

in science expenditures from between fiscal 1970 and 1969, while cuts were reported by only 9 percent of the public institutions.

- Faculty and postdoctorate appointments continued to increase overall during the period under study, but the rate of change declined sharply. From fiscal 1968 to 1969, the overall growth was 10 percent. In the succeeding year, however, it dropped to 4 percent, and for that same year, 20 percent of the departments reported reductions in full-time faculty.

- Despite an 8 percent drop in federal support for graduate students, enrollments of full-time students declined by less than 1 percent. Among the disciplines, the largest decline—8 percent—was reported by heads of mathematics departments. Chemistry and biochemistry chairmen reported drops of 5 percent. On the other hand, sociology enrollments rose 12 percent.

- On the much-contended issue of

whether research funds are being equitably distributed between junior and senior researchers, the study turned for information to department heads, the rationale being that, though they are usually senior researchers themselves, they have a stake in the output of their departments. The report states that in 1970, "an adequate division of funds for junior staff" was reported by 78 percent of the chairmen, a decline of 1 percent from the previous year.

In addition to financial information, the survey solicited comments on the effects produced by changes in federal financial support. The report states that these "showed a high degree of consistency" in complaining of impairments in research and training programs, low morale, and anxiety about the future.

Now that the financial plight of academic science has at last been quantified with some precision, the key

question, of course, is whether anyone in a position to do something about it is actually listening. There are hopeful signs that the Congress is at least attentive to arguments that the National Science Foundation should be financially strengthened to take on greater responsibilities. This, incidentally, turns out to be a direct product of the Mansfield amendment. And, to the Senator's credit, it should be recognized that that, after all, is what he had in mind when he attacked the Defense Department for being a mainstay of academic research. Whether the situation and mood can be fruitfully exploited is a separate matter. A key figure in this regard is likely to be President Nixon's newly appointed science adviser, Edward E. David, Jr. David is known to be looking hard into academic science finance and related matters, but he has yet to make his first public statement in this area.

—D. S. GREENBERG

## Science Policy: Daddario Panel Urges New Study, Changes in OST

The House Subcommittee on Science, Research, and Development released a report on 1 November recommending major changes in the federal science apparatus and calling for formulation of a national policy that would rescue the scientific enterprise from its present financial uncertainties. The report, entitled "Toward a Science Policy for the United States," was drafted after summer hearings during which the subcommittee heard from many of the elders and leaders of the scientific community. It comes as a final appeal on behalf of that community by science's most dedicated friend in Congress, Representative Emilio Q. Daddario. Daddario decided last spring to become Democratic candidate in the Connecticut gubernatorial race and thus to give up his congressional seat and his chairmanship of the science subcommittee. However, Daddario's successor as chairman of the subcommittee, John W. Davis of Georgia, conducted some of the summer hearings and took part in preparing the subcommittee's report.

In drafting the report, the subcommittee was sometimes thinking bigger

than the political realities would seem to permit. Its major recommendations include the following:

- The Nixon Administration should set up a task force to draft a statement of national science policy to be submitted to Congress not later than the end of next year. Neither Congress nor the Administration alone could formulate a "credible, viable national science policy," the subcommittee said. It urged that members of the task force be drawn from both the executive and legislative branches of government, from state and local government, from the scientific community, and from the general public. According to the subcommittee, science policy has been developed in "ad hoc" fashion in the past without a statement "in measured political terms [of] what the government thinks of science and technology, or how it intends to treat them."

- The Office of Science and Technology (OST) in the Executive Office of the President should be separated from any direct administrative connections with the President's science adviser or the President's Science Advisory Com-

mittee (PSAC). At present, the director of OST is also science adviser to the President and chairman of PSAC. In the subcommittee's view, OST is pulled in so many directions and kept so busy coping with brush fires that it cannot discharge its statutory obligations to lead in formulating basic science policy and evaluating the overall federal effort in research. OST should, among other things, "develop criteria for the support of basic research by the mission-oriented agencies," which have reduced their support for such research both because of the generally tight budgetary situation and because of the Mansfield Amendment restricting research spending by defense agencies to work clearly "relevant" to their missions. Further, the subcommittee held that OST should submit an annual report to Congress describing the state of research and development in the United States and proposing the next year's programs.

- The National Institutes of Research and Advanced Studies (NIRAS), a new administrative entity proposed by the Daddario subcommittee last April, should be established as soon as possible. This agency would include an institute of natural sciences, an institute of education, and an institute of arts, humanities, and social studies.

The NIRAS administrator, who would be assisted by an "office of priorities and planning," would not be of cabinet rank. But his agency would

have a budget of more than \$2 billion a year if most activities of the National Institutes of Health were transferred to NIRAS as originally contemplated. Conceived as an ambitious and more broadly gauged successor to the National Science Foundation, NIRAS might be responsible for funding as much as 60 percent of all federally supported basic research. However, the subcommittee indicated that NIRAS perhaps should not absorb the contract research activities of NIH and should take from that agency only its institutional grant and training functions.

- An Office of Technology Assessment (OTA) should be established as an independent arm of the Congress to "assess the impacts, good and bad, of existing and developing technology." In September the House Committee on Science and Astronautics, of which the Daddario subcommittee is a part, approved a bill to establish the OTA and authorize a \$5 million appropriation for its first year's operations. With a view to ensuring the independence of the OTA, the bill would have this new agency operate under a board that would include a half-dozen members appointed by the President, as well as several senators and representatives.

No full-blown concept of just what a national science policy should be is available, but, from the summer hearings, the subcommittee distilled a number of "major principles" that might go into such a policy. Clearly, a cardinal principle is that "continuity, stability, and long-term support in pursuit of scientific goals" should be assured. Accordingly, the subcommittee is recommending that, pending the establishment of NIRAS, the National Science Foundation, which now funds 15 percent of all federally supported basic research, should begin funding a third of all such research.

One subcommittee witness, James R. Killian, Jr., science adviser to President Eisenhower and now chairman of the corporation at M.I.T., suggested that the search for a science policy was a search for a way to encourage the government to take a broader view in considering support of research. "Federal reductions and shifts in science support appear to have been taken without the integrative guidelines of a policy consensus," he said. "Each of these actions might have seemed reasonable within the context in which it was decided, but they are now having a [damaging] cumulative effect . . ."

## Mansfield Amendment Not Yet Dead

The controversial Mansfield amendment—which for the past year has restricted the kind of research the Pentagon can support—may be down but it's apparently far from out. The amendment was so emasculated by a House-Senate conference committee in late September that Mansfield complained bitterly on the floor of the Senate about "a total abdication of congressional responsibility." But he vowed at the time that "the fight is far from ended," and the latest word from Mansfield's associates is that the majority leader will launch a major effort to have his amendment reinstated when the Congress reconvenes on 16 November, following the election recess. Mansfield has already lined up more than 35 senators to act as cosponsors of his amendment, and he is expected ultimately to gain support from many more.

The Mansfield amendment, prohibiting the Department of Defense (DOD) from supporting any research that does not have a "direct and apparent relationship to a specific military function or operation," was tacked onto the fiscal 1970 military authorization bill last year as part of a broad effort by antiwar senators to limit military expenditures. The amendment caused much consternation in the Defense Department, which warned that an overzealous interpretation of its restrictions might cripple defense research, and in the scientific community, which feared that the military financial spigot would be turned off at a time when other sources of support were also drying up.

Nevertheless, Mansfield, who viewed his amendment as a first step toward lessening the scientific community's dependence on military funding, was pleased enough with the first-year results to have the amendment reintroduced in the military authorization bill that will apply to fiscal 1971, the next fiscal year. The amendment sailed through the Senate with little trouble, winning passage along with other research amendments by a 68 to 0 vote. But then it was forwarded to a House-Senate conference committee and suffered what many observers regard as near death.

The conference committee was assigned the job of reconciling the House and Senate versions of the military authorization bill, and by the time the horse trading was over, the Senate conferees, in order to win approval of a modest restriction on ABM (antiballistic missile) expansion from their House colleagues, had been forced virtually to abandon the Mansfield amendment. The amendment was reworded so that it no longer says anything about requiring research to have a "direct and apparent relationship" to military functions. Instead, the amendment now simply says that the Defense Department can't finance any research "unless such project or study has, in the opinion of the Secretary of Defense, a *potential relationship* [italics added] to a military function or operation." The new wording, according to Mansfield, is worse than setting no guidelines at all, since "it affirmatively states that the Department of Defense will solely determine what research is beneficial to it."

Two other Senate attempts to curb and redirect military research were also watered down in the conference committee. One Senate amendment, which suggested—though in no sense required—that the budget of the National Science Foundation (NSF) should be boosted by 20 percent (roughly \$100 million) to compensate for the restrictions on DOD research funding imposed by the Mansfield amendment, was made so vague as to become almost meaningless. Another amendment which sought to impose restrictions on Pentagon support of "independent research and development" by industry was also weakened.

At this writing, Mansfield's precise tactics for the attempt to reinstate his amendment have not been worked out, but it is clear that an effort will be made to insert it into the military *appropriations* bill, either while the bill is still being considered by a Senate committee or when it reaches the floor for a vote. The amendment had previously been attached to the military *authorization* bill.—PHILIP M. BOFFEY

Both Killian and Philip Handler, president of the National Academy of Sciences, looked favorably on the proposal to establish NIRAS as a way of bringing about a broader view of research support and greater stability of support. Edward Condon of the University of Colorado and E. R. Piore of IBM had recommended establishing a Department of Science. Others, including Secretary of the Air Force Robert C. Seamans, Jr., and S. Fred Singer of the Department of the Interior, had favored a "heavily augmented" NSF. Any legislation to implement the NIRAS concept recommended by the subcommittee will surely encounter strong opposition if it provides for a full or partial dismemberment of NIH.

Some witnesses, such as Patrick E.

Haggerty of Texas Instruments, Inc., suggested that OST should be converted to a Council of Science and Technology, on the model of the Council of Economic Advisers. While neither accepting nor rejecting this suggestion, the subcommittee decided, for the moment, simply to recommend the separation of OST from the science adviser and PSAC and to call for "additional statutory backing, staffing, and funding" for the agency. Yet OST derives much of its influence, such as it is, from the fact that its director is chairman of PSAC and science adviser to the President. Without someone with access to the President at its head, OST could well become another obscure and forgotten agency.

Observing that the U.S. balance of

payments position was becoming less favorable, Haggerty warned that the nation already is being hard pressed by other technologically advanced nations such as Japan and the nations of Western Europe. On the same point, Derek J. De Solla Price of Yale indicated that, in the future, the United States must look increasingly to science and technology to compensate for the diminishing of some of its natural resources. "The richness of this land now lies ultimately in the laboratories of the academic world and in the near-academies employed in industry and government," he said. "It is exactly in this area that the U.S.A. will meet during the next decade a very serious challenge from Japan, and perhaps from other countries later." —LUTHER J. CARTER

## Academic-Labor Alliance Formally Established

Cambridge, Mass. Representatives of organized labor and the academic community met here 29 October for their second session in 2 weeks and formally agreed to establish a national coalition for political and social cooperation. The labor leaders pledged membership support and organization; the academics promised brain power and student cooperation. In coming weeks in ten or more cities across the country, the as yet unnamed organization plans meetings among unionists, students, and professors to begin work on specific, common problems. In the words of one laborite, the organization could "unlock the door which has been slammed between universities and working people" by the Nixon Administration.

Leading the discussions were the originator of the two meetings, Nobel prizewinner George Wald, Higgins Professor of Biology at Harvard, and the man who made the coalition proposal, Hal Gibbons, vice president of the Teamsters (*Science*, 29 October). This latest meeting elected an executive committee of nine (three from labor, three faculty, and three students) which will circulate names and information about existing worker-student projects among the ten pilot projects. Although carefully limited to this clearinghouse function, the committee is well connected; included among its members are Leonard Woodcock, president of the striking United Auto Workers (UAW), and Joseph Rhodes, Jr., Harvard junior fellow and student member of the President's Commission on Campus Unrest.

Primary emphasis will be on the local projects involving the concerns of rank and file union membership. Possible areas include coping with layoffs in places where military contractors have had their funds cut, establishing day care centers, safety on the job, community and environmental health, worker's pension insurance, improved education, and racial discrimination.

A major point of attack will be industrial conversion. Victor Reuther of the UAW explained: "One of the biggest myths today among the American worker is that

he thinks employment opportunity is related to the maintenance of defense security. We've got to debunk this myth, so he can identify job security with peaceful and positive social goals." Seymour Melman, professor of industrial engineering, Columbia, talked at length on the economic research still needed to understand the implications of the post-Vietnam economy for the work force.

But there also emerged during the 7 hours of meetings a number of internal strains over other directions the group might take nationally. A key one was speaking out on political issues. Rhodes talked of the "obscurity" of Administration electoral strategy in drawing public attention to student unrest and "permissiveness" rather than to issues that are closer to the worker, such as unemployment, inflation, and racial injustice.

Suggestions by academics that the group adopt specific stands on political issues ran into opposition. "You're living in a different world," said Tony Mazzocchi, legislative director of the Oil, Chemical and Atomic Workers, "if you think that the workers think the way some of us do on issues. It would be counterproductive." Some of the labor people and many of the students were adamant that group pronouncements on national issues would cause a loss of confidence in the organization among the rank and file.

Yet unanimity and goodwill generally prevailed. Carl Wagner, of the Alliance for Labor Action, spoke of some student and young worker projects he had started. "There are six million trade unionists in this country who are under 28. And they're like the students. They believe that somebody else is controlling their lives." And the Teamsters' Gibbons said, "The kids of the United States have been taking a real beating because they are leading a fight for a better society. Every time they get out there I want to throw a protective cordon of trade unionists around them. They are fighting for what we all want—a better community." —DEBORAH SHAPLEY, associate editor, *M.I.T. Technology Review*.