

part in this education and adjustment to new situations. But, as was pointed out recently by Neisser (6), "the view that machines will think as man does reveals misunderstanding of the nature of human thought." We can help in this educational process, if in no other way than by exhibiting an understanding of the problems of psychology and sociology. But in so doing let us realize that we cannot simply educate the scientist to a different way of life so that his ways will conform to the commerce of the world. A moral code must also exist under which an individual scientist can think, work, and reason as a unique personality and with freedom to express his intellectual individuality.

Scientist-editors in other countries.

Many laudable activities are going on within the great international scientific organizations. Unfortunately, for various reasons some of the good intentions and practical work of these large groups may not bring about needed change. I feel that small working sessions, such as the one members of the Conference of Biological Editors held last year with their colleagues from Latin America, should be encouraged. Preliminary plans to have a similar meeting this year with representatives from Europe did not materialize, but we may hope that this will be arranged in the next few years.

Scientists who believe that the old, tried, and true is sufficient or who underestimate and fail to understand the need for change may soon be lost in

a challenging and exciting period of history. But those who have the vision to see beyond the obvious, the wisdom to search for and recognize the truth, and the ability to apply basic knowledge for the good of mankind will find this period one of great reward and satisfaction.

References and Notes

1. "A tentative study of the publication of original scientific literature" (International Council of Scientific Unions Abstracting Board, Paris, 1962), p. 292.
2. B. W. Adkinson, *Am. Meteorol. Soc.* **43**, 119 (1962).
3. D. J. D. Price, *Intern. Sci. Technol.* **1963**, No. 15, 37 (March 1963).
4. W. Weaver, *Science* **137**, 1025 (1962).
5. "Science, Government, and Information. The Responsibilities of the Technical Community and the Government in the Transfer of Information" (President's Science Advisory Committee, Washington, D.C., 1963).
6. U. Neisser, *Science* **139**, 193 (1963).

News and Comment

NSF: New Director Has Ordered Small But Significant Steps Aimed at Improving Operations

During the few months that have passed since the leadership of the National Science Foundation (NSF) changed hands, there have been no dramatic changes at that colossus of support for scientific research; rather, the new director, Leland J. Haworth, has instituted a series of small but significant changes aimed at simplifying NSF's relations with the scientific community, and he has been attentive to maintaining the rather good relationship that NSF has come to enjoy with the capital's political community.

As far as the immediate interests of the scientific community are concerned, it appears that the principal difference is that it's going to be easier to get a speedy "yes" or "no" from the Foundation. Furthermore, for the present, at least, there is nothing to indicate that NSF is going to be swept up by congressional concern over tighter bookkeeping on federal expenditures for research.

Of course, a blast from Capitol Hill, such as the one that pushed NIH into more rigid accountability procedures, would be the ultimate test. But there has been no specific pressure for NSF to follow the NIH example, and within the Foundation there is confidence that the existing bookkeeping requirements will stand scrutiny—that they strike an intelligent balance between protecting the taxpayers' funds and sparing the researcher undue paper work.

It is acknowledged that last year's AIBS affair was a regrettable and highly embarrassing one, but the episode is regarded as a painful fluke rather than a symptom of widespread difficulty. AIBS's diversion of grants was unearthed after expansion of the Foundation's audit activities, an expansion that was initiated to catch up with the Foundation's phenomenal growth of recent years. It is now felt that the audit operation is of suitable size, and there is no expectation of any growth of auditing, beyond that necessary to keep up with the Foundation's growth.

This expectation, however, is based

on the assumption that the scientific community is its own best watchdog; it is not unreasonable to assume that if some particularly pungent incident were to come to public attention, the Foundation might, in self-defense, be forced to adopt more restrictive policies.

Actually, Haworth has had very little time in which to make his imprint on NSF, but the few things he has done have elicited approval both inside and outside of the Foundation. He took over the post early in July, and in mid-August he left for 3 weeks to visit the Soviet Union for an international conference on accelerators. (This was an engagement that he had made while in his previous post as a member of the Atomic Energy Commission.) Prior to his departure, however, he took a number of steps aimed at moving a considerable amount of decision-making authority from his own office to the lower echelons of the Foundation. As might be expected, this has not harmed the morale of his subordinates.

In many respects the relocation of authority is testimony that Haworth's predecessor, Alan T. Waterman, had brought the Foundation safely through some long and dangerous political channels and that now it is no longer considered necessary for the decision-making process to be concentrated in the director's office. (To some extent, though, the shift is a reflection of Haworth's style of operation, which one Foundation official summed up as, "I'll give you the authority, and I'll back you up. Now it's up to you if you sink or swim.")

As the Foundation's first and only

director during the first 12 years of its life, Waterman headed an organization that came into existence after a long and bruising congressional fight that produced serious rifts between important elements of the scientific community. On the political side he had to contend with a great deal of know-nothing suspicion of science, while allaying scientists' fears that the Foundation would use its great resources to dictate the direction of American basic research. All this took place at a time when cold war pressures induced Congress to employ the Foundation as a channel for promoting research (the budget rose from \$3.5 million at the start to \$322 million last year). But throughout, Congress was looking hard over Waterman's shoulder, and there is little wonder that, in this atmosphere, he drew the decision-making process into his own office.

Even top-level subordinates tended to occupy the roles of advisers to the director rather than administrators of the Foundation's programs, and on many major NSF projects, such as Mohole, seemingly routine matters were regularly scrutinized by the director. These practices often resulted in delays and the appearance of indecisiveness at the lower echelons, but while some parts of the scientific community writhed, the fact is that the essential job of winning confidence in Congress was accomplished—simply because Waterman was on top of every detail of NSF operations.

Haworth's loosening of the reins has been accomplished, first of all, by reviving the post of deputy director, which had been vacant since 1957. To fill this position, he appointed John T. Wilson, who became assistant to the president of the University of Chicago in 1961 after serving for 6 years as assistant director of NSF's division of biological and medical services. In addition, Haworth has elevated the office dealing with scientific personnel and education, making its head, Bowen C. Dees, an associate, rather than an assistant, director. At the same time, the associate director for research, Randal N. Robertson, was given responsibility for NSF's four national research centers and at least temporary responsibility for the management of the Mohole project. (A final decision on Mohole will be made after receipt of a study now underway on the management of the controversial deep-sea drilling project. The study, which is headed by Emanuel R. Piore, I.B.M. vice president

for research and engineering, is expected to be completed next month. Meanwhile, the Houston engineering firm of Brown and Root, which is contractor for the project, is continuing its design work, after a brief freeze of funds by the Bureau of the Budget. The Bureau is permitting expenditures of up to \$2 million for design, but no hardware is to be purchased until the review is completed.) Finally, Haworth has made a number of other changes, mostly of a housekeeping nature but all designed to pinpoint responsibility and authority and to push both down to the lower levels of the organization.

In connection with this, he wrote a memorandum setting forth his concept of the division of duties in operating the Foundation. For those scientists and administrators who will be dealing with the Foundation, the Haworth concept would seem to hold forth the prospects of frank and uncumbersome relations.

"I believe," Haworth stated, "that it is good practice to delegate, to the greatest extent possible, authority and responsibility for operational decisions and actions. It has been my experience that decisions are best made by those who know most intimately the details of the problem, with due respect paid to established operating policy. This assumes that the individuals who are directing the programs of the Foundation will understand and operate within established policies. It further assumes that they will refer decisions involving deviations from established policies or matters of unusual significance or complexity to an appropriate reviewing unit within the Foundation. In this connection, I consider it desirable to discuss such matters at an early stage when flexibility is possible, rather than to wait and make a rigid proposal for approval or disapproval by higher authority. If all of us conscientiously follow these general principles and boundary conditions in the day-to-day operations of the Foundation, the Foundation, in turn, will meet its obligations to the scientific community and to the country as a whole."

Besides taking steps affecting the inside of NSF, Haworth has looked to the Foundation's external relationships. One of his first official calls was on Representative Albert Thomas, the Texas Democrat who chairs the appropriations subcommittee which passes on NSF's funds. In the past Thomas has talked critically but has responded rather generously to NSF's requests for

funds. But this year his goodwill is of critical importance, for under proposals initiated by Waterman, the Foundation is seeking a budget increase from \$322 million to \$589 million, and it is hoping to undertake a number of new programs that would bring it into new areas of support for science. First of all, it is seeking \$25 million to establish its first trainee program, part of an overall Kennedy Administration program for a large-scale expansion of graduate science and engineering training; and then, NSF is seeking \$33 million for a "science development program" designed to promote the development of "centers of excellence" for graduate training. At the moment, neither house of Congress has completed action on these requests, and, as a result, NSF isn't risking the possibility of raising false hopes by releasing many details. But if the science development program wins congressional approval, it would represent a new and highly significant step in NSF's support for the sciences. For, under the program, existing institutions that show promise but lack support would receive funds that could be used, with few restrictions, for anything from new buildings to faculty salaries. The funds would be allotted for from 3 to 5 years, after which the institution would be on its own. Congress is extremely wary of appropriating money for such across-the-board purposes, and if Haworth fails to sell the legislators on the need for support of this type, he will at least be in distinguished company.—D. S. GREENBERG

Wiesner Hospitalized after Massachusetts Boating Mishap

Jerome B. Wiesner, the president's science adviser, was hospitalized with pneumonitis this week after his sailboat capsized, on 5 September, and left him in the water for 45 minutes near Martha's Vineyard, Massachusetts.

At the time of his rescue, Wiesner was in a state of shock and under the impression that his 10-year-old son, Joshua, who had been sailing with him in the small homemade craft, had drowned. The boy was later brought in by a boat which picked him up while he was attempting to swim to shore. Wiesner, who is 48, was hospitalized at Otis Air Force Base, where he was reported recovering and in satisfactory condition. His son did not require hospitalization.