Alpher, Bethe and Gamow paper on cosmology, to which Hans Bethe was persuaded to lend his name to make a pun on the Greek alphabet. (He had actually been responsible for some of the ideas involved, however.)

The question of who was actually at the switch becomes important when a scientist wishes to change jobs and cites these multitudinous publications in support of his resume. Laboratory administrators have said that it is not difficult to find out: One calls up the senior men involved in the experiment in question and they tell. That is all well and good, but if Piccioni's suit goes in his favor, how much are such opinions likely to be worth in the future?

That in some cases they are not entirely trusted now is exemplified by stories of the difficult diplomacy involved in deciding the order of names on a paper. There are people who claim more than is their due, and there are also those who are willing to give up their own credit in favor of someone whose reputation is less established. The negotiations can be painful, and have led in some cases to the custom of listing names alphabetically. But this has its own drawbacks. Samuel A. Goudsmit, editor in chief of the American Physical Society, once complained that it could happen that an experiment which one remembered by the names of the chief participants was forever indexed under the name of an obscure graduate student who happened to be called Aaron Aardvark.

In cases where people have worked separately and perhaps competitively the problem of just credit is even more difficult. Recent cases in which some discussion has arisen include the invention of the maser and the invention of holography. A famous historical case was the development of integral calculus independently by Newton and Leibniz.

In the calculus case both men get credit; in some others the traditional decider is priority of publication. But in fact the where of publication can be as important as the when: Obscure publication is often less prior than publication in a main-line journal. For years Gregor Mendel did not get credit for his work in genetics because it appeared in a journal published at Brno, which was read by few outside Moravia.

The Piccioni suit also touches the award of Nobel prizes. Piccioni is not asking for a share in the prize, nor is any accusation made against the prize committee. As Meyers puts it, the committee could act only on the public evidence. Nevertheless, the committee is supposed to be a group of people in the know, and as those in the know know, these things get gossiped about. A decision in favor of Piccioni could only further tarnish the reputation of a committee already under fire in some quarters for the quality of its choices.

Finally, the question arises: Now that the wall of custom has been breached, how many scientific plaintiffs will follow suit? It will be interesting to see. □

Getting down to earth in environmental education

In predominantly rural areas of America, environmental education comes naturally for many children. The children gain an esthetic appreciation for the relatively untrammeled environments of such areas. They also absorb ecological concepts almost automatically. Living constantly with natural environments, they cannot help but learn something about the interrelationships among life forms. Thus in many such areas today, environmentalist and conservationist movements are strong and growing stronger.

It is a different matter for children in an urban ghetto. Natural environments there have long since been destroyed (although not completely) and children grow up thinking that exhaust fumes, rat-infested garbage heaps and paved surfaces are the natural order of things. The Anacostia district of Washington, D.C., is an example of such an area. Most Anacostia residents have low incomes, and the area has a huge auto junkyard and a waste disposal plant. One writer has called it a place "forgotten except when the city was looking for someplace to put the things it didn't want in other neighborhoods."

So National Capital Parks, the Washington, D.C., division of the National Park Service, decided Anacostia might be the ideal place to start a pilot program for environmental education in urban elementary schools. After a year-long experiment in several Anacostia elementary schools, the program looks so good that it will be expanded to other Washington area schools next year. And, say members of the NPS team that put the program together, the concepts are applicable nationwide —even in middle-class neighborhoods or even in places where most people live close to nature.

The prime emphasis in the program is to stay away from the teaching of abstractions and to get down to earth. "Because there is often no nearby source of living wilderness for urbanites except by busing children to a remote refuge," says NPS biologist John Hoke, "the things of the natural world must be brought to the children." Of particular importance is to add the dimension of time, so children can get some notion of ecological succession and of the gradual changes that occur in life forms as their interactions with each other and with physical factors change. Thus the concept of "mini-environments."

A typical mini-environment, and the one used most frequently in the Anacostia program, is a forest floor ecosystem. The basic materials are simple and cheap (a key consideration with the program's limited budget): an airline plastic plate, or a lazy Suzan, as a base, plus a plastic dome to cover it and to hold in moisture to duplicate humid forest floor conditions. The kids can then sometimes be taken to a forest to collect living materials, plus rocks, to put under the domes. If this is impossible, there are other expedients; mosses, for instance, can be found between the cracks of even ghetto sidewalks. The best time to collect is in the early spring; that way kids get more than they expected, because the soils collected contain plant seeds and insect eggs which later sprout and hatch. The rest is mostly left up to the kids, and Hoke says learning is spontaneous. Watching the ecosystems grow, the children soon learn about relationships and (in the case of animals) territoriality; they also learn about physical parameters, such as the amount of watering

Wm. Spradley/Nat'l Capital Parks

National Parks' Millie Richmond shows ghetto kids how to build mini-forests.

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."

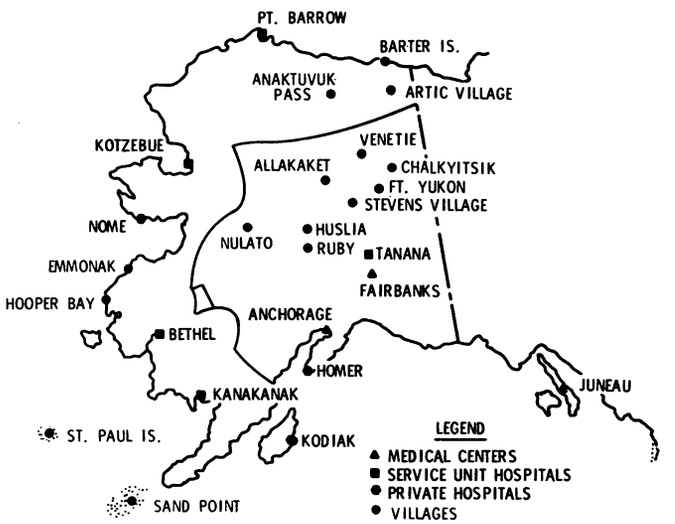
Tanana is the main PHS center for the satellite-equipped villages. Usually, three doctors are stationed there. But recently Duncan had a heart attack. Two other doctors, Michael Carroll and George Brown, have been transferred to other assignments. David W. Templin, chief of medicine at the Anchorage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



NASA

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