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