

to deliver myself of a little opinion right now on this deal. There is absolutely no limit to the imagination of a scientist, but there is a limit to the budget, to the taxpayer's ability to sustain this imagination. There are going to be some other visionary programs that will have to be cut before we go into this thing because as I see it, the estimate on the 600-1000-BeV is around \$975 million."

McDaniel continued with, "It is necessary to start early because we do not yet really know how to build a 600-1000-BeV machine. It seems to me that, extrapolating our present technology, it is too large a machine to build. It may be too expensive a way to build it. We need to look at new methods."

CERN also has problems. In the midst of our own difficulties, it is perhaps salutary to look at similar strains and anxieties experienced by CERN as it gropes toward its 300-BeV project. Having reduced its site list from 22 to 13, CERN officials must now decide among such names as Gop-

fritz, Focant, Doberdo, and Nardo in nine countries jealous of national honor and economic strength. Design studies as well as general layout and feasibility studies for accelerator components are under way. But the 5.2-million-Swiss-franc budget is being challenged by some member states as too high. They say that the proposed buildup in 1966 implied too early a freezing of design and too large commitments for 1967. Whereupon the CERN scientific policy committee retorted that it would be catastrophic for the future of CERN if preparatory studies for the 300-BeV machine were halted. "The working group would be broken up; it would be difficult to set up again, and its dissolution would give the impression that the project was being abandoned for a fairly long time. This would have irreversible effects in many countries, which would revise their balances between national and international expenditure." All of which has a ring of familiarity to US accelerator enthusiasts.

Copyright revision. Key provisions of HR 4347 would set up a single national system of statutory protection for all written work whether published or unpublished, extend copyright duration from the present 28 years (renewable by another 28 years) to the duration of the author's life plus 50 years, and provide for the fair-use concept without defining the scope of the concept. Physics-book publishers are hoping that the fair use doctrine will remain unchanged in the new bill. There have been strong arguments for inclusion of a clause that would permit very liberal copying, without payment, of copyrighted material for educational use. Such a clause, say the publishers, would have a drastic effect on the already thin markets for high-level text and reference works. The new copyright bill is currently under discussion in subcommittee 3 of the House Committee on the Judiciary.

Metric-study bill. S 774 would authorize the US to conduct a study of what increasing metric-system use in other countries will do to the US (see *PHYSICS TODAY* Feb. 1966, page 120). The Senate has already passed the bill, and the House Science and Astronautics Committee will soon consider it. Committee chairman George Miller expects the bill to come to the House floor in this session.

Patent law. S 1809 would replace several existing government laws with a single uniform policy on patents derived from government-sponsored research and development. Known as the Federal Inventions Act, the bill will be considered by the Senate Judiciary Committee some time after Easter.

NSF revision. HR 13696 is the Daddario bill on the National Science Foundation which hews closely to recommendations contained in the House Science, Research and Development Subcommittee report (see *PHYSICS TODAY* March, 1966, page 56). Key provisions would emphasize increased NSF support in the social sciences and engineering, direct NSF to evaluate the status and needs of US science and to initiate research relevant to national problems, give the National Science Board almost exclusively a policy-making function within the founda-

Bushels of bills affecting the science community

Congress is (or will soon be) busy discussing tariffs on teaching equipment, teacher unemployment compensation, the metric-system study and revisions of copyright and patent laws. At the same time, new bills have been introduced that may significantly alter our overall science posture, the National Science Foundation and geographic distribution of federal science funds.

Importing scientific apparatus. HR 8664 would enable the US to ratify an international agreement on importing educational, scientific and cultural materials (the Florence agreement). The bill would have the effect of eliminating duties and special taxes on many imported instruments and on apparatus used in physics departments throughout the country. The American Institute of Physics has taken the lead in the physics community in endeavoring to bring this bill before Congress. Though President Johnson has urged passage of the agreement, the bill is tied up in the House Ways and Means Committee headed by Rep. Wilbur Mills (D-Ark.). Provided the committee can dis-

pose of more urgent work and Johnson does not propose new taxation (which the committee would perforce take up), HR 8664 has some chance of being discussed by the committee during the current session.

Unemployment compensation. Ironically enough, one of the bills occupying the Ways and Means Committee is also important to the academic community—the bill for revising the unemployment compensation law. Until now the law has not required such nonprofit organizations as colleges and universities to participate in the unemployment compensation program. Though most states permit voluntary participation of the nonprofits, few educational institutions have taken advantage of the opportunity. The Ways and Means Committee is considering administration proposals that employees of private nonprofit institutions be brought under the law's coverage (such employees would include physics professors). Committee spokesmen say there is a good chance that some sort of legal requirement covering the nonprofits will be written into the law.

tion, direct the board to render an annual report to the President on the condition of US science, give the NSF director complete management authority and provide for a deputy director and four assistant directors. Hearings on the bill began 19 April.

A companion bill, HR 12242, introduced by Rep. Bell (R-Calif.), would have Congress authorize all NSF appropriations.

Federal science department. Rep. Fulton (R-Penn.) recently announced that he will sponsor a resolution calling for a government department of science, research and technology. Says Fulton, "Shall Congress leave science policy status quo, in separate compartments, with each agency building its own anthill? I think it is time the US Congress raised science, research and technology to the cabinet level."

Spreading federal funds. S 231 is a resolution by 11 midwestern and southern senators who want the National Science Foundation to recommend changes in existing laws so as to provide for broader distribution of federal research and development funds. HR 13786 proposes a \$150-million-a-year program of institutional grants administered by NSF "to promote science and education of scientists." A common feature of these and other measures (such as HR 780) is the desire of Congress to distribute federal science funds on a formula basis—so much money for each state and institution per scientist produced. Up to the present the scientific community has in general resisted Congressional pressure for geographic distribution of science funds. There is little doubt, though, that in the near future Congress is going to get its way. Some voices in the physics community have suggested that now may be an appropriate time for science to reconsider its position and perhaps provide Congress with constructive guidance on this issue. These scientists say that even if we do not accept the tenet that geographic consideration should be an important element of science and public policy, we must, as interested citizens, provide critical examination of such Congressional demands and questionings in this particular area.

USOE—the giant gets bigger

"With a huge \$138 million jump over last year, the US Office of Education requested \$1.3 billion for higher education alone in 1967. This figure will be more than twice the entire \$525-million budget request of the National Science Foundation. Though USOE support spreads over a far broader base than that of NSF, undoubtedly more and more physics departments will feel the benefits of burgeoning USOE programs in these areas: \$453 million for undergraduate-facilities construction, \$200 million for graduate- and undergraduate-school construction, \$17 million for undergraduate-instructional equipment, \$82 million for National Defense Education Act graduate fellowships. One program USOE is launching this year is called "Strengthening Developing Institutions" (Title III of the 1965 Higher Education Act), for which \$5 million has been appropriated for 1966 and \$30 million requested for 1967 (see *PHYSICS TODAY*, January, page 93).

Graduate physics support. While NSF remains the major government supporter of graduate physics education, USOE is providing a larger share of such assistance. Through Title IV of the 1958 National Defense Education Act, NDEA fellowships provide a \$2000 stipend for the first year of study, \$2200 for the second, and \$2400 for the third, together with a \$400 allowance per year for each dependent. The act also provides for an accompanying grant of \$2500 to the graduate school the student attends.

During the last two years, Congress has greatly expanded the entire NDEA fellowship program, so that awards in physics have correspondingly increased in number. Varying between 60 and 80 during the first six years of the program, such awards numbered 158 in 1966 and are expected to number about 315 in 1967. Thus by 1967 some 542 graduate physics students will be enjoying NDEA support if Congress appropriates the money.

Comparable rough estimates of NSF support for graduate physics through NSF fellow, trainee and cooperative

graduate programs show this: 1964, 630; 1965, 800; 1966, 645. In 1967 NSF expects the number to be about the same as in 1966. Should NSF support remain static or even decline while USOE assistance continues to rise, USOE may, in the not too distant future, become the major government supporter of graduate physics education. Nevertheless, NSF fellowships, which are given on an individual basis by one's peers (USOE awards are not), will no doubt continue as one of the most prestigious awards a physics graduate student can obtain.

Curricula support. Though developers of new physics-teaching ideas are now very active, little of their support comes from the US Office of Education. But this is not solely the fault of USOE, whose Cooperative Research Program offers support for the development of new ideas in education and the application of existing ones.

The program started off in 1954 with very little money, and most of it was earmarked for research with retarded children. Under Title IV of the 1965 Elementary and Secondary Education Act, however, the program was amended and greatly expanded. This year slightly more than \$100 million is available for educational research by colleges and universities, secondary and grade schools, private firms and even individuals. Such research might include higher education, laboratories and elementary and secondary schools, as well as adult and vocational training.

"We would certainly like to receive more proposals from the physics community," says C. B. Lindquist of the USOE Bureau of Research. "We want to hear more about new physics equipment, textbooks, physics for the nonscience major and interdisciplinary projects." One important physics program USOE has partially assisted for the last few years is Harvard Project Physics, directed by Gerald Holton, F. James Rutherford and Fletcher G. Watson.

USOE judges proposals in terms of their promise for meeting stated objectives, significance to the total national education effort and economic efficiency. Small projects (\$7500 or