RANDOM SAMPLES

edited by CONSTANCE HOLDEN

First AIDS Vaccine Trial Launched

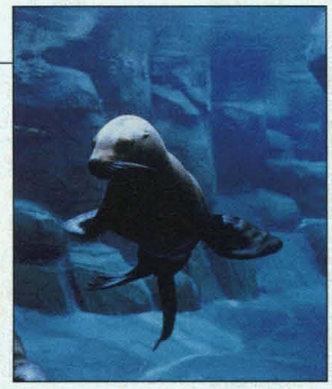
The first full-scale clinical trial of an AIDS vaccine is set to begin this month. VaxGen Inc. of South San Francisco announced on 3 June that the Food and Drug Administration has given it the green light to begin trials of its product, AIDSVAX, in thousands of volunteers in the United States and Thailand.

AIDSVAX is based on an HIV envelope protein, gp120, which stimulates antibody production. It has performed impressively in animals, but results in human volunteers have been disappointing.

Researchers are still divided over whether to move ahead with something that may be partially successful or wait for a more promising vaccine (*Science*, 30 January, p. 650). One leading voice of caution is that of Caltech President David Baltimore, who heads a committee overseeing the government's AIDS vaccine effort. Baltimore says not only he but most of the research community regards it as "extremely unlikely" that the vaccine can confer total immunity, and he questions whether the samples are even large enough to determine if vaccination can "dampen the effect" of infection.

The U.S. subject population is 5000 gay men and a few uninfected heterosexuals whose partners are HIV-positive. Two-thirds will be vaccinated over a 3-year period and the rest given a placebo. In Thailand, where the rate of new infections is higher, half of a group of 2500 uninfected intravenous drug users will be vaccinated. The vaccine will be assessed by two measures, says VaxGen President Donald Francis: infection by HIV and viral load in those infected.

Some scientists doubt that any vaccine can work if it only boosts antibodies and does not also affect another part of the immune system, killer T cells. Francis is undeterred, saying "we base a lot of our confidence on the fact we can protect the chimpanzee from a very large intravenous [viral] challenge."



JAMES MISHLER CLARK

No oil spills here. Steller sea lions.

Exxon's Legacy

When the tanker *Exxon Valdez* ruptured in Alaska's Prince William Sound in 1989, the devastating oil spill killed thousands of sea otters, hundreds of harbor seals, and some quarter-million seabirds. Some populations still haven't bounced back.

But there's a bright side to the disaster: Last month, thanks to compensatory damages paid by the oil company, a nonprofit consortium launched the Alaska SeaLife Center, a $56 million complex that claims to be the largest cold-water research facility in the Western Hemisphere—and Alaska's biggest tourist attraction.

Located in Seward next to the University of Alaska's Seward Marine Center, the facility was built with $39 million from the Exxon settlement; the rest of the money was raised by Seward. It houses facilities for research, public education, and rehabilitation for stranded or injured marine animals as well as a series of indoor and outdoor aquariums and habitats for native species such as otter, salmon, seabirds, and Steller sea lions.

One center priority is understanding why some marine populations have not fully recovered since the spill. Harbor seals in Prince William Sound are declining, says SeaLife research director and University of Alaska marine science professor Michael Castellini. Researchers are testing a "junk food" hypothesis: Because seals are eating low-lipid pollock instead of high-lipid herring, which have also been declining since the spill, they may not be getting adequate nutrition.

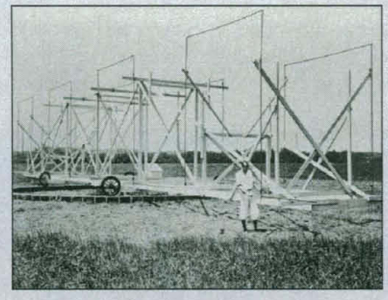
More Humps for Solitons

Physicists have for the first time created a complicated version of a soliton, a wave that can cover long distances without losing its shape. That could greatly enhance solitons' information-carrying capacity.

Almost all waves tend to spread out and lose their shape when they travel through a medium because they actually contain a lot of waves traveling at different speeds. But not a soliton, a phenomenon first noticed in the 19th century as a wave that sped through a canal without weakening. After the laser was invented, physicists found that optical solitons could be created in "nonlinear" materials, whose optical properties change with light intensity.

Ordinary solitons travel with just one excited "mode," or intensity peak. Mordechai Segev and Matthew Mitchell of Princeton University and Demetrios Christodoulides of Lehigh University in Bethlehem, Pennsylvania, knew that it should be possible to create solitons with multiple modes as long as the modes did not interfere with each other. So they sent two laser beams, each having a different mode, through a crystal called strontium barium niobate. One beam followed about 10 meters after the other so that their relative phases would change too quickly for the modes to interfere. When the researchers looked at the intensity profile of the beam that emerged, they found that it was a soliton that had more than one hump of brightness.

It's too early to say just where multimode solitons, reported in the 25 May issue of *Physical Review Letters*, might be put to work. Segev notes that solitons can cross each other without interference, offering a way to pack more information into a smaller space—and multiple humps could make them even more useful. This work "may have exciting implications for new ways to compute," says Princeton computer scientist Kenneth Steiglitz.



LUCENT TECHNOLOGIES

Radio daddy. Sixty-seven years ago Karl Jansky, an employee of Bell Labs, used a 30-meter antenna, rudely carpentered from copper and two-by-fours, to detect radio waves from space (see photo). His achievement opened up a whole new view of the universe, ultimately giving astronomers their first glimpse of quasars and black holes, as well as evidence for the big bang. Sadly, other astronomers did not appreciate his contribution until after Jansky died in 1950 at age 44, but now he's finally got a monument, in the form of a 3.3-meter replica of his antenna. It was dedicated on 8 June at the long-forgotten site of the original on the grounds of Lucent Technologies (formerly AT&T's) Bell Labs in Holmdel, New Jersey, located after some determined detective work on the part of Bell Labs astrophysicist Tony Tyson and Nobel laureate Robert Wilson of the Harvard-Smithsonian Center for Astrophysics in Cambridge, Massachusetts. The recognition is "long overdue," says Jack Welch, a radio astronomer at the University of California, Berkeley. "He opened a whole new field."