

required. Hoke says some of the kids learned that tiny deciduous-tree seedlings under the domes don't necessarily shed their leaves in the fall; this was a surprise to him, too, he admits.

The other thrust of the total program is "Expand," a multi-media system designed by Marley Thomas of the NPS staff. It is a program of silk-screen presentations, filmstrips and children-designed workbooks. All are about the Anacostia environment, but many portions are interchangeable and thus usable in other areas. (As with the mini-environments, Expand staffers work closely with elementary school teachers.) One of the programs is about rats, and about how both rats and people

suffer from being forced into such close proximity. Other programs are frank in tracing the socioeconomic roots of environmental and urban problems.

Hoke and Mrs. Thomas say the enthusiasm of the elementary school children for the programs is immense. Some children, for instance, have begun to landscape their formerly barren school yards, and others are interested in making their own machines to blow the plastic domes for the mini-environments (Hoke invented the inexpensive prototype dome-blower). But it is necessary to reach the children early. Once they get into junior high school, says Mrs. Thomas sadly, they have become too cynical to be interested. □

Diagnosis by satellite: Doctors hail Alaska test

On May 18 a doctor on St. Paul Island off the coast of Alaska declared a medical emergency. A 39-year-old Alaskan male had suffered a head injury three days earlier. His condition had deteriorated. Paralysis had set in. The doctor contacted the Public Health Service (PHS) in Anchorage via the Applications Technology Satellite I (ATS I), in geosynchronous orbit over the Pacific. He made arrangements to have the man picked up by a Coast Guard craft and evacuated to an Anchorage hospital. There doctors treated him for a subdural hematoma. They say he would not have lived otherwise.

In March in the remote village of Allakaket with a population of 125, a medical aide tried in vain to contact the PHS in Tanana, Alaska. An 11-year-old girl, Sally Sam, was seriously ill. The aide finally reached an ATS ground station. He was put through, via the ATS radio to physician David Duncan in Tanana. Duncan's diagnosis was acute

appendicitis. Within 15 minutes of the call, the girl was picked up by an aircraft and taken to a hospital.

Similar stories can be told of Lincoln Mark, a native of Huslia, who had been injured in a snowmobile crash; of another acute appendicitis case in Anaktuvuk Pass, and of a hemorrhaging woman in labor in Chalkyitsik.

This month marks the end of the first year of a medical experiment using the ATS radio for communications between doctors at Tanana and remote villages in Alaska. The experiment is a joint project of the Lister Hill National Center for Biomedical Communications of the National Library of Medicine in Bethesda, Md.; the National Aeronautics and Space Administration; and the Alaskan Native Health Service, a branch of PHS. The Lister Hill Center supplied the 26 ground stations—VHF radios—to 26 villages for communication with the satellite. There are a couple of telephones. Only one village with

a telephone has a nurse. She services a population of about 700.

"Before ATS communications," says Albert Feiner, director of the Lister Hill Center, "the villagers had to rely on short-wave radios. Because of ionospheric disturbances in the Alaskan atmosphere, radios were unreliable. Sometimes the villagers would have to wait weeks to get a message through."

Now, says Brian Beattie of Anchorage, coordinator of the project, the doctors at Tanana have a daily radio schedule with the medical aides in the villages. The villages range in population from 90 to 800. The medical aides have had three weeks of formal training, either in their villages or in the hospitals at Anchorage or Tanana.

There have been some dramatic rescues possible because of the satellite communication. There has been some experimentation with educational programs. Doctors have sent electrocardiograms through the satellite. "But the main asset," Beattie told SCIENCE NEWS in a telephone interview from Anchorage, "is just communication. It is extra reassuring for the aides to be able to talk with doctors each day."

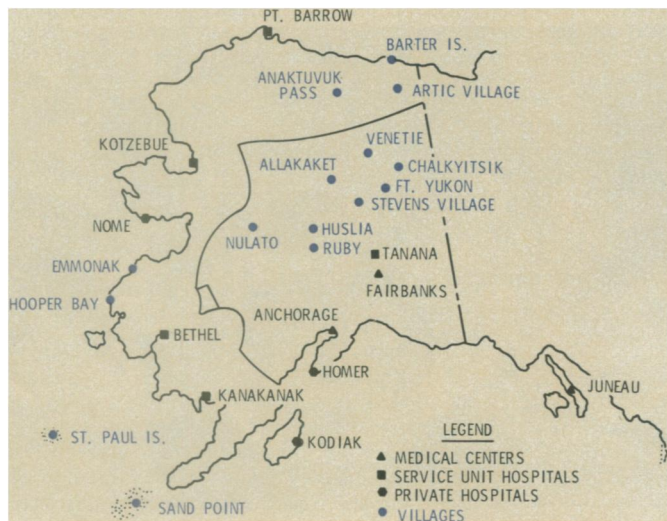
Tanana is the main PHS center for the satellite-equipped villages. Usually, three doctors are stationed there. But recently Duncan had a heart attack. Two other doctors, Michael Carroll and George Brown, have been transferred to other assignments. David W. Templin, chief of medicine at the Anchorage Medical Center, is now in Tanana treating Duncan and filling in until replacements arrive.

Templin is most emphatic about the ATS experiment: "It is an absolute necessity." On June 30 he discussed with village aides the health and treatment of 20 patients in 12 villages. That was an average day. Over a 120-day period from September to December 1971, Duncan provided consultation about (or treated himself) 794 patients in 10 villages. Only 30 patients in 19 villages had been treated during a similar 120-day period before the ATS radio was available.

Sen. Mike Gravel (D.-Alaska), a strong supporter of the project, wants a permanent satellite communications system for Alaska. Alaskans, he says, are cut off not only from the world but also from each other. The expense and time involved for putting in a ground system is prohibitive. The geographical obstacles of the terrain and the great distances involved also make conventional communications impractical. "What we need is a satellite system."

The doctors in Tanana agree. But no one is sure yet how much longer the ATS will be available. "Public health-care benefits of the experiment are now being evaluated," says Richard Marsten, director of communications at NASA. □

ALASKA EXPERIMENTAL SATELLITE COMMUNICATIONS PROJECT



Medical consultation via ATS satellite with remote Alaskan villages where telephones are scarce and radios ineffective.