A Forceful New Hand on the Reins at NSF

Former IBM executive Erich Bloch wants the United States to be Number One in all areas of science and engineering

The National Science Foundation (NSF) has had trouble hanging on to its leaders over the past few years. Now, it appears headed for a period of relative managerial stability under a seasoned technocrat, Erich Bloch, who is the first director to come from industry.

Bloch, whose job officially started last September, has quickly established himself as a strong leader, bringing with him the expertise accumulated from a long career at IBM, which he joined in 1952 after getting a B.S. in electrical engineering at the University of Rochester. Among other projects, he worked on the development of the IBM 360 computer, for which he received a National Medal of Technology in February. During the 3 years prior to coming to NSF he served as IBM's vice president for technical personnel development and chaired the Semiconductor Research Cooperative, an industry group that funds research in universities.

Primary among Bloch's concerns are enhancing industrial competitiveness, beefing up engineering, and refurbishing the nation's research infrastructure. He puts great emphasis on the increasing complexity of research and the need to promote interdisciplinary work. His priorities are well reflected in the proposed fiscal year 1986 budget, which he has been defending with relative ease at congressional budget hearings. NSF, unlike almost every agency outside the Defense Department, is scheduled for an increase of $67 million, for a total of almost $1.57 billion.

Bloch has adapted quickly to his new duties. The differences between his old and new jobs are "not as great as people make them out," he says. "A lot of my friends warned me: if you pull on a string, nothing happens at the other end. But the foundation is not the typical bureaucratic organization . . . the people are very responsive, very professional. I'm kind of impressed."

The German-born Bloch is forceful, independent-minded, competitive, and not without charm. He has been described by other NSF officials as straightforward, an excellent manager, a "direct action kind of person," and one who "takes responsibility for his actions."

He appears to see himself as the right man at the right time—that is, when the agency is moving aggressively to foster collaborative relationships between universities and industry. "If I had been offered this job 5 or 10 years ago, I wouldn't have been interested," he says, because of the "adversarial, hands-off" relationship between the two camps. But all that has changed with extraordinary rapidity because of the heavy competitive pressures on industry, eagerness for dollars in academia, and the growing complexity of scientific and engineering disciplines. Says Bloch: "I have a feel for the need for cooperation in research and education and an opinion of what should be done."

Constance Holden

Erich Bloch

National Science Foundation director promises that science will not suffer from engineering buildup.

This year marks a big surge ahead for engineering at NSF. The centerpiece is the Engineering Research Centers (ERC) program, funded at $10 million in 1985, which is supposed to get an additional $15 million. The centers, five of which are to be designated this year, represent a "new tool," says Bloch. By supporting multidisciplinary projects conducted by university and industry scientists, they are supposed to "capture modern engineering." Ultimately, there are to be 25 such centers, funded at $100 million, one of which will be devoted to biotechnology, an area that NSF particularly wants to stimulate. Bloch says that "in the end" the centers should become largely self-supporting, with continuing government support of only the most "far-out components." But at present no phase-out strategy has been designed.

Some scientists are concerned that engineering, which now occupies over 14 percent of the budget, is going to start elbowing out the science at NSF. Bloch, however, says "I believe very strongly that engineering needs to get more resources but not at the expense of science." He thinks engineering should continue to grow—a total engineering budget of $500 million by the end of the decade is "not inconceivable." But a 50-50 split with science is "nonsense," says Bloch, who points out that engineering gets much more direct support from state governments and from industry than does science.

Another concern expressed by scientists is that big collaborative programs, such as the ERC and the new supercomputer centers—which are scheduled to receive $200 million in the next 5 years—are going put the squeeze on individual grants. But Bloch says not to worry. Although the proportion of foundation money going to individual grants will decrease from 73 percent to 70 percent, he points out that many such grants will be available in the engineering centers program. But he acknowledges that times are changing: "there is no doubt that the trend is towards more expensive, bigger programs like ERC, ocean drilling and astronomy. That will also happen in chemistry, physics and other areas" as ever newer and costlier instrumentation comes into use. "Instrumentation is driving the social structure of science," says Bloch.

When Bloch refers to "science," the term does not necessarily include the social and behavioral sciences, on which he holds "the conventional views of engineers," according to one NSF official. Bloch acknowledges that "we have an obligation towards those disciplines," and endorses research to "enhance their qualitative aspects" (hence, a $5-million

hike for economics). But he perceives them primarily as support functions: "our main responsibility is to select the ones important to the physical sciences." Bloch thinks work needs to be done in sorting out the priorities in social and behavioral sciences and in coming up with some "common denominators" (the National Academy of Sciences is currently trying to do just this); meanwhile, "the foundation can't be held responsible for doing everything."

Bloch also appears to be cautious about any expansion of NSF's international role, although he says "with the rest of the world making progress in science and engineering it behooves us to look at the international program with new interest." Former NSF director Guyford Stever, who is heading a study on the subject, believes the foundation should take a more prominent part in international science policy, but Bloch is reluctant to have NSF mixed up in any initiatives other than those related to basic research. Appointing a "foreign secretary" (one of Stever's suggestions) for NSF "is a bit too highfaluting for me," says Bloch.

Bloch wants to promote global cooperation insofar as it benefits American science, but he does not see NSF taking a direct role in addressing global problems, such as how to build up the scientific infrastructure of developing nations. "I am more directed toward making sure that our own infrastructure and research is the best in the world."

Bloch makes no bones about the fact that he sees the issues in a very competitive light. "I think we have to try to be the best in all those areas that are of importance to us. I am pretty sure there's an area of no importance to us but I don't know what it is. . . . A lot of people are upset about that kind of approach to life. They say science is international, so who cares who does it. I say science is no more international than commerce is. . . . I think it's a highly competitive field, I don't apologize for it."

Bloch's views appear to be very much in line with those of General Electric executive Ronald W. Schmitt, chairman of the National Science Board (NSB). "No board is effective without extremely close working relationship with the CEO, and we have that," says Schmitt. Ties with the NSB, which intends to take a more active role in the direction of NSF, will presumably be further enhanced by the appointment of board member John H. Moore, an economist at the Hoover Institution, to the deputy directorship.—**CONSTANCE HOLDEN**

Newman's Motor: Does It Work or Doesn't It?

The creation of a perpetual motion machine would be, as one scientist puts it, "one of the world's greatest inventions." But a man who claims to have invented such a machine is refusing to submit the device for rigorous scientific testing.

For the past 5 years in a widely publicized battle, Joseph Newman of Lucedale, Mississippi, has pitted himself against the U.S. Patent and Trademark Office in hopes of securing a patent on his machine. When the patent office indicated it was unconvinced that the device works, Newman sued the agency to make it reconsider (*Science*, 16 November 1984, p. 817; 10 February 1984, p. 571).

Last week, the court battle took a slightly new turn. U.S. District Judge Thomas Jackson ordered Newman to submit the machine to the National Bureau of Standards for testing. Newman said he will not comply.

Newman asserts that the bureau had a chance to test the device back in 1982, but it refused. The bureau has a different recollection of the circumstances. According to bureau spokesman Mat Heyman, Newman showed up at the bureau's doorstep virtually unannounced and asked for a test of the machine, which he had hauled up from Mississippi on the back of a truck. Bureau staff agreed only to observe, not test, the machine since the bureau has a policy to test only those devices submitted by other federal agencies. At the time, the bureau also did not have the proper equipment. Nevertheless, the bureau did make arrangements with Auburn University, the closest facility to Newman's hometown with the proper equipment, to test the machine. Newman never showed up, according to Heyman.

Newman also claims that the court's order requiring a demonstration of his machine sets an unfair precedent. "No other inventor has had to demonstrate his invention," he says. Not so, says patent office spokesman Oscar Mastin. He says it is not uncommon for the patent office to require testing before a decision is made to issue a patent, especially in unusual cases. "This is an unusual case," Mastin says.

Newman complains that he is not about to spend more money to ship his machine back to Washington for testing. Meanwhile, he has hired a public relations firm to publicize his cause.

Newman has until 30 May to present his machine to the bureau, which now has the necessary equipment. The next court hearing is set for 11 June. If Newman does not submit the device, the judge said, "I will draw inferences."—**MARJORIE SUN**

NIE's Director Ousted, Its Survival in Doubt

The National Institute of Education (NIE), storm-tossed since its inception, may be headed for the guillotine under the leadership of William J. Bennett, the provocative new Secretary of Education. Bennett has asked for the resignations of NIE director Manuel J. Justiz and his boss, Donald Senese, assistant secretary for the Office of Educational Research and Improvement.

The action appears to be a step toward remodeling the department along the lines recommended by the conservative Heritage Foundation in its 1984 government blueprint, *Mandate for Leadership II.* Observers anticipate that Bennett will eventually consolidate the NIE and the National Center for Education Statistics into a single office of research and statistics. This expectation has been reinforced by Bennett's hiring of Eileen M. Gardner, author of the Heritage recommendations, as a policy adviser.

Reportedly chosen to replace Senese is Chester ("Checker") Finn, an education researcher at Vanderbilt University who helped write the Heritage manifesto. Finn, a friend of Bennett's, participated in the original design of NIE when he was working for Daniel Patrick Moynihan in the Nixon White House, but has since denounced the agency for being captive to special interests and failing to confine its focus to basic research.

Education research advocates are particularly concerned over the fate of the educational laboratories and centers competition, which will culminate