

PHYSICS IN GOVERNMENT

Federal support for university physics research in 1967

A PHYSICS TODAY estimate of federal support for university physics research in fiscal 1967 indicates that the maximum growth rate to be hoped for under the new budget is about 7.6%. That is, provided the president's budget goes through congress unscathed, a possibility that is far from likely. (The growth rate may in fact even drop a percent or two.)

Such is the consensus of the federal physics-program directors with whom we have talked. The increase,

from \$124.1 million in fiscal 1966 to about \$133.5 million in fiscal 1967, is clearly far below current estimates of the minimum growth rate (about 16%) needed to support on-going physics research in the colleges and universities. The current growth rate is below even the growth rates of the two previous years (about 10% in 1965 and 11.5% in 1966), which have resulted in severely restricted physics activity on many campuses throughout the 50 states.

NAS expands international programs in Europe and Asia

Iron and bamboo curtains to the contrary, the National Academy of Sciences is penetrating deep into the scientific hinterlands of eastern Europe and Asia. NAS has just entered into a program with Yugoslavia of exchange visits by scientists and is actively pursuing similar contacts with Poland, Rumania, Hungary and Czechoslovakia. At the same time the academy is expanding its programs with the USSR and the developing countries and exploring possible scientific contact with Red China and Indonesia. The academy's international activities are conducted through its Office of the Foreign Secretary, whose director and executive secretary are Harrison Brown and W. Murray Todd, respectively.

Visits by individual students and scholars to iron curtain countries are not new. What makes the NAS programs especially commendable is that they are specifically geared to contribute to the professional advancement of American scientists. Can US scholars profit from visits to research establishments in eastern Europe? Although admitting a certain sterile quality inherent in all East-West scientific exchanges, the academy believes US scientists can learn a great deal from their colleagues in eastern Europe. It was this belief that motivated Brown to tour the academies of eastern Europe in 1962 in an attempt to es-

tablish formal scientific contact. Brown's visit is being followed by exchanges of senior scientists to survey research and identify fields and institutions where scientists might work.

The Yugoslav memorandum of understanding, which was signed by academy president Frederick Seitz and his Yugoslav counterpart Marko Kostrencic, will serve as a pattern for future arrangements with eastern European nations. It provides for exchanges "in all disciplines in which the two academies are mutually competent: natural sciences (including mathematics), engineering sciences and behavioral sciences." Embracing a three-year period, the program provides for both short-term visits to lecture, survey research or exchange professional views, and for longer stays (up to one year) to carry out research. Visits in each direction totaling about 40 man-months per year are allowed, with no necessary matching of either the numbers of exchanges or scientific fields. The memorandum also provides for cooperation in scientific publication and documentation and for the encouragement of visits beyond the scope of the formal program. One important advance in the Yugoslav program over the formal agreements signed with the USSR since 1959 is that the former allows the host country to invite scientists whereas in the Soviet agreement se-

lection is done by the sending country.

"It takes a lot of doing," says Todd, "to reach the kind of arrangement we think will be useful. NAS is not a governmental institution and the eastern European and Russian academies are; nevertheless they are most anxious to be considered non-governmental institutions. We have to keep these arrangements in as loose a framework as possible. We deal with the Polish and Yugoslav academies, not with their governments. Naturally, we coordinate these programs with the State Department and the National Science Foundation."

Besides the Yugoslav program, similar exchange arrangements with Poland are near completion; the Rumanian and Hungarian programs are currently in an initial delegation-exchange stage, and a reply from the Czechs to an earlier NAS memorandum is expected shortly. Meanwhile the academy has significantly expanded its Soviet exchange program with 55 persons participating in the 1964-65 exchange agreements. The academy has also been able to arrange exchange visits of US and Soviet scientists that developed spontaneously from earlier contacts. Several Soviet scientists have been invited by NAS to visit the US (including Keldysh and Kapitzka) and though the invitations were turned down, the Soviets may possibly come to the academy's annual meeting in April in response to a second invitation. The Russians, meanwhile, issued no invitations to American scientists through the NAS, but an unknown number of American scientists continue to receive invitations directly. The academy committee for policy formulation on both the Soviet and Eastern European exchange arrangements is currently chaired by Robert Marshak.

Communications between US and mainland China scientists are to be explored by an ad hoc academy group, headed by Alan T. Waterman. The group, which is just being formed, will discuss the exchange of views with western European scientists who have

had contact with mainland Chinese.

Largely through the impetus given by Brown, the academy in 1963 embarked on a new program of aid to developing countries. The main thrust of this program is in helping these nations create the kind of scientific institutions that will enable them to adapt modern technology to their

needs. NAS insistence on reciprocal benefits for the visiting American scientists is also pursued. "Our scientists go there and learn about their institutions, their customs, their ways of getting things done," says Todd. "In this way we also learn to help them in a more effective manner."

NAS programs now encompass an

extensive area in Asia. Through its Pacific Science Board, the academy is expanding programs with the Philippines as well as with the Academia Sinica on Taiwan. At the same time, a committee on science relations with Indonesia is being considered. In 1964 Indonesian scientists visited the US for talks about science cooperation.

Congress studies national science policy

What is the appropriate relation between science and government? Several groups in Washington are now exploring this question. For example, the House Subcommittee on Science, Research and Development, headed by Rep. Emilio Q. Daddario (D. Conn.) believes the National Science Foundation should take a major role in developing our nation's science resources and policies. His report urges NSF to put aside its passive role and put added emphasis in the areas of engineering and the social sciences. NSF director Haworth and others in government generally agree with the thrust of the report while having reservations in some particulars. Meanwhile, groups in Congress, headed by Senators Harris (D. Okla.) and Nelson (D. Wis.) and Rep. Reuss (D. Wis.) are actively discussing the entire government-science interface.

What is Congress really seeking? It does have Constitutional responsibility to allocate and appropriate the resources of the country. But as William Carey of the Bureau of the Budget has pointed out, "Congress is not anxious to take over policy initiative for scientific research. It merely takes the quaint view that somebody should seize the initiative. It cannot make sense out of the decision-making procedure of the agencies in deciding how—if at all—research priorities are defined and resources matched up with them. What Congress wants more than anything else is evidence that the Executive is running a tight ship and knows what it is doing."

Daddario wants bigger NSF role

The Daddario subcommittee has asked that the National Science Foundation "should take the initiative and be held broadly responsible for the nation's science resources, disengaging

the Office of Science and Technology and the President's science advisory committee from their detailed oversight in this area." To further this goal, the subcommittee proposes, among other things, that NSF evaluate the state of the various scientific disciplines and their resources, direct research "to help bring the scientific base for new and emerging technologies required in the national interest," and channel more effort into the social sciences.

To equip the foundation for its new role, the subcommittee is going to ask Congress to amend the NSF Act of 1950. Legislation will be introduced to:

- release the National Science Board (which shares NSF authority with the director) from routine duties and give it a strictly policy-making function
- require the board to make an annual report on the status of science, "the report to be made to the Congress via the President"
- require NSF to evaluate the needs of the individual disciplines (in order for the foundation to operate as a "balance-wheel")
- encourage NSF to support research in the applied and social sciences
- strengthen the director's office by giving him complete management authority plus authority to approve all grants, subject only to the board's veto. The report also recommends placing the director's salary on a par with those of the heads of AEC and NASA and providing NSF with a deputy director and four assistant directors appointed by the President and confirmed by the Senate
- remove the present authority by which NSF is organized largely by disciplines, and require its organization along functional lines; for example basic research and support of institu-



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tional development.

Other nonlegislative recommendations of the subcommittee include:

- stronger representation on NSB of nonprofit organizations, industry, small colleges and social scientists
- improved liaison with the State Department
- additional emphasis on institutional and developmental support
- more top administrative and management personnel. "NSF has had its troubles in dealing effectively with the big operational programs [for example Project Mohole, Antarctic program, educational curriculum studies]. The subcommittee believes that this is due in part to the lack of trained and experienced professional management."

Reactions of government scientists

Will the above proposals achieve their purpose of providing NSF with a "positive, dynamic stance" and putting it in the forefront of science policymaking? *PHYSICS TODAY* asked NSF director Leland Haworth for his views. "I think that the objectives they have of trying to be helpful both to the Congress and the Executive branch in their recommendations and conclusions are all to the good," Haworth says. "The study and report are very worthwhile and have caused a lot of soul-searching on the part of both the subcommittee and the foundation, and forced us to think