

## Briefings

edited by FAYE FLAM

### Back to the Future

Fill a White House panel with aerospace experts and former astronauts and charge them with finding new approaches to a joint Moon/Mars mission. Have them cast their net wide, garnering 2500 suggestions from academia and industry. After 10 months of study, let them write a glossy, 150-page report. Their conclusions?

You guessed it: NASA's old ideas are best. For instance, the United States should develop a nuclear-powered spaceship to speed up the interplanetary voyage, the panel recommended. NASA researched and abandoned this technology long ago, in the 1960s and 1970s. For launching equipment into earth orbit, landing on Mars, and other tasks, the panel recommended revamping old moon-rocket technology—in particular, Saturn V engines. This suggestion will sit well with several members of the House science committee, who recently expressed interest in reviving the Saturn V (see *Science*, 15 February, p. 733).

The panel, chaired by retired Air Force general and astronaut Thomas Stafford, endorsed four alternative approaches to the mission: exploring both the moon and Mars, exploring Mars, developing a permanent moon base first and visiting Mars later, and exploiting lunar and Martian energy and minerals for terrestrial use.

Although the panel did not make any cost estimate, outside experts said the new plan, while cheaper than previous NASA schemes, would still cost hundreds of billions of dollars. But with an estimated Mars arrival date around 2015, and even a decision between the four alternatives “a way down the road,” according to Vice President Quayle, any congressional budget battles are probably years in the future.

### A Tasty Tufted Tuber

An international collaboration of plant geneticists has bred a new “hairy potato” that reportedly resists the tuber's many devastating pests. From the name, you might think it would also resist consumers.

Actually, the hairs, which are tipped with sticky goo, grow not on the tuber itself but on the leaves and stems that appeal to pests, explains Cornell University biologist Robert Plaisted.

“Small insects get stuck to the leaves as if they were flypaper and then die of starvation,” says Plaisted. Beetles and other large insects that make the mistake of attacking the hairy potato meet an even worse fate, he says. The hairs gum up their insides.

Plaisted, along with John Dodds of the International Potato Center in Lima, Peru, and other colleagues, tinkered with potato genetics for 10 years to create the hairy potato. They did it by combining a nonedible wild strain from Peru with a domestic variety. The result: a potato that needs no chemical help to resist pests.

The scientists hope that worldwide introduction of the hairy potato could slash pesticide use, since farmers spray more pesticide on potatoes than on any other crop. Plaisted says he and his colleagues are still perfecting their new tuber by breeding out the undesirable wild traits such as small size and slow growth. But they are close. The few he has sampled do taste “pretty much like ordinary potatoes.”



Insects beware. The hairy potato leaves.

### Women's Health: A World Crisis

Reproductive health problems are the world's biggest killer of women of childbearing age, according to a new report from the Worldwatch Institute in Washington, D.C. Pregnancy complications, including botched abortions, infections of the reproductive tract, and contraceptive side-effects, kill about 1 million women every year and injure hundreds of millions more, according to the report, entitled “Women's Reproductive Health: The Silent Emergency.”

Author Jodi Jacobson reports that pregnancy complications are rampant in the developing countries of Asia, Africa, and Latin America. In Africa, a woman's lifetime risk of dying

from a pregnancy-related cause is about one in 21, compared with one in 6366 in North America.

Though poverty and ignorance often prevent health care during pregnancy, Jacobson says cultural factors can exacerbate the problem. In many areas, a woman can seek medical help only with permission from her husband or a senior family member. In Zaria, Nigeria, for example, a woman suffering from obstructed labor often can't get help if her husband isn't around to give the okay. In some parts of Africa, South Asia, and the Middle East, pregnant women often have severely restricted diets, sometimes to conserve food for men, or in the superstitious belief it will lead to an easier delivery.

But efforts to prevent preg-

nancy have their own perils. In the struggle to control population growth, some governments are overlooking women's health. In Brazil, for example, contraceptive pills are widely available without a doctor's prescription. As a result, 40% of pill users in Brazil are smokers, a group usually advised against the pill because of the associated risk of stroke and heart disease. “There is a danger to reproductive health when you look only to limit population,” Jacobson says.

Many other threats to reproductive health, including sexually transmitted diseases, are easy and cheap to cure, Jacobson says. But they go widely untreated in many countries—often developing into debilitating or deadly conditions.

### Researcher's Legal Battle Ends

New York University medical researcher Jan Moor-Jankowski's career took a sudden turn in 1983, when an interview with *New Scientist* magazine and a letter in a medical journal thrust him into a million-dollar legal battle that would consume his career for 8 years. On 3 June his ordeal finally came to a close, when the Supreme Court refused to hear an appeal of a lower court's decision against the Austrian pharmaceutical giant Immuno AG, which had sued Moor-Jankowski for libel.

The legal odyssey began when the 1983 *New Scientist* article quoted Moor-Jankowski's criticism of Immuno plans to build a facility in Africa for doing hepatitis research on captured chimpanzees. The researcher had warned that Immuno's plans threatened to sidestep an international treaty to protect the endangered animals. Then, in the *Journal of Medical Primatology*, which he edits, Moor-Jankowski ran an opinion letter written by another researcher warning of the dangers of returning potentially infected chimps to the wild.

Immuno responded by suing

Moor-Jankowski, *New Scientist*, and about 50 parties in its home country, Austria, including local chapters of Greenpeace and the World Wildlife Fund. All but Moor-Jankowski settled out of court—"for the obvious reason," according to one court ruling on the case, "that the costs of continuing to defend the action were prohibitive." Moor-Jankowski stayed in the ring for 8 years in New York state and federal courts, where he won favorable decisions, which Immuno repeatedly appealed.

The courts ruled against Immuno, says Moor-Jankowski's lawyer, not only because Immuno failed to prove that any of the statements in question were false, but because the New York constitution grants special free-speech protection to statements of opinion. He says the case will set a precedent, helping to protect others from libel suits over opinion. "Immuno sued to chill public opinion," he says. "You can't have people in big companies sue to shut people up."

Immuno's lawyer counters

that the company sued only to vindicate their damaged reputation. He says Moor-Jankowski knew all along that Immuno never planned to release any potentially infectious chimps back into the wild, as the letter in the journal states. The appellate court, he says, "got it wrong" when it ruled that Moor-Jankowski's statements were all true.

Now that it's over, Moor-Jankowski says he expects to have a tough time returning to medical research after an absence of 8 years.

## A Nuclear Cure for Nuclear Waste

In a nuclear-age version of fighting fire with fire, a team of researchers mostly at the Los Alamos National Laboratory in New Mexico proposes dulling some of the radioactive bite of wastes from nuclear weapons facilities by blasting the hot trash with neutrons.

The idea—called Accelerator Transmutation of Waste (ATW)—is to extract long-lived

radioactive elements such as plutonium and technetium from waste stored in tanks at places like the Hanford Nuclear Reservation in Washington and shower them with neutrons, transforming them into either stable atoms or shorter-lived radioactive ones. An accelerator slamming protons into a heavy metal target would generate the neutrons, which would be slowed and made more effective by a pool of heavy water surrounding the source. The radioactive nuclear waste would be piped through the pool.

The process does not entirely neutralize the radioactivity, says theoretical nuclear physicist Edward D. Arthur, the ATW program manager. "You would still need a repository of some type," he adds. But while non-nuked waste has to be stored for tens of thousands of years in deep and expensive repositories whose reliability is hard to predict, keeping transmuted materials for several centuries in near-surface facilities should suffice, he says.

The ATW technology has roots going back nearly 30 years, but it still exists largely on

paper. Earlier this month, though, the Los Alamos group talked up the idea in Orlando and Monterey at two nuclear science meetings. They'll do the same next week in Sweden at a gathering of accelerator-based transmutation specialists. Getting the Los Alamos ATW project up and running will require, among other things, an accelerator that produces a current of protons 100 times more powerful than any existing machine. But that technological challenge might be simpler than the political and environmental challenges posed by any scheme for coping with nuclear waste.

## When Do You Send Blue Roses?

Violets are red and roses are blue. It sounds mixed up, but it could soon be true—thanks to genetic engineering. Late in August, DNA Plant Technology Corp. (DNAP), in Cinnaminson, New Jersey, plans to field-test genetically transformed chrysanthemums that sport pure white blossoms. If all goes well, florists may be selling the transgenic mums within two years.

The DNAP researchers got white mums by adding a non-functional duplicate of the pigment gene, which suppressed the original gene's expression. Although nonengineered white mums are already on the market, none have the high productivity and disease resistance of the gene-spliced kind.

Moreover, gene-splicing promises flower colors never seen in nature. There's every incentive to try, according to DNAP's Neil Courtney-Guterson. The demand for horticultural oddities is huge—the worldwide market for cut flowers and ornamentals exceeds \$4 billion annually.

If DNAP and its partner, the Dutch seed company Zaadunie, B.V. (a subsidiary of the pharmaceutical giant Sandoz) succeed in their quest for blue roses, a lot of flower lore will soon need rewriting.

## The SIDS-Seal Connection

The ability of a seal to hold its breath for long periods may offer a clue about why some human babies die suddenly and inexplicably in their cribs.

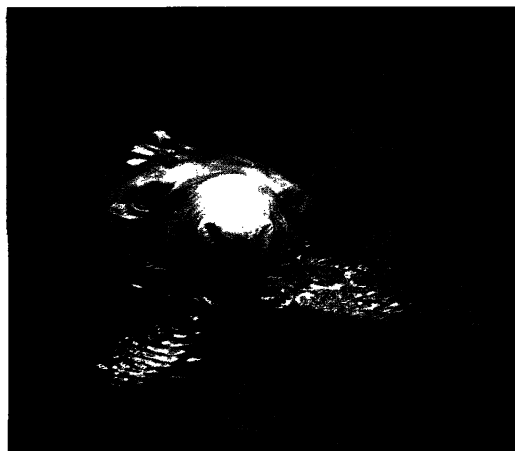
Seals stop breathing for several minutes at a time, not only when they dive but also while they sleep, says University of Alaska marine biologist Michael Castellini. This so-called sleep apnea is generally good for the seals: it slows their metabolism, enabling them to conserve blubber.

But in baby seals, breath-holding can cause wild fluctuations in heart rate. It takes about a year before they learn to stabilize their heart during apnea. That's where the connection to human babies comes in: Similar heart-rate fluctuations may play a role in Sudden Infant Death

Syndrome (SIDS), according to Castellini, who spoke on the SIDS-seal connection at a conference on elephant seals at the University of California, Santa Cruz.

SIDS kills about one in 500 babies under the age of 12 months. Scientists cannot explain why SIDS strikes, but the syndrome is correlated with medical complications of pregnancy and delivery, smoking during pregnancy, and cold weather. Castellini is studying sleep apnea in baby seals and how they learn to control their heart rate in the hopes of finding a cause—and perhaps a cure—for SIDS.

Castellini isn't the only animal researcher to be intrigued by a potential animal parallel. Veterinarians at the University of Pennsylvania are studying a link between SIDS and sleep apnea in bulldogs.



Heavy sleeper. Male elephant seal.