help of dedicated scientists and engineers focusing their efforts on improving transportation with a minimal adverse effect on environment." He said that most of the Center's staff could go to work on problems in transportation immediately.

As examples of prospective DOT work at the Center, Volpe listed R&D on: automated air-traffic control, aircraft collision-avoidance systems, aircraft automatic-landing systems, sensors for measuring air pollution from vehicles, systems analysis on urban transit and highway traffic, ocean buoys to transmit weather and oceanographic data, and auto-driver simulation systems to study accident causes and prevention.

In early May DOT said that the Center would have about 425 employees of all types on 1 July. Of 826 employees at the beginning of this year, 159 had left by May and another 56 were planning to leave. DOT said that it would keep as many employees as possible, that it was sending letters telling employees whether or not a "suitable position" for them at their current speciality and salary seemed likely at the Center, and that those obliged to leave might be considered for other jobs in Transportation.

Inquiries by PHYSICS TODAY in late May helped to clarify some aspects of the job situation at the Cambridge Center. From the beginning of this year to 1 July the professional staff, almost all of whom have graduate degrees, was expected to drop from about 430 to 240. Of these, employees working in physics jobs were being cut from about 250 to 90. Many physicists, some of them definitely "senior," were effectively told that their jobs would end on 30 June. An estimated

THE PHYSICS COMMUNITY

Teachers From Black Colleges Evaluate Their Physics Programs

Should we teach physics differently to black students? When 50 physics teachers from black colleges, and other interested persons, exchanged their views recently the answer was decidedly "yes." In honest and realistic terms, the group evaluated and tried to redirect existing programs. From this forum on common problems came a recognized need to create independent, self-sufficient programs geared to the black student. Chaired by James Mayo of Morehouse College, the conference was sponsored by the Sloan Foundation and held during the middle of May in Atlanta, Ga.

The problems were those found in most small colleges, yet their emphasis changed within the context of being black: How do you combat the lack of successful models and poor motivation, and how do you build confidence? These questions were common to all six discussion groups concentrating on different topics; for the answers, they considered teaching experience in the black college as the primary source. Because most of these schools are beginning to experience competition from the larger, predominately white universities for students and faculty, the atmosphere throughout the conference carried a sense of urgency.

Much of the discussion kept turning to the high school, which was soon identified as the core of many problems. "Because the local high schools are inadequately preparing students in the sciences, more attention should be given to training high-school teachers," said Walter Massey of Brown University. Some suggested remedial courses for the student at the college level, if one could break down resistance to these courses; still others recommended extending the curriculum over a five-year period.

In evaluating the curriculum, Julius Taylor of Morgan State College commented that "most students are not prepared for graduate school, because the present emphasis on specialized courses does not give the student a good understanding of basic concepts." Many others also advocated a curriculum that concentrates on basic concepts instead of on the overspecialization found in the larger universities. The consistent theme was the need for these schools to create their own programs, especially because many felt that the existing programs and textbooks did not fully meet their students' needs. One specific recommendation called for an ad hoc group to study the funding of an effort to develop instructional materials, especially text material.

But even if the curriculum was improved, the real need is for better teachers. George Neely of Fisk University "strongly favored the idea that the schools might reap greater benefits by going after an MS recipient, developing him as a teacher and, at the same time, encouraging him to obtain a PhD. That is, fit the man to the job, rather than the job to the man."

The major barriers in faculty recruitment are lack of funds and research facilities. A possible solution, for which a proposal is being written, is for a few geographical centers, each based around one college that is near laboratories and industries. In this way, each center would have a combination of advantages that would make it easier to attract money and good physicists interested in research. The objective would be for the colleges to exchange teachers with each other in addition to the present exchange programs with larger universities, which, it was felt, often do not benefit the smaller school. For example, at one school a chemistry professor was sent to a larger university for two semesters and in return the smaller school received an English professor for one semester. Regional summer workshops were also mentioned as a way to improve faculty and students.

The conference ended with the appointment of an executive committee headed by Mayo, to organize the proceedings and to plan future projects.—TJ

AIP Names Robert Marks as New Associate Director

Robert H. Marks has become associate director for publications and information for the American Institute of Physics, as of 16 May. Marks is overseeing the publication of journals, including PHYSICS TODAY, for AIP and its member societies, and the AIP information division.

Marks, who received his BS in civil engineering from the Massachusetts Institute of Technology in 1947, was previously the public relations manager for Michel-Cather, Inc. From 1959 to 1969 he was with McGraw-Hill, Inc, serving as the managing editor of *Power* for the last five years.

Unsupported Papers Delayed By AIP; Charges Increased

The American Institute of Physics has reinstated a three-month delay for those domestic and foreign articles for which the page charges are not honored, and has increased this charge for most of its journals.

H. William Koch, AIP director, stated

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, microwaves 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 (⅓ 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.

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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.