

50 physicists, with only five weeks to go at the Center, were still "looking."

Job distinctions are not exact, but it is clear that "physicists" definitely fared worse on the average than other professional staff members (very largely "engineers"). One reason for this is that some NASA research areas in which physicists were heavily involved were largely cut out by DOT. These include solid-state devices and theory, and materials in general; in these specialities only about 10 out of 80 technical staff members were expected to stay on. By contrast DOT will continue work on optics, lasers, mi-

crowaves and various electronic applications, and in these areas most of the technical staff will remain at the Center.

Also, for the switch of the Cambridge Center from space research to more applied work on transportation systems, a relatively high degree of technical specialization appears to have worked against the physicists. An established solid-state theorist may seem a less promising candidate for developing auto-driver simulators, for instance, than a young engineer with a broad background in the fields of electronics and computers. —JBP

Mettler Report to President Urges More Science Support

Basic research support within the federal government should be tied to the gross national product, according to President Nixon's Task Force on Science Policy, which also suggests a figure of about 0.1% of the GNP for NSF ($\frac{1}{3}$ of all federal basic research) for such support. This recommendation, which would approximately double current NSF funding, is included in the Task Force report, *Science & Technology: Tools for Progress*, released by the White House on 8 May.

that the increase in page charges and the delay "are essential to assure the economic stability of the journals," which has been affected by increasing publishing costs and by cuts in federal funding. The delay was reinstated for articles accepted in May; the page-charge increase begins for most of the journals in September.

These two changes affect the *Journal of Applied Physics*, increased from \$55 to \$65; *The Physics of Fluids*, from \$60 to \$70, and *The Review of Scientific Instruments*, from \$60 to \$75. The *Journal of Chemical Physics* and the *Journal of Mathematical Physics* are affected by the delay, but the page charge for each remains at \$60. A delay has not been instituted for *Applied Physics Letters*, but the page charge has increased from \$60 to \$75.

Education and Manpower Division Finds Employment Pattern Changing

The final data of the 1969 employment survey, conducted by the American Institute of Physics, prove earlier speculations that the gap is widening between physicists' PhD speciality and their actual work activity (see PHYSICS TODAY, April, page 23).

The survey was begun in December, when 2700 physicists who received their PhD's during 1967-69 were mailed questionnaires by the AIP Education and Manpower Division. Out of 2000 responses, 1625 were usable. From this data an employment pattern emerged.

Some of the analyses focused on physicists' attitudes towards their present jobs. The questions revealed that 32% of the 1625 are presently looking for employment and that the percentage of 1969 graduates who are not satisfied with

their jobs is higher than for the other two years. The government was the only employer category to take a smaller share of the 1969 graduating class, compared with earlier classes. It took 10% of the 1969 class compared with 17% of the 1968 class.

Other analyses showed a growing gap between speciality and work activity, which is especially acute for those working in elementary particle, nuclear and solid-state physics. Of the 1625, 19% had PhD's in elementary particles and fields, yet only 13% were working in that speciality. For nuclear physicists the ratio is 18% to 11% and for solid state, 28% to 21%. The trend is reversed for the 0.1% of the 1625 who were trained in engineering physics; 4% are working in that field and 2% plan to stay there. Of the persons who were not employed in any physics speciality, 2% went into computer sciences and 2% into education.

These three specialities with atomic and molecular physics (which together account for 75% of the PhD's) were dealt with separately according to work activity. Teaching, mainly in four-year colleges, jumped from 8% in 1968 to 11% in 1969 for the entire group, with the atomic and molecular group showing an increase from 11% to 21%. In contrast, the tenured teaching and research positions have decreased for the whole group, from 38% for 1967 graduates to 26% for 1968 and 20% for 1969. The elementary-particle physicists are still holding a proportionately higher fraction of these positions, but the trend is still downward, from 42% in 1967 to 25% in 1969. Academic-research positions have increased from 36% in 1968 to 54% in 1969, mainly because these PhD's are obtaining postdoctoral appointments.

This increase reflects the general trend; 25% of the 1967 PhD's are still postdoctorates, as are 46% of the 1969 PhD's. Yet the holding pattern will probably be affected by the cuts in federal funding, which will reduce postdoctoral appointments by 10% in 1970-71 (see PHYSICS TODAY, June, page 64). Taking the PhD's in elementary-particle and nuclear physics as a whole, more 1969 graduates are working in development and design (12% from 1968 to 29% from 1969).

The survey also looked back to find out how the PhD's got their jobs. 52% of the 1969 graduates sent more than 10 applications to industry, but in 1967 only 29% and in 1968 only 40%. Regardless of the number of applications, 18% of the 1969 PhD's who applied to industry received no industrial job offers. But the actual unemployment for the whole group was 2.5%.

More complete analyses are available from Education and Manpower Division.

A New Home at Princeton for Physics, Math and Statistics

Princeton University dedicated a new \$17.2-million mathematics-physics-statistics complex on 17 March. Under construction since 1966, the complex includes a six-level physics building (Stanley Palmer Jadwin Hall), a 15-level mathematics and statistics building (Henry Burchard Fine Hall), a library that connects the two structures, and a cyclotron area, which is attached to Jadwin Hall. The facilities of the physics department, which include Palmer Laboratory, Jadwin Hall and the Elementary Particles Laboratory, will be known collectively as the Joseph Henry Laboratories.

The 13-member group, headed by TRW President Ruben F. Mettler, was appointed last October as one of a number of panels "established to assist the Administration with ideas and recommendations for 1970 and beyond."

The group urges long-term planning, both in the White House and the Departments of the federal government. It urges the Office of Science and Technology to aim for the "integrated management" of basic and applied research support by the government. The report urges the President's science adviser to develop priorities for various competing scientific research programs, and also to become more involved in the budgetary process.

A governmental commission ought to review federal laboratories and recommend continuation, change or even closing some of them, the task force said.

Concerning national security, the group says the present situation differs from the past because we are in a situation of relative balance with respect to the Soviet Union; research budgets are declining; the Strategic Arms Limitation Talks (SALT) may have major implications on the research and development program. At such a time, the group says, our research and development program for national defense should have an even higher priority than in the past, at the expense of reducing military hardware,

if necessary. The Mansfield amendment was singled out for criticism.

US scientific and technological resources can be applied better in international affairs; "science for mankind" can be a reality in international relations, the report said. We should emphasize the transfer of research and development capabilities to developing nations rather than simply transferring the technology itself.

The group noted a "national need for excellence in science and technology," and recommended that the President call for—as itself a national goal—"leadership in science and technology relevant to our other national goals." The President should emphasize using science and technology to develop and project long-range requirements for national goals. US economic growth depends substantially on the health of science and technology, which can contribute much to pressing social, urban and environmental problems; the Task Force urged the President to direct various agencies to better apply science and technology in attacking these problems.

High-Energy Politics Is Debated at APS Meeting

One of the liveliest sessions of the American Physical Society Washington meeting on 27–30 April was a round table on the future of elementary-particle physics arranged by the Division of Particles and Fields. A standing-room-only audience of 600 listened for over two hours to a discussion of current funding problems, and of how and by whom hard choices should be made. On the platform were Louis Hand of Cornell, Donald H. Miller of Berkeley, Jerome Rosen of Rochester, Robert Sachs of Chicago, Victor Weisskopf of MIT, David Bartlett of Princeton and chairman Luis W. Alvarez of Berkeley. A dozen or so speakers contributed often-spirited comments from the floor.

Weisskopf, who is chairman of AEC's high-energy physics advisory panel (HEPAP), noted that particle physics has suffered, along with other areas, in the funding shortage. He suggested that particle physicists could consider themselves relatively fortunate because the 200–400 GeV accelerator was still going ahead, although money for the new machine means that other programs must be cut. HEPAP has the responsibility of advising AEC on the distribution of high-energy physics funds.

Sachs is chairman of the elementary-particle panel of the National Academy's

Physics Survey Committee (the Bromley Committee). The panel is trying to formulate priorities in high-energy physics, and also justify overall expenditures in this field. Weisskopf and Sachs both asked for considered views and suggestions for their panels.

Hand saw an "overpopulation" of high-energy physics, and suggested that too many young physicists are trying to enter a field with diminishing opportunities. Bartlett pleaded the values of the relatively smaller and older machines of which the Princeton-Pennsylvania and the Cambridge Electron Accelerators, which face partial or complete shutdown, are the chief examples. Rosen said the time has come to examine the system that makes decisions and allocations—he noted that physicists who counsel patience in the present situation are generally those who have tenure. Alvarez observed that the situation could be much worse, and that high-energy physicists have done a poor job of explaining their work to US taxpayers.

Various comments from the floor included: "overglamorizing" of high-energy physics; the suddenness of the budget cuts; the inability of younger physicists and those "on the floors of the accelerators" to make their voices heard; the delays and red tape in proposing an experiment, and the lack of adventurous spirit within the scheduling committees.

IN BRIEF

Crystal Lattice Defects will be published by Gordon and Breach. The new journal, edited by R. R. Hasi-guti of Tokyo University, will publish fundamental experimental and theoretical papers.

A *Cumulative Author Index* covering volumes 141–188 of *The Physical Review* and volumes 16–23 of *Physical Review Letters* (1966–69) is available from Department BN, American Institute of Physics, 335 East 45th Street, New York, N. Y. 10017. The price is \$7 for members of the American Physical Society and \$14 for nonmembers.

Euratom will provide technical assistance to the International Atomic Energy Agency in establishing an international nuclear information system.

"The Sun in Action," a 10-minute time lapse, 16-mm silent film showing solar phenomena, is available through the Lockheed Solar Observatory, PO Box 551, Burbank, California 91503. □



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