universities, he said, should not be small institutions in little cathedral towns (a reference to those now being established) but large ones in large cities, open to teachers from the business world. In such universities, new chairs in new fields should be easier to establish, artificial distinctions between applied and basic research or between arts and sciences should be allowed to disappear, and the cult of the useless in scholarship should be banished.

Discussing defense research establishments, Crossman said some of them "are among the finest in the world," but Britain could not "afford to have so much of our scientific resources huddled into these places if we're not using them fruitfully. . . . One of the reasons we want to get rid of the independent nuclear deterrent is to remove the security label. . . . I would hope to declassify not only a large number of documents but also large parts of these institutions and open them for civil uses."

The idea of introducing scientific advisers into government, Crossman said, was not so much a gimmick for boosting the economic growth rate as a means of forcing the government to face technical questions in a period of "permanent emergency" resulting from technical change.

"The deepest thing which is wrong with this country is a strain of amateurism and of oligarchy. We are a country which has gentlemen who believe that you don't have to know anything special, anything particular; that you don't have to have technological skill; that a good education in a pure language will equip you to take great decisions. This tradition is the greatest single brake on modernizing this country, whether you meet it in Whitehall, the House of Commons, the cabinet, the board of a company, or, above all, in the university."

With this philosophy behind them, ministers Michael Stewart and Frank Cousins now face the difficult job of using more money and initiative to stimulate civilian economic growth. Although Crossman believes that the government's position as a large purchaser will be significant in this effort, he also spoke of large special development contracts. In view of the difficulties already experienced in developing airliners such as the Comet, or British-designed power reactors fueled with cheap uranium-235, competitive with American reactors, attractive subjects for such development contracts may be hard to find. These technical difficulties are widely discussed in Britain, a nation much given to carping. There is a feeling that it is tough to play at the technical-development table dominated by Americans and Russians. But the new Labor government evidently is gearing up to try.—VICTOR K. MCELHENY

Money for Science: NAS Studies Likely To Have Large Influence on Future of Government Support

Starting next month, the National Academy of Sciences will issue the first in a series of reports that are likely to have considerable influence on the future of federal support for the various scientific disciplines. Science and government studies, it is true, often come and go these days without affecting anything but Washington's leading export industry, scrap paper processing. But the forthcoming Academy reports will probably have a long-lasting effect, and the scientific community would be well advised to regard them as highly significant.

The studies, which have been under way for the past year, were organized by the Academy's Committee on Science and Public Policy to develop realistic appraisals, rather than lobbyist pleadings, on the scientific opportunities and financial needs in major fields of research.

For this purpose the committee, chaired by George B. Kistiakowsky of Harvard, set up subcommittees of approximately ten members each as follows: physics, chaired by George E. Pake, of Washington University; chemistry, Frank H. Westheimer, Harvard; astronomy, Albert E. Whitford, Lick Observatory, Mt. Hamilton, California; plant sciences, Kenneth V. Thiman, Harvard; and computer technology, J. Barkley Rosser, University of Wisconsin. In addition, it is also planned to establish a study on molecular biology. The first report, on astronomy, was completed this week and is scheduled for publication in mid-November.

The goal of appraising, rather than lobbying, is a difficult one to maintain, especially at a time when financial pressures are causing some scientists to conclude that unwarranted affluence has overtaken other fields to the detriment of their own. But the Academy has been running the studies with a fairly tight rein, and, as far as such things are possible, the subcommittees have been restricted to analyzing the present state of their respective fields, the opportunities that lie ahead, and the financial support that would be required to realize those opportunities.

The decision to undertake the studies appears to derive principally from the leveling off of federal support for science during the past two years. As the money has grown tighter, concern has developed that political judgments and connections might come to outweigh scientific judgments in the allocation of federal funds. And it was felt that, before the struggling became too intense, it would be extremely useful to have each discipline set forth what can be reasonably anticipated from it in coming years.

Actually, there has so far been relatively little interdisciplinary combat over federal funds, but few things seem to distress the leadership of the scientific community as much as a public row among scientists, and it is fears of just such a row that contributed to the decision to undertake the Academy studies.

A little over a year ago, William D. Carey, executive director of the Bureau of the Budget, made a prophecy about how the scientific community might react to financial distress: "When dollars for Big Science become scarcer," he told the 17th National Conference on the Administration of Research, "the scientific community can be expected to break ranks and form clusters of opinion and dissent . . . . [We] can expect the fur to fly and the issues to be illuminated with far more pungency than we have seen thus far."

It may be that financial conditions are not yet suitable for producing the spectator sport foreseen by Carey, but over the past year, as money has become tight, if not scarce, the evidence has been mixed on whether his prophecy is en route to being fulfilled. There are scientists casting covetous looks at other disciplines, institutions, or regions, and some of them have been making the rounds in Washington to

plead their case. Also in growing numbers, states and regions are lobbying for federal research support. Colorado, for example, is seeking to become the site for the 800- to 1000-Bev accelerator now in the early stages of design at the Brookhaven National Laboratory. And multitudes of non-space researchers know just what they would do if they could get their hands on some of that moon money. But, despite these signs of financial agitation, the dominant impression is that the scientific community is not moving toward a dogfight over the division of federal support.

In part this can probably be attributed to the fragmentation of federal support among numerous federal agencies, and the consequent lack of any battlefield where, for example, the biologists might have it out with the chemists. It is, in fact, far easier for subdivisions of a discipline to struggle against each other for the favor of the agency that provides the bulk of support for the overall discipline. A case in point would be the physicists who lobby against each other for shares of the Atomic Energy Commission's physical research budget.

But it isn't only the lack of a suitable battleground that is helping to keep the peace among the disciplines. Whether because of timidity or statesmanship, the scientists who are concerned about these matters, and who are in a position to try to do something about them, seem to have very little stomach for waging the sort of Washington lobbying campaigns that other segments of American society indulge in when dissatisfied with their federal share. And, once the Academy reports are on record, it is going to be increasingly difficult to make a row—unless the row happens to be in line with the Academy's findings.

The reason for this is that, with remarkable rapidity, Kistiakowsky's Science and Public Policy Committee has become very well connected in Washington—particularly with Congress, which heretofore was off the beaten track for the leadership of the scientific community. The scientists originally came to Washington at the invitation of the Executive agencies, which treated them with courtesy and generally refrained from dragging them into any messy political business. When Congress beckoned, the reaction of many scientists was that Capitol Hill was too dominated by the philosophy of "what's in it for my district" for cool scientific advice to have any place there. However, it appears that, as Congress started to snipe at federal support for science, the leadership of the scientific community was forced to the conclusion that if it was painful to work closely with Congress, it might be even more painful not to work with it. One consequence of this shift in attitude was a recent decision of Kistiakowsky's committee to accept an invitation to provide scientific and engineering counsel for the House Science and Astronautics Committee headed by Representative Emilio Q. Daddario (D–Conn.).

Linked to Congress with this formal tie, the Kistiakowsky Committee stands as a unique scientific bridge between the two branches of government, and its views on federal support for science are very likely to be extremely influential. Interestingly, the first questions directed to the Academy by Daddario's Committee fall within the subject area of the studies soon to be forthcoming. They are: (i) What level of federal support is required to maintain a position of leadership for the United States through basic research in science and technology, and what are the economic, cultural, and military applications? (ii) What judgment can be reached on the balance of support now being given by the federal government to various fields of scientific endeavor and on adjustments that should be considered?

The questions, which have been turned over to an *ad hoc* committee headed by Kistiakowsky, are about as precise as the question of what part of a family budget should go for recreation. But there is a saying that you can't beat something with nothing, and once Kistiakowsky and his group have come up with their answers, it will be tactically difficult for anyone who disagrees to match them in prestige, data, or easy access to the political councils that will ultimately make the decisions.

—D. S. GREENBERG

Politics: Johnson and Goldwater Scientist Groups Show Differing Views on Civilian Technology

Outside of matters related to weapons development, the scientist and engineer groups that have taken sides in the presidential election have sounded very much alike when they have addressed themselves to science and technology.

There now appears to have developed one additional area of difference, and that involves the role of the federal government in what has come to be referred to as civilian technology—that is, research and development of nonmilitary and, usually, commercially oriented products. This difference showed itself last week when Scientists and Engineers for Goldwater–Miller issued a statement of principles which declared that "our government should confine its major research activities to projects which private industry cannot be reasonably expected to undertake."

By contrast, just a few days before, Senator Humphrey, the Democratic vice-presidential candidate, addressed a Washington, D.C., rally of Scientists and Engineers for Johnson–Humphrey and stated support for closer ties between government and industrial research. Humphrey was speaking for himself and the party, but Scientists and Engineers for Johnson–Humphrey had a hand in drafting his speech, and many of those in the leadership of the organization have long been associated with efforts to have the federal government stimulate industry to expand its research and development activities.

"We will not—let me assure you—be deterred by ill-informed denunciations of government planning or other bogies of reactionary minds," it was stated in Humphrey's prepared text.

"Industrial clinics," he said, "taking advantage of the resources in engineering, business economics, and other academic specialties possessed by our fine universities, can be established on campuses around the nation. These clinics can serve the plurality of industrial needs in different regions of the United States."

The candidate's proposal is, of course, derived from the now-defunct Civilian Industrial Technology program which the Department of Commerce unsuccessfully tried to sell to Congress during the Kennedy administration. And, considering that industry, which is the source of the bulk of scientist-engineer support for Goldwater, was instrumental in defeating the program, it is not surprising that the Democratic and Republican scientist-engineer groups should split on this particular issue.

In other respects, however, they seem to remain in agreement. The Goldwater group's statement of principles opened with the assertion that "our continuing and great national need is for basic research in science and engi-

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