

researchers surveyed. As the report says, "A small minority find some offsetting gains, in the form of better discipline and closer planning of current and future spending. In general, however, these enforced virtues are regarded as overwhelmingly offset by the loss of opportunity and continuity in scientific research and the bitter fruits of budget reduction."

The weakness of the report is that, while it cites numerous woeful examples, it fails to put these cases in broad perspective. In view of the time and resources available, this is understandable. But when the report says, for example, "In some cases, the effects on the institutions themselves are serious; the continued existence of some has been placed in doubt," it raises an expectation of specific and telling details which it does not fulfill.

Much the same thing can be said of the report's manpower analysis. The statistical case rests on a relating of federal spending for research and development in the past to the employment of R & D scientists and engineers. Taking into account the rising cost of employing scientists and engineers, the report estimates that a 15-percent annual increase in federal R & D spending would bring a 4.8-percent yearly increase in employment of scientific manpower, while a constant level of spending would cause a 1.2-percent annual decrease in employment and a widening "manpower gap." This analysis, however, is based on aggregate data generated in a period when there was a much smaller manpower base, and, also, it does not offer the kind of breakdown by category that would be most useful.

The report also follows fashion in linking the fortunes of science to the welfare of society. A section headed "Science as the key to social evolution," however, invokes authority by quoting the President and President-elect, members of Congress, and scientists speaking as statesmen rather than offering anything acceptable as scientific evidence.

In fact, as the report says, "The place of science in the fabric of society has not been, nor is it now argued." What is being questioned is whether there should be a 15-percent guaranteed annual increase, which is how organized science would like to regard its yearly growth subsidy.

The point seems to be that the old generalizations about the value of sci-

Summary of Academy Recommendations

The following is a summary of the recommendations from the report "The Crisis Facing American Science," released last week by the Ad Hoc Committee for Evaluation of Federal Support for Science of the New York Academy of Sciences.

"(1) The federal government should, at the earliest possible moment, take short-term corrective action to offset the critical short-term effects of the cutbacks.

"(2) Guidelines for the annual growth rate of federal spending on scientific research should be established. The growth of the economy can well sustain a rate of 15 to 20 percent per annum.

"Such a policy, however, must be founded on our perception of the fact that existing programs do not use available scientific knowledge and manpower to their fullest extent. (Ideally, spending on science should be defined by human needs—social, economic, and cultural—and not by a fixed formula of growth rate.)

"A case can be made for increasing scientific research expenditures at this time by 15 percent a year—first, because it is based on society's previous record of response to its many research needs, and second, because it will allow universities to balance research growth with that of graduate education.

"(3) Improved methods of consultation and communication should be established between the federal government and the scientific community, so that each can better understand the unique problems, pressures, and challenges facing the other.

"(4) Since scientific research is generally a long-term process, every effort should be made to put the scientific research budget on a long-term, multi-year basis."

ence will no longer serve. The reaction of the New York Academy of Science seems, in part at least, conditioned by the old responses. But the New York group deserves considerable credit for leaping into the breach.

The 151-year-old organization is not a self-selecting, geographically limited group, but, rather, is an international body open to scientists in all scientific disciplines. The report is the New York Academy's first serious venture into the public policy field, and its intention to pursue its interest could mark the arrival of a significant independent group in the field.

A balanced and detailed assessment of the effects of federal cutbacks on research and research institutions should be a top-priority matter for American science. The job requires a combination of information gathering and interpretation which is too big for most private agencies, and too awkward—because of congressional sensitivities—for governmental agencies, such as the National Science Foundation (NSF), which is the logical nominee.

The buck, therefore, inevitably passes to the quasi-governmental National Academy of Sciences and its Committee on Science and Public Policy headed by Harvey Brooks of Harvard. It has been known since September that COSPUP has been quietly cooperating with associations representing universities with major research interests in gathering detailed information from members on the effects of federal cuts. When or in what form the results of this investigation will be presented to the administration and Congress is not clear. But the job is perhaps the most important and most demanding one that COSPUP has undertaken, for if American science faces a "research gap" and a "manpower gap," this is, in part at least, because of a "persuasion gap."

—JOHN WALSH

Erratum: In the article "Dallas: Larger role proposed for research center" (13 Dec. 1968), it was stated incorrectly that, as recently as the late 1950's, no institution in the Dallas-Ft. Worth area offered Ph.D. programs in science. The University of Texas's Southwestern Medical School at Dallas awarded a Ph.D. in microbiology in 1955 and one in biophysics in 1957; to date, 24 Ph.D.'s have been awarded altogether, for work in six different scientific fields.