

## Giving Up on GOES-NEXT?

■ If the National Oceanic and Atmospheric Administration (NOAA) takes the advice of legislators, it will soon be making plans to procure a satellite from Japan to avoid a possible gap in U.S. weather coverage—the first such gap since 1975.

Technical problems have delayed replacements for the aging GOES-7, the last U.S. geostationary weather satellite. GOES-7 will begin to drift out of orbit by June 1992, and will start losing functions such as

hurricane tracking by the following February.

NASA deputy administrator J.R. Thompson told a joint hearing of the environment and oversight science subcommittees last week that his agency can launch the first GOES-NEXT satellite by December 1992. But a witness from the General Accounting Office said this forecast may be too optimistic, pointing out, for instance, that unexplained technical problems in two GOES-NEXT instruments could delay the launch another 6 to 9 months. And even if GOES-NEXT did get off on time, it will require 6 months of orbital verification before it begins taking data.

For these reasons, Representative Howard Wolpe (D-MI) virtually endorsed an alternative: "I would strongly urge NOAA to look closely at the Japanese GMS-5 satellite," he said, referring to a Japanese-funded, American-made spacecraft slated for a 1994 launch that could be moved up to mid-1992. NOAA is expected to decide among its options by the end of the month.

## Conference Confusion

■ As *Science* went to press, radio astronomers and other aficionados of extraterrestrial intelligence were ramping up for a 5 August joint U.S.-Soviet conference on the subject in California. But there was a hitch: The Soviets weren't expected.

The Soviets certainly want to attend, said University of California at Santa Cruz astronomer Frank Drake, who helped organize the third Joint Conference on the Search for Extraterrestrial Intelligent Life. But Drake said the Soviet airline Aeroflot is demanding that 25% of the price for overseas tickets be paid in hard currency. That amounts to hundreds of U.S. dollars that the scientists reportedly were having trouble scraping up. The U.S. contingent wanted to help their Soviet colleagues, but their hands were tied by a 1987 NASA intergovernmental agreement stating that researchers must pay their own way when traveling to and from "joint activities" in either country.

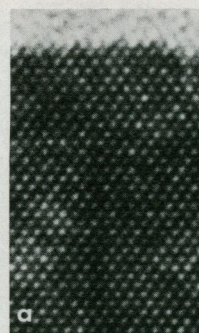
The first two joint conferences, held in 1971 and 1981, went off without a hitch. But even as U.S.-Soviet cooperation is opening up on a broad variety of fronts, scientific collaborations between the two nations are on the rocks.

## Pushing the Limits of Electron Microscopy

■ This November, researchers at Oak Ridge National Laboratory (ORNL) expect delivery of a scanning transmission electron microscope with a novel design that should provide the best window yet on the inner anatomy of solid materials.

"With the new microscope we anticipate getting a resolution down to 1.4 angstroms, which will be the best resolution [by about 0.3 angstroms] of any electron microscope" in the world, says Stephen Pennycook, an ORNL electron microscopist.

Images produced by the new device will also be less ambiguous than those from conventional instruments. A standard transmission electron microscope does not really "see" a sample directly, but registers an interference pattern produced after an electron beam passes through a sample. To create a visual image, a computer has to work backwards and infer the



The new microscope reveals a germanium layer (b) invisible to standard microscopy.

ORNL

submicroscopic structures that could have produced the interference pattern—an inherently uncertain process.

The new design eliminates much of this uncertainty by detecting electrons that scatter through the sample at relatively sharp angles. These electrons don't generate interference patterns and can be interpreted directly. The result is an electron pattern that forms an unambiguous map of the sample's atomic anatomy. As a bonus, these electrons can also identify the type of atom from which they've scattered, making possible "compositional mapping" at the atomic level.

## Slowing the Spread of Scrapie

■ A proposal now before the United States Department of Agriculture (USDA) may force sheep and goat farmers across the U.S. to brand livestock at risk of contracting scrapie, a disease caused by an enigmatic "virus-like agent" that turns the brains of infected animals to mush.

A special USDA committee composed of representatives from the Animal and Plant Health Inspection Service (APHIS) and 11 livestock associations has recommended an intensive campaign against scrapie because APHIS officials fear it may spread from sheep



A scrapie-infected sheep.

and goats to other livestock, including cattle. The USDA's concern over scrapie stems from events in the United Kingdom, where in the last 5 years about 18,000 cattle have contracted bovine spongiform encephalopathy (BSE) or "mad cow dis-

ease," a fatal scrapie-like illness, after eating ground sheep meat (*Science*, 28 September 1990, p. 1492). While no U.S. cattle have come down with BSE, health officials say infected sheep and goats may be spreading the disease to mink, mule, deer, and elk.

The new program calls for branding "high risk" sheep and goats

descended from an infected dam. The committee also recommends more basic research on scrapie, including its cause, incidence, transmission modes from sheep to other species, and possible methods for live-animal diagnostic tests.