

March. Clinton's budget is bound to reveal better than his answers to questions by the news media how

much buying power he will give science and technology agencies.

—IRWIN GOODWIN

COMMISSION ON NSF'S FUTURE ENDORSES THE PAST—ORACULARLY

When the Commission on the Future of the National Science Foundation issued its report on 20 November, the 11-page document brought sighs of relief from academic scientists who had feared that the foundation was going to change its purpose. But the report contained enough Delphic statements to satisfy those who would expand the foundation's mission into more applied research and thereby help to improve the nation's industrial competitiveness.

For starters, consider the commission's main conclusions:

Society's support for the NSF and for university research is based on the confident expectation that the generation of new knowledge and the education of a skilled workforce are necessary (though not sufficient) investments to achieve our national goals of a high quality of life in a productive and growing economy. In accepting society's support, the scientific community naturally assumes an obligation to be both responsive to national needs voiced by society as well as the intellectual priorities solely initiated by the scientist or engineer.

Concern over technology application and competitiveness sometimes conjures a choice that budgeting is decided on either the criteria to please the scientist or to serve the public need. In reality these criteria and interests are congruent. The history of science and its uses suggests that the NSF should have two goals in the allocation of its resources. One is to support first-rate research at many points on the frontiers of knowledge, identified and defined by the best researchers. The second goal is a balanced allocation of resources in strategic research areas in response to scientific opportunities to meet national goals. It is in the national interest to pursue both goals with vigor and in a balanced way. The allocation of resources should be reviewed regularly with those two goals in mind. Positive responses to both will enhance the standing of science.

So it appears the commission would

have it both ways: NSF should continue to fund basic research, largely directed by the ideas of creative individual scientists and engineers, and increase its support, in a balanced way, of "strategic research areas" that have some payoff for society, possibly in such practical fields as computer networking, biotechnology and new materials for better houses, electronics and transportation.

The commission was formed last summer in an effort to quell the tempest that swirled through the academic science community after the Senate appropriations committee directed NSF to face up to the "new reality" of global economic competition in today's post-cold-war era by helping to transfer the results of basic research into industrial applications. Walter E. Massey, NSF's director, stepped right into the maelstrom in August by issuing a public memo to the National Science Board advocating "an expanded portfolio of programs that would be integrated with ongoing activities and closely aligned with industry and other government agencies" (PHYSICS TODAY, September, page 53).

That sent NSF clientele to their word processors and fax machines, afraid that the programs Congress and Massey were proposing would shortchange the traditional investigator-initiated basic research. At that point, the board decided to appoint a special commission to look carefully at the foundation's present condition and future mission.

The commission, consisting of 15 members under the cochairmanship of William H. Danforth, chancellor of Washington University in St. Louis, and Robert W. Galvin, former chairman and CEO of Motorola Inc, held three public sessions over the three months it was allotted to produce the report. There were remarkably few arguments over the conclusions and recommendations. NSF and the academic researchers it supports, says the commission's report, "should complement rather than replace the roles of those engaged in technology development. Redirecting the NSF's activities from research and education would have little or no effect on the US competitive position in the near term, but would severely restrict pros-

pects for the long term. Research and education activities offer ample opportunity to increase the potential contribution of scientists and engineers to society." Commission member John Armstrong, IBM's vice president for science and technology, forcefully expressed the implications of the commission's statement when the report was presented to the science board. Changes are needed in NSF, he said, but "saving industry is not one of them."

Indeed, the commission warns Congress and the public about expecting too much from NSF, which accounts for a paltry 3% of the Federal government's R&D spending. In fact, it questions the very premise behind the argument for more direct involvement by NSF in industrial research: "Failures in the marketplace have not been the result of slow transfer of academic science to industry. . . . All manner of other more prominent factors, including the stewardship by American business, far outweigh whatever could be traced to the technology itself or the technologists."

Accordingly, the commission ignored the demands of Congress that NSF needs to become more relevant to the nation's economic and social needs. This view comes from some who are NSF's most devoted friends on Capitol Hill. "There are many Americans who think they are paying more and getting less from research," says Representative George E. Brown Jr, chairman of the House Science, Space and Transportation Committee. Some in the business world are calling for more practical research as a way of contributing to US industrial competitiveness. "I don't think pumping money into basic research and keeping your fingers crossed is adequate for this new world," says John Rowell, vice president of Conductus, a superconductivity startup firm in Sunnyvale, California.

Those who benefit from NSF's largess think differently, not surprisingly. Most of the 800 scientists, engineers and university administrators who sent letters and e-mail to the commission said, in effect, "if it ain't broke, don't fix it." The report, said Danforth, "is in line with the vast majority." Massey, however, received a somewhat different message: He interprets the commission as endorsing "a greater integration of science and engineering research into society, and the public's increasing expectations for the results of this research" as well as "more active use of partnerships, especially with industry . . . in strategic research areas."

—IRWIN GOODWIN ■