on, and no one will take the job. Washington University chancellor William Danforth has, for a second time, taken himself out of contention for the directorship of the National Institutes of Health. The first time, he said no to a White House "litmus test" on abortion. This time, sources say, he declined the post because negotiations with Health and Human Services Secretary Louis Sullivan over the director's authority broke down.

For months, a blue ribbon committee appointed by Sullivan labored to find ways to enhance the NIH director's power in matters such as staff promotions and advisory committee appointments (*Science*, 9 February, p. 628). Despite the committee's many recommendations, HHS officials appear to be determined to hold on to authority over NIH in ways that critics say amounts to micromanagement.

If Danforth couldn't wow the Administration enough to win concessions, who can? Danforth not only is a well-respected scientist, he is (i) a card-carrying Republican, (ii) wealthy enough, thanks to an inheritance from the Ralston Purina fortune, to ignore the paltry pay the government is offering, and (iii) the brother of a U.S. Senator. But insiders say there was no give in the bargaining.

This may also be why another top candidate, Yale dean Leon E. Rosenberg, has decided to stay put. In a formal statement to the Yale faculty, Rosenberg said: "During the past year, numerous news reports have speculated on my candidacy. . . . I wish to resolve this matter definitively. . . . I have decided to remain at Yale University as dean of the School of Medicine."

How to Save Endangered Species

David P. Hamilton

Test-tube tiger. *A Siberian cub gnaws on the hand that feeds him.*

Endangered species are in trouble mainly because their numbers are declining, right? Wrong. According to population biologists, the greatest threat to many species is posed by genetic homogeneity, the result of inbreeding due to natural or man-made population bottlenecks. Many wild cats, for instance, produce high percentages of abnormal sperm which lead to birth defects and increased susceptibility to disease.

That's why reproductive biologists got so excited last April over a fairly routine event—the birth of three cubs to an endangered Siberian tiger at the Henry Doorly Zoo in Omaha, Nebraska. These cubs were conceived through an in vitro fertilization technique developed by biologists at the Smithsonian's National Zoological Park, although two didn't make it for reasons unrelated to IVF. Other zoos have successfully used artificial insemination and embryo transfer in the births of gaur and bongo calves, but the Siberian tiger is the largest zoo animal to successfully undergo IVF. The new technique promises to improve species' genetic variance in two ways: by allowing widely separated or sexually incompatible animals to reproduce and by introducing new genes from untamed populations.

Primate Find Surprises Biologists

Although they live in them, tamarins don't grow on trees: the tiny but colorful primates have been considered rare finds for biologists used to trekking through the forests of eastern Brazil to find them. But no one would have predicted encountering the rarest of the rare—a troop numbering only a few dozen—in one of the world's most endangered ecosystems, the Atlantic forest region south of São Paulo, Brazil.

The discovery is "one of the most amazing primatological discoveries in this century," says Russell Mittermeier of Conservation International. The new species, named *Leontopithecus caissara*, brings the total of known lion tamarin species to four. Known popularly as the black-faced lion tamarin, the animal is gold with black face, arms, and tail.

The animals live on a wooded 35,000-acre island, inhabited mainly by fishermen and separated by a canal from the province of Paraná near São Paulo. The discoverers, Maria Lucia Lorini and Vanessa Guerra Persson of the Capao da Imbuia Natural History Museum in Paraná, plan further exploration of the island.

Previously, field researchers "always worked from São Paulo to the north" because Paraná, to the south, has lost all but 3% of its forest cover, says Mittermeier. "To find a new species of such importance in a highly developed part of Brazil . . . is little short of phenomenal. It is almost like finding a major new species in the suburbs of Los Angeles."

Although debates may arise over whether the discovery really is a new species, Mittermeier has no doubts. He says

"the animal is geographically separate" (its nearest relative lives on the other side of a high coastal mountain range) and "morphologically distinct."

Three Mile Island "Turns Around"

TMI-1, the reactor at Three Mile Island that didn't suffer a near-meltdown in 1979, achieved the world's best performance for 1989, according to several industry publications.

The April issue of the British magazine *Nuclear Engineering International* ranked the unit number one in efficiency—meaning it experienced no unscheduled down time—among 339 U.S. and European nuclear power plants. The magazine called this feat "further testimony to the turnaround that has been achieved" since the mishap at Unit 2. Then, in May, *Nuclear News* announced that TMI-1 had the most improved efficiency rating of any U.S. plant in the past 3 years.

Of course, efficiency ratings don't prove that a plant has operated safely. But they surely provide General Public Utilities—TMI's owners—with the kind of publicity a utility prefers to see.

Weed Genes

Four federal agencies have decided it's time to do something about weeds. Not eradicate them; study their genetics. The National Science Foundation, the Department of Energy, the National Institutes of Health, and the Department of Agriculture agreed on 12 June to cooperate on a 10-year project to map and sequence the tiny weed *Arabidopsis thaliana*. The effort is expected to cost $100 million.

Arabidopsis is considered an ideal organism for genetic analysis because of its relatively small genome (estimated at 100 million base pairs), its short life cycle, and the ease with which it can be grown in the lab.

NSF, which has been discussing such an effort since last summer (*Science*, 14 July 1989, p. 131), will be the lead agency in the project, and has requested $5 million in its fiscal 1991 budget to get things started. NSF's Mary Clutter, head of the directorate for biological, behavioral, and social sciences, emphasizes that the project will be driven by biological priorities, and won't be a grind-it-out sequencing effort.

At the Fourth International Conference on *Arabidopsis* held in Vienna last month, scientists endorsed the scheme and established an ad hoc advisory committee with representation from labs around the world to try to coordinate the project. Plant molecular biologist Elliot Meyerowitz of the California Institute of Technology will chair the committee.

English Physics Hits the Fat Farm

Undergraduates studying physics in English universities are a miserable lot: they have 3 years to learn what students in the United States and other European universities absorb in four or five. One ominous result, familiar to American ears, is the general agreement among industrialists that recent physics graduates are unable to talk or write effectively and show little aptitude for solving the kinds of problems industry employs them to solve.

The British, however, have not only defined the problem, they have a head start on fixing it. "[W]e try to teach far too much, and in consequence we teach it ineffectively," states the report of a working group convened to examine higher education in physics.* The group's solution: cut the content of physics degrees by at least two-thirds. "If we aimed to teach less, we could teach far better," states the report. Students would be given "time to learn how to find things out for themselves" and might even get training in communications and problem-solving skills.

Following 3 years of "reduced factual content," the report recommends a 1-year immersion in cutting-edge physics for those who intend to pursue the subject. (Students interested in leaving physics to teach high school or to become, say, bankers, would forgo the extra year.) Great Britain's major universities have been enthusiastic about the project and now plan to have the reformed curriculum in place by 1993.

**The Future Pattern of Higher Education in Physics* (The Institute of Physics, the Standing Conference of Physics Professors, and the Committee of Heads of Physics in Polytechnics, June 1990).

Advanced Photons

Ground was broken on 4 June for the "world's brightest light"—the $456-million Advanced Photon Source (APS) at Argonne National Laboratory.

A circular accelerator nearly four football fields in diameter, the APS will provide the world's most brilliant beams of x-rays—10,000 times brighter than existing x-ray sources—to reveal atomic and molecular structures in fine detail for research in fields ranging from medicine to earth sciences.

The facility is also expected to create 375 full-time jobs and attract hundreds of scientists as well as new high-tech industry to the area. The APS is scheduled to become operational in 1995.

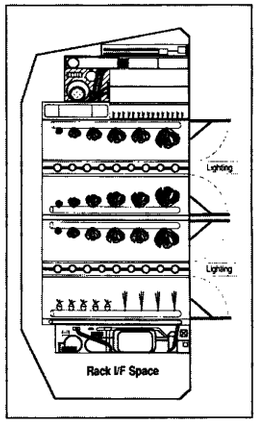
The NASA Vegematic

It's salad days for astronauts, thanks to NASA engineers. For decades, astronauts have complained about the freeze-dried rations they're forced to eat in space. Now NASA has the answer to their prayers: a "salad machine" that will grow fresh vegetables for long missions.

Designed to fit into a single standard space station rack—about 69 cubic feet—the machine will provide light, water, and nutrients to plants on less than a kilowatt of power a day. In order to make efficient use of the limited space, plants will grow on both the "top" and "bottom" of each shelf in the machine.

Seeds will be carried into orbit pre-encased in cassettes, which astronauts will plant in the machine's growth chamber. Each cassette contains a wick, a web of synthetic fibers which anchors the plant's roots and draws nutrient solution from the delivery system.

Astronauts should spend 15 to 20 minutes a day planting seeds and tending plants, according to project director Mark Kliss. Much like tending a garden on Earth, the activity is expected to bolster the morale of crew members by providing them with a creative outlet—something to nurture—during their free time.



Eat your veggies. *The salad machine will grow fresh produce for astronauts.*

Because salad machine vegetables must have similar temperature, lighting, humidity, and nutrient requirements, current candidates include leaf lettuce, carrots, radishes, onions, sprouts, tomatoes, peppers, and cucumbers. If all goes according to plan, the machine should grow 12 salads a week, which poses another technological puzzle: what happens when the astronauts apply oil and vinegar in microgravity?