

(Roscoe B. Jackson Memorial Laboratory, Bar Harbor, Me.); two of his students, Judy Dick and Robert Kamen; Donald Barr; and students from the Science Honors Program, School of Engineering, Columbia University. There will be a paper on summer science training programs for secondary school students of high ability, by Conrad E. Ronneberg, National Science Foundation. The last item on the program will be exhibits by students of New York City schools.

*Conference on Scientific Manpower.* The program of the Conference on Scientific Manpower, "Developing Student Interest in Science and Engineering," will be cosponsored by the Engineering Manpower Commission, Scientific Manpower Commission, National Science Foundation, and Section M-Engineering. Samuel Schenberg, New York City Board of Education, will preside; 27 Dec. Papers will be presented on summer research experiences for high school students (Harold

A. Edgerton, Richardson, Bellows, Henry and Company, New York); science aptitudes of high school students (John C. Flanagan, American Institute for Research, Pittsburgh, Pa.); high school backgrounds of science doctorates (M. H. Trytten, National Research Council); the role of science fairs (Phoebe H. Knipling, Arlington County Public Schools, Arlington, Va.); the junior engineering technical society program (Richard T. Fallon, Michigan State University).

## Science in the News

### Science Advisory Committee and National Goals Reports Emphasize Growing Roles of Government

The President's Science Advisory Committee issued a report last week on basic research and graduate education which states the case for federal support for science in stronger terms than either party platform used, or either presidential candidate used publicly. It was of interest that the paper was issued as an official White House document, bearing the endorsement of President Eisenhower, a man who does not view the prospects of an increasing federal budget or an increasing federal role in national affairs with any pleasure. These circumstances reflect the extent to which even economic conservatives have come to accept the necessity, if not the desirability, of a clear increase in the role and responsibility of the federal government in the coming years.

The one statement in the report printed in italics says this: *"Whether the quantity and quality of basic research and graduate education in the United States will be adequate or inadequate depends primarily upon the Government of the United States. From this responsibility the Federal Government has no escape. Either it will find*

*the policies—and the resources— . . . or no one will."* The report gives no cost estimates: it implies only that it would be impossible to spend too much and that it is necessary to spend a good deal more than is now being spent.

A week later, last Monday, the President's Commission on National Goals published its report, the result of a year-long privately-financed study under the leadership of a committee appointed by the President, and here again the report reflected the acceptance of a major increase of the role of the federal government, particularly in the area of education. In the individual comments, one member, Crawford Greenwalt, president of DuPont, said the report called for "unprecedented increases in government expenditures." He said he was concerned about the sort of tax policies that might result. He stressed the need for tax revisions that would encourage the growth of the economy. But he offered no objection to the "unprecedented increases" in government spending themselves.

At the opposite end of the political spectrum represented on the commission, George Meany, president of the AFL-CIO, complained that the report only "grudgingly recognizes the roles and responsibilities of the federal government." Democrats in general com-

plained that the commission, although intended to be nonpartisan, contained a disproportionate number of Republicans. But to the extent this was true it only strengthened the significance of the paper as a reflection of the leftward shift of American politics as a whole; for the report is a good deal closer to the tone of the Democratic platform than to that of the Republican platform.

The report, for instance, although in somewhat vague language, endorses the proposal pushed through the Senate last year by the Democrats for unrestricted federal aid to education, with the states free, indeed encouraged, to use the money for teachers' salaries. President Eisenhower made it clear that he would veto any such bill if it ever reached him, on the ground that it would lead to federal control of education.

In the general economic sphere the report accepts the idea that "extraordinary measures" to stimulate the economy may be justified, these possibly to include "the greater individual effort and sacrifice exemplified by forced savings and reduced consumption." The circumstances which would impel consideration of such measures would not be an acute depression, but merely the failure of the economy to grow at a substantially faster rate than it has in recent decades. Indeed, the report assumes as a starting point that measures will be put into effect to virtually eliminate recessions and to keep unemployment consistently below 4 percent. The commission does not regard these steps as taking extraordinary measures, but both objectives imply federal intervention in the economy going beyond anything in the past, when recessions have been quite common (we now appear to be in our third in about six years),

and unemployment above 4 percent has not been rare (at last report it was 6.4 percent).

In sum, the National Goals study goes considerably beyond what might have been expected a few years ago from a committee report in which very little could be included over the opposition of such solidly respectable commission members as the president of one of the nation's largest corporations and the chief of the United States Chamber of Commerce. And like the scientist's report, carrying Eisenhower's endorsement for a series of proposals which includes making federal money available for college professors' salaries, the tone of the National Goals report suggests why the outlook for Kennedy's New Frontier is more hopeful than the narrow margin of his election might suggest. For it is not Kennedy single-handedly trying to reshape a country satisfied with the way things are now, but Kennedy offering to lead the country in a direction in which a wide spectrum of the nation's leading citizens, including many who classify themselves as conservatives, believe the country must go.

#### Science Report

Although the major significance of both reports may lie in their acceptance of the need for more vigorous action and bigger spending by the federal government, the principal purpose of the scientists' report was not to make a case for more money, although that is clearly implied, but for a philosophy for allocating as much money as might be available. The central point was that, in anything but the very short run, a policy of trying to strengthen science by investing in research without a parallel investment in the training of the next generation of scientists is self-defeating. The present difficulty is that current policies for investing in science not only pay too little attention to the training of new scientists, but that support is often distributed in such a way as to draw money and talent away from teaching.

The first large-scale federal investment in science, during the war years, was based on the need to buy certain types of information, to get the information quickly, and, particularly, in the special case of the atomic bomb, to make the breakthrough before the enemy did. There was not much room for thinking of preparing the next generation of scientists. There is still a lim-

ited case for this approach in areas relating to national security, but, over-all, the problem is no longer to make a comparatively few specific breakthroughs as quickly as possible, but to strengthen the scientific capability of the nation.

The whole way of thinking that regards scientific research as an investment in getting specific pieces of information that would in turn pay for the investment makes little sense as the basis for a national science policy, and a number of government agencies have been moving as far as they can toward seeking to strengthen science through investments in facilities and fellowships, as well as in the traditional grants for research projects which promise to yield significant new information.

The Science Advisory Committee report argues that not only these broader investments should be given more emphasis but that the philosophy behind the federal support of science should be based on a recognition that support for educational facilities and for training the next generation of scientists is part of the same process as support for basic research.

The report argues that an end should come to the practice of refusing to include full payment for overhead and subsidiary expenses when grants are made for research projects, for this forces the universities, in order to get grants to support their research, to draw money away from teaching, from faculty salaries, and from the whole area of the social sciences and humanities. It argues that the graduate fellowship program should not only be expanded to make support available to all truly promising candidates, but that these fellowships should be enlarged to provide grants to the universities to cover the full cost of the student's training, rather than merely paying the expenses to the student, beyond which the university must put up its own money, often several thousand dollars per student per year.

These and several other proposals in the report imply a very substantial increase in the federal science budget, but the report makes it clear that the committee regards such proposals as important even if there is to be no increase in over-all federal support for science. There is considerable feeling in the committee that too large a proportion of the federal science budget is being spent on costly space and defense projects, when the money could be

more usefully invested in research and science education. The committee feels that investment in basic research should be doubled as quickly as possible (from the current \$800 million per year to at least \$1500 million) and that, if necessary, money could be taken from development funds, without increasing the over-all budget for research and development.

Some modest beginnings toward the sort of support for science the committee would like to see have already been made. The National Science Foundation has begun a program for refurbishing graduate laboratories, a step away from the policy of making grants only for major pieces of equipment which the universities could not otherwise finance. A still fairly small program of unrestricted institutional grants has been set up, giving universities a small proportion of their project grants to be used in any way the universities feel will strengthen their science programs. The National Institutes of Health have been making some grants for facilities, once again a step away from the policy of making grants only for specific research projects. The committee would like to see the Federal Council on Science and Technology strengthened to provide a better mechanism for seeing that national policies on support for science, once established, are followed to a reasonable extent by all agencies supporting science, including such agencies as Defense and the AEC whose more narrow interests naturally tend toward the older philosophy of buying useful information rather than a broader interest strengthening American science.

The report does not attempt to lay down a national policy in specific terms. This will lie in the hands of the new Administration and the new Congress. What the report does is to give an impressively vigorous and forceful statement of a point of view, with the hope that it will help shape the ideas and attitudes of the career government officials, the new political appointees, leaders in Congress, and the university administrators, all of whose understanding and support of a changing attitude toward what is involved in the wise support of science will be needed if the attitudes contained in the report are to be translated into effective action.

The full report, which covers many more points than those mentioned here, will be printed in the 16 December issue of *Science*.—H.M.