environmental experts who testified—some representing the plaintiffs and others representing the defendants—and to decide whether, from the standpoint of protecting the wildlife preserve from needless damage, the utility's administrators and engineers had planned wisely. Neither judges nor the administrators who run utilities and public works agencies are experts on environmental issues. But judges, who ordinarily are not ax grinders, should be better than the administrators at listening impartially to those who are experts on these issues.

As the cases discussed here suggest, conservationists look to the courts for help in making industry, public utilities, and administrative and regulatory agencies give substantial weight to natural values and environmental protection. Such considerations often have been treated as matters of secondary concern by industry and by these agencies, as well as by the stockholders, special "clientele," and political interests which influence their policies. Sax points out the irony of the situation: "To make the democratic system respond properly to the environmental crisis, conservationists are going to the judiciary, the least democratic branch of government."—LUTHER J. CARTER

State Technical Services: Congress Swings the Axe

In the ordinary cliff-hanger, the heroine is rescued in the nick of time. But last week a modest Commerce Department program to help small industries apply new technology succumbed to a change in the script. The Congressional express finally ran over Pauline. The State Technical Services (STS) program, born in 1965 with a glowing prospectus, was cut off without a cent of grant money on 20 December by a Senate-House conference committee on supplemental appropriations.

Despite proud beginnings, STS in its short life never gained much popularity or financial support on Capitol Hill, although it seemed to have the goodwill of most state governments. After initial doubts, the Nixon Administration decided to give the Great Society orphan another chance last month and asked $5 million to continue grants to states at about the same rate as last year. A major factor in the decision was a report by Arthur D. Little, Inc., on economic benefits produced by the program.* But because of the hostility of a powerful House subcommittee chairman and the rush of last-minute business, the request was rejected.

It is hard to predict what will happen now to the STS attempt to establish an industrial extension service modeled on the Agricultural Extension Service for farmers. Enough funds remain to pay the Washington staff for 6 months. But the last of the 1969 federal grants to states is being spent, and therefore many of the state programs may have to be disbanded in the next few weeks.

In 1965 President Johnson hailed the State Technical Services Act as the "sleeper" of the year and declared, "If we had had this legislation 25 or 30 years ago, we might have prevented the economic depression that today exists in Appalachia" (*Science*, 24 September 1965). The authorizing legislation contemplated a rapid expansion over 3 years, from a funding level of $10 million to a level of $30 million. But, as with many another Great Society scheme, the scope of the State Technical Services program fell far short of the architects' intentions. (The Johnson Administration originally proposed a 5-year, $140-million program.)

Congress appropriated $3.5 million for the first year of operation and $5.3 million for fiscal 1969, the last full year of operation, a slight decline from the level of the previous year. (By contrast, the current federal budget for the Agricultural Extension Service is over $100 million.) The bulk of federal STS funds are made available to states, on a one-for-one matching basis, to support services designed to disseminate technological information to industries through person-to-person contact by field service representatives, and by means of conferences, demonstrations, and special courses. To qualify for federal aid, the states must draw up 5-year plans for developing technical services programs. Typically, the states contract with universities and technical schools to provide most of the services. In 1969, 47 states drew on such federal aid (all but Florida, Maryland, and North Dakota). Obviously $5 million does not go a long way when spread over that number of states; the largest federal grant to a single state (New York) was $355,000 in fiscal 1968.

In part the Office of State Technical Services suffered from the common, Vietnam-induced scarcity of federal funds. But another reason for its neglect by Congress was the low regard in which it is held by the House Appropriations Subcommittee for the State, Justice, and Commerce departments, headed by Representative John J. Rooney (D–N.Y.).

Rooney's dislike of the program came through clearly in hearings on 25 November on the Administration's request and in the decision of his subcommittee on 10 December to deny any new funds for the program. Rooney dismissed the Little report, outlined below, as "a lot of bosh and nonsense" and ridiculed Assistant Secretary of Commerce for Science and Technology Myron Tribus for defending STS activities, which he contended should be handled by other programs of the Department of Commerce, including the Economic Development Administration (EDA) and the Office of Field Services. Some observers trace Rooney's skepticism to past friction between the subcommittee and former Assistant Secretary of Commerce for Science and Technology J. Herbert Hollomon, who was the enthusiastic sponsor of the State Technical Services Act (and probable source of President Johnson's 1965 remarks). Hollomon departed Commerce in 1967 to become president of the University of Oklahoma, leaving the STS program something of a bureaucratic stepchild.

Whatever the reason, for supporters of the program Rooney appeared in the role of the mustachioed villain on 20 December, insisting successfully on

* *Program Evaluation of the Office of State Technical Services* (Department of Commerce Clearinghouse for Federal Scientific and Technical Information, Springfield, Va., 1969); $3.00, paper; $0.65, microfiche.

his refusal of funds despite Senate approval of the full amount sought by the Administration.

The STS program also suffered from being only one of a number of federal conduits for technology transfer, to say nothing of the normal commercial processes of technological innovation. For instance, both the National Aeronautics and Space Administration and the Atomic Energy Commission have launched separate programs designed to transfer technical information to private industry. Also, the program was poorly coordinated with such related Commerce Department activities as the Economic Development Administration and the Office of Field Services.

More serious, perhaps, was the fact that the STS technology transfer program, unlike the Agricultural Extension Service, was not backed by federal programs of research relevant to specific industrial needs. Such programs were proposed by the Kennedy Administration in 1963, but failed to make headway against opposition from established industrial concerns (*Science*, 26 September 1965). A report of the national academies of sciences and engineering* recently observed that universities which participated in the STS program "often . . . are engaged in basic science or sophisticated technological research wholly unrelated to the problems of their potential clients, who by contrast are in industries that lag behind in modern technological developments," producing a "cultural and professional mismatch." The report declared that, for this and other reasons, "the analogy to the Agricultural Extension Service has not, in practice, been particularly meaningful."

Little Study Ordered

The new Administration was decidedly skeptical about the value of STS when it took office. Tribus, who had been a consultant to the program while dean of the Thayer School of Engineering at Dartmouth, had become "rather discouraged" with it, he told the Rooney subcommittee last month. In March, Commerce engaged Arthur D. Little, Inc., a management consulting firm, to appraise the Office of State Technical Services and recommend whether it should be modified or terminated. Meanwhile only enough money ($290,000) was allocated to pay federal salaries.

The study, directed by Peter E. Glaser, was presented to Commerce officials on 22 August with a strong endorsement of the value of STS activities, particularly of the person-to-person field services to industry, which make it unique among federal technology transfer programs. In October, Secretary of Commerce Maurice H. Stans asked the Bureau of the Budget to approve $5 million in fiscal 1970 to resume STS programs. He also appointed Roger Gilbertson, who monitored the Little study for Commerce, as acting director of the STS office.

The Little team examined successful cases of assistance to industry in nine states (Arkansas, Georgia, Illinois, Michigan, Oregon, South Carolina, Utah, Vermont, and Wisconsin). They concluded that the STS program was most successful where it provided "problem-solving services to industries which do not participate in federally sponsored R&D programs because of small size or nature of industry." The report explained that small firms are usually "not in a good position to absorb the costs and incur the risks involved in technology transfer. . . . The STS program can afford a reasonable number of failures, if the successful projects produce sufficient primary economic benefits to generate tax returns equivalent to the total program budget, as we have shown they do in some states." (The Little team estimated that state and federal tax receipts in the nine states increased by at least $2 million as a result of extra economic activity generated by STS programs with a combined budget of $2.3 million.)

The study also found that the STS program provided valuable secondary benefits in such areas as reducing environmental pollution, increasing efficiency in industry, and upgrading products, services, and wages.

Before the program's termination, STS officials in Washington said they were increasingly involved in helping small industries adjust to new antipollution laws. The most prominent case study in the Little report dealt with such a situation in Vermont, where state and federal water pollution laws forced cheese manufacturers to stop dumping whey, a by-product, into rivers and streams by 1 January 1969. According to the report, the Vermont STS director, David Emery, took the initiative to find a commercial use for the whey. Using a feasibility study by

* *The Impact of Science and Technology on Regional Economic Development* (National Academy of Sciences and National Academy of Engineering, Washington, D.C., 1969).

Blacklists: HEW Revisions Due

New internal security procedures affecting scientific advisers serving the Department of Health, Education, and Welfare are expected to have been announced by the time this issue of *Science* has been published. The new procedures reportedly will make clear the criteria for choosing scientists to fill government advisory posts, will require less stringent investigation by the agency of the backgrounds of scientists and, presumably, end the "blacklisting" practices with which HEW has been charged.

Within the scientific community, HEW has been criticized for blacklisting which dates back at least to the early 1950's. At least 30 scientific and legal groups have assailed the practice as unfair, and the protests have mounted since the practice was discussed in an article in *Science*, 27 June 1969.

The first full confirmation that such blacklists were used came to light this week in newspaper stories on the report of an investigative committee that discovered blacklisting practice at many levels of the department. The 40-page report, researched by Harlan Reed Ellis, a research associate at the Teachers College of Columbia University, found two cases where rejected appointees were Nobel laureates. The report was submitted 1 December to the investigative committee, chaired by Undersecretary John Veneman, which had been appointed late in September to examine internal security procedures. The new procedures will be based on the committee's recommendations.

Scientists had complained that grounds for rejection of appointees are veiled in secrecy; the rejections often appear arbitrary or based on irrelevant information; and there is no provision for appeal or for confrontation of the evidence.—NANCY GRUCHOW

the University of Vermont and a package of federal economic development loans and water improvement grants, Emery is currently negotiating with one or more major food processing companies to build a plant to convert the liquid whey to an edible dried protein. Little's study estimated that the whey plant would have annual sales of $1.4 million, create 200 new jobs, increase sales for the cheese manufacturers, prevent the closing of some small cheese plants employing 51 persons, and generate $454,800 in additional federal, state, and local tax revenues. One alternative, a sewage disposal plant to get rid of the whey, would cost about $30 million and another $400,000 a year to operate, the report said. The Little report urged that STS concentrate primarily on face-to-face field services. It found the education, information services, and demonstrations funded by the program to be of secondary importance. But it said the program could "serve as a bridge between industry and universities," if field personnel were to keep businessmen informed of existing academic courses and services applicable to their needs and inform universities of the educational needs of local industry. The same link might also serve to stimulate academic research on industrial problems paid for by business firms.

Most states drew heavily on universities and colleges to carry out the STS program. For instance, in 23 states an academic institution was the designated state technical service agency. (In 18 states, the department of commerce or economic development commission was the designated agency, and six states designated other agencies. Even in these states, field services were generally carried out by universities.) New York State, for example, involved some 20 campuses in the program; ten of these set up field service personnel.

The STS program was in existence long enough to attract some interest in most states. Indeed, lobbying by governors and universities played a role in the decision of the Commerce Department to ask Congress for money to continue grants. A few state governments may now pick up the share of program costs which Commerce had contributed, at least for a while. It remains to be seen, however, whether support for STS will persuade the Nixon Administration to attempt a resurrection in the next reel.

—ANDREW HAMILTON

RECENT DEATHS

Leroy G. Augenstein, 41; chairman, biophysics department, Michigan State University; 8 November.

Edgar Brown, 98; former botanist for the U.S. Department of Agriculture; 10 November.

Clark M. Cleveland, 68; professor emeritus of mathematics, University of Texas; 1 November.

J. A. Cohen, 54; director, medical biological laboratory, National Defense Research Organization, The Netherlands; 31 October.

Delmer C. Cooper, 73; professor emeritus of genetics, University of Wisconsin; 26 November.

Elbert F. Cox, 73; former chairman of mathematics department, Howard University; 28 November.

Lloyd T. Delany, 46; associate professor of educational psychology, Queens College; 7 November.

Armin J. Deutsch, 51; staff member, Mount Wilson and Palomar Observatories, California; 11 November.

Lyle O. Enstenson, 53; professor of psychology and education, Carleton College, Minnesota; 29 November.

Carroll L. Fenton, 69; former assistant professor of physical sciences, University of Buffalo; 16 November.

James R. Gladden, 58; former chief of orthopedic surgery, Howard University Medical School; 7 December.

Elva Goodhue, 81; former head, science department, Lindsey Wilson College, Kentucky; 18 November.

Frank L. Griffin, 88; former president, Oregon Academy of Science and twice president, Reed College; 9 November.

Harold M. Groves, 72; professor emeritus of economics, University of Wisconsin; 2 December.

Edward C. Hendley, 64; professor of chemistry, Mississippi State University; 29 November.

Edward C. Horn, 53; professor of zoology, Duke University; 18 November.

George W. Keitt, 80; retired chairman, department of plant pathology, University of Wisconsin; 18 November.

Edward E. Keso, 69; professor emeritus of geography, Oklahoma State University; 12 November.

Harry F. Lewis, 78; former dean and vice president, the Institute of Paper Chemistry, Wisconsin; 17 November.

Emil Liebman, 69; chief research analyst, Arctic Institute of North America; 2 September.

Harvey B. Lovell, 66; professor of biology, University of Louisville; 25 November.

James L. McCartney, 71; psychiatrist and fellow of the New York Academy of Medicine; 29 November.

A. M. J. F. Michels, 79; former director, van der Waals Laboratory, Holland; 2 August.

Max F. Millikan, 56; director, Center for International Studies, Massachusetts Institute of Technology, 14 December.

Rufus Oldenburger, 61; professor of mechanical engineering, Purdue University; 22 November.

Ernest M. Patterson, 90; economist and professor emeritus, Wharton School of Finance and Commerce, University of Pennsylvania; 9 November.

Walter H. Pielemeier, 80; former professor of physics, Pennsylvania State College; 12 November.

Harrison M. Randall, 98; physicist and bacteriologist, University of Michigan; 10 November.

Michalina Roth, 69; psychoanalyst and professor, Albany Medical Center; 11 November.

Leo A. Sapirstein, 50; professor of physiology in the radiology department, Stanford University Medical School ;16 November.

Michael Shapovalov, 89; former plant pathologist, U.S. Department of Agriculture; 26 August.

Vesto M. Slipher, 93; astronomer and former director, Lowell Observatory, Arizona; 8 November.

Edward A. Steinhaus, 54; director, Center of Pathobiology, University of California, Irvine; 27 October.

Maurice Sullivan, 66; former head of dermatology, Johns Hopkins University; 28 October.

Thomas J. Sullivan, 62; associate professor of urology, College of Physicians and Surgeons, Columbia University; 15 December.

Etienne J. Vassy, 63; professor, Faculty of Sciences, Laboratory of Atmospheric Sciences, University of Paris; 30 October.

Fred W. Warburton, 71; research physicist, U.S. Naval Ordnance Laboratory; 11 November.

Walter L. Whitehead, 78; emeritus professor of geology, Massachusetts Institute of Technology; 2 December.

Jack S. Wilkes, 52; vice president for university affairs, Southern Methodist University; 8 November.

Saul Winstein, 57; professor of physical-organic chemistry, University of California, Los Angeles; 23 November.