Sharp Drop Reported in Physics Baccalaureates

Latest American Institute of Physics manpower data show a decline of almost 9% over the previous year in the number of physics bachelors degrees granted during 1965–66. The figure of 5037 was several hundred fewer than previous pessimistic estimates and turned a flattening-out trend of the past few years into one of definite decline, with physics baccalaureate production reaching its lowest level since 1959–60. Only the South Atlantic and particularly the Pacific states ran counter to the drop, which was most pronounced in New England. Four-year colleges as well as masters-granting and PhD institutions shared proportionately in the decline.

Two factors appeared to influence the drop. One is that (up to 1965–66) progressively fewer students have been enrolling as undergraduate physics majors. The other is the increase in the dropout rate of physics majors (from junior to baccalaureate). This rate had been declining during the past few years but during 1965–66 it belied estimates and increased from 27% to 30%.

Nevertheless there is one reason for optimism. The number of third-year physics majors increased from 7014 in 1965–66 to 7345 in 1966–67. Hence, a correspondingly larger crop of baccalaureates is hoped for next year.

Congress Slashes NBS and Higher-Education Budgets

A House appropriations subcommittee has dealt the National Bureau of Standards a bitter blow, cutting its fiscal 1968 authorization by $7.8 million to $32.49 million, even less than the bureau received the previous year. At the same time, the appropriations committee cut deeply into authorizations for the National Defense Education Act fellowship program, a major vehicle of support for graduate physics fellowships.

NBS. The cut in the NBS budget, if sustained in the Senate, will force the bureau to continue (at best) at about the same level of activity as this past year. But with increasing costs of research and restrictions on hiring new bureau scientists, NBS officials say that their overall operations will inevitably suffer, with consequent lowering of morale. Bureau officers are at a loss to explain why Rep. Rooney (D-NY), who heads the subcommittee holding the bureau purse-strings, voted against an NBS increase. "We had an increase of some $3.5 million last year," said one NBS budget officer. "It looked as if we had finally gotten through to him and that Congress was beginning to appreciate the work we do." Other Washington observers, however, point out that, even though the financial climate in the Capitol this year is very poor, NBS scientists could do a better job in testifying before committees. "Bureau people have not yet learned to explain their programs so that nonscientists and Congress can appreciate them," said one commentator. "By comparison the National Institutes of Health scientists present a much more effective case for support."

NBS spokesmen indicated they hoped for a restoration of the cut by the Senate. Historically, the Senate has restored NBS funds slashed by Rep. Rooney, and a Senate-House conference usually settles on half the increase. "We are pessimistic," said one official. "It's a time when the only money you get is for Vietnam or for the poverty program, and even that's in jeopardy."

NDEA fellowships. The House appropriations committee approved $450 million in fiscal 1968 for construction grants for academic facilities, a figure some $63 million less than the previous year. But what startled academic representatives in Washington was the committee action in cutting $10 million from the $96.6 million budgeted by

RESONANCES

Draft deferment status of physics graduate students remains temporarily unchanged, under a new law passed by Congress and a Presidential directive. Students in their second or later year of graduate work "may" be deferred (depending on their local boards) for up to five years to obtain their PhD's. (Some, as at present, will continue to be drafted.) Beginning graduate students "may" be deferred for one year. What happens to these and newer graduate students next year will hinge on whether the President adds physics to the list of graduate specialties receiving mandatory deferments, now including medical fields only.

200-GeV and LASL meson facility funds won approval from the Joint Committee on Atomic Energy and later from the House and Senate. They also voted to increase the Stanford linac operation from 10 to 15 shifts per week. Congress, however, rejected the Omnitron study, and some say the project is dead, with insufficient support from physicists.

A bubble chamber and storage rings have been recommended for fiscal 1969. The AEC high-energy advisory panel (Weisskopf committee) says Brookhaven should have the 14-foot chamber and Stanford the 3-GeV rings, each project costing about $17 million.

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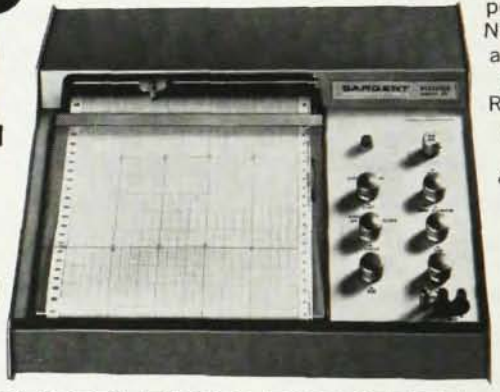

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the Administration for NDEA fellowships. In defending its action, the committee said, "There is too much emphasis on scholarships . . . and fellowships as compared with loans, work-study programs and construction of facilities." Officials estimate that the $10 million decrease will mean a reduction in new fellowship awards from 6000 in 1967 to 3560 in 1968.

Most observers attribute this major cut in so significant a program to the recent death of Rep. John Fogarty (D-RI), former chairman of the appropriations subcommittee for health, education and welfare and one of the strongest congressional proponents higher education has ever had. "This is the first year," said one academic spokesman, "that we've had a problem of this kind. With Fogarty's death the whole situation has changed. This cut would have been unthinkable a year ago." Academic sources said they are quite hopeful of getting the $10 million back in the Senate. But the Senate-House conference was a different matter. "We can't tell what will happen any longer."

AIP Establishes New Program To Study Physics and Society

Because of the contributions of physics and the leadership of physicists in triggering the swift growth in scientific research, the American Institute of Physics has invited a distinguished group of scientists and other public figures to form a new committee on physics and society. At the suggestion of AIP Director H. William Koch and with the approval of the AIP Governing Board, the committee was organized to study the ways in which these contributions and contributors interact with education, industry and government.

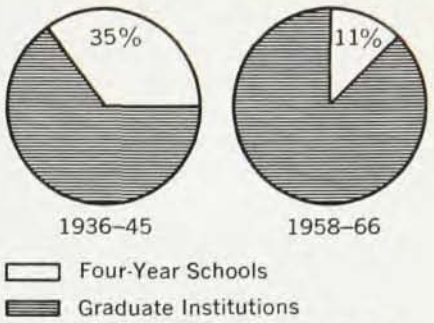
This committee will serve as an interface between physics and the society of which it is a part. Rather than concerning itself with the daily operations of the AIP, it is concerned with looking objectively at the relationship of physics to society and the demands which society should properly place upon physics and seeing how these needs are being met. Its fundamental purpose will be to advise the Governing Board of the AIP on (1) the future goals and direction of the organized physics community in America in regard to the direction and financing of basic and applied research; (2) the relationships of physics to the sciences and humanities; (3) the relationships of physics to industry, education and government; (4) communications of the institute within the physics community and with the general public, particularly in emphasizing that physics is a part of society.

On 3 June the committee held its first meeting and elected John A. Wheeler, professor of physics at Princeton University, chairman. So far the following members have been appointed, with possible additions to be made in the future: Robert F. Bacher, provost of the California Institute of Technology; William O. Baker, vice president of Bell Telephone Laboratories; H. Richard Crane, professor and chairman of the physics department, University of Michigan; E. L. Goldwasser, professor of physics at the University of Illinois and chairman of the division of physical sciences, National Academy of Sciences; Robert E. Marshak, professor of physics, University of Rochester; Robert W. Morse, president of Case Western Reserve University; Gerard Piel, publisher of *Scientific American;* E. R. Piore, vice president and chief scientist of IBM; William Fairbank, professor at Stanford; Gerald Holton, professor at Harvard; David Robinson, vice president of NYU; Alan T. Waterman, consultant to the president of the National Academy of Sciences.

Lewis Slack, who recently became an associate director of the AIP, will serve as secretary of the committee and ex officio member. The chairman of the Governing Board and the director of the AIP will be ex officio members of the committee.

NAS Data Give Baccalaureate Origins of PhD's in Physics

Four-year colleges produce only about 11% of future physics doctorates while foreign colleges now provide almost 16% of US PhD's in physics. These estimates, obtained by PHYSICS TODAY from data in the doctorate-records file of the National Academy of Sciences Office of Scientific Personnel,



BACCALAUREATE ORIGINS of physics PhD's a generation apart. During 1936–45, 35% received their BS at 4-year schools; during 1958–66 the figure had dropped to 11%.

are based on a study of all US students who earned PhD's in physics during 1958–66.

During the same period 19% of physics doctorates had received their BS degrees at MS-granting schools and 70% from PhD-granting institutions. The estimates for physics did not vary by more than a fraction of a per cent from figures for the physical sciences as a whole: BS-granting colleges provided 11.6% of future science doctorates, MS schools 19% and universities 69.4%. The most recent figure for foreign institutions is 15.9%.

Many physics teachers whom PHYSICS TODAY contacted expressed astonishment at the 11% figure for four-year colleges. These schools produce about 34% of the physics bachelors degrees, and in 1960 had approximately 19% of the total undergraduate enrollment. The only extensive previous study of baccalaureate origins of physics doctorates, performed by M. Hugh Trytten of NAS, showed that, of 1160 physics PhD's granted during 1936–45, four-year colleges provided the undergraduate origin of 35%.

Causes of decline. Among the reasons put forth by physicists for the drop in effectiveness of the four-year school as a PhD provider is the continuous shift of many good schools from baccalaureate to MS and PhD status. During the past five years, for example, 39 four-year colleges have added graduate programs in physics. Such schools include Amherst, the city colleges of New York, several schools of the New York State system, Univer-