world of public and governmental policy. I hope that the Committee on National Statistics will work with other groups to establish and maintain a room of its own for statistics in the house of public policy, a room of our own, with a wide, clear view and with lots of doors to the rest of the house.

References and Notes

1. Brief, nontechnical descriptions of many of these economic and demographic indexes, along with descriptions of other statistical activities, are presented in J. M. Tanur, F. Mosteller, W. H. Kruskal, R. F. Link, R. S. Pieters, G. R. Rising, Eds., *Statistics: A Guide to the Unknown* (Holden-Day, San Francisco, 1972).
2. *Federal Statistics: Report of the President's Commission* (Stock No. 4000-0269, Government Printing Office, Washington, D.C., 1971), 2 vols.
3. Those four members are Frederick Mosteller (Harvard University), William Shaw (E. I. du Pont de Nemours & Co.), Stanley Lebergott (Wesleyan University), and myself. The other members of the committee are Douglas Chapman (University of Washington), Cuthbert Daniel (Consultant), Bernard Greenberg (University of North Carolina at Chapel Hill), Morris Hansen (Westat), I. Richard Savage (Florida State University), and Elizabeth Scott (University of California at Berkeley).

NEWS AND COMMENT

NIH Director Stone: Another Manager on Nixon's Health Team

The first thing to say about Robert S. Stone, the new director of the National Institutes of Health (NIH), is that good management is foremost on his mind, just as one might surmise from a look at his curriculum vitae. Stone, who has been dean of the University of New Mexico's School of Medicine since 1968 (he was chairman of pathology before that), has just completed a year's sabbatical at the Alfred P. Sloan School of Management at the Massachusetts Institute of Technology. During his months in Cambridge, he read, attended classes, worked with a few students on their theses, and thought a lot. He says his experience at Sloan was "clearly one of personal renewal."

Stone was hired to be director of NIH because of his experience and interest in management—there is no doubt about that—and because officials of the Nixon Administration believe he will fit in with the health team that is being created. Charles S. Edwards, recently named assistant secretary for health in the Department of Health, Education, and Welfare (HEW), of which NIH is a part, spoke with *Science* about his view of the NIH directorship and the man chosen to fill it. "The head of NIH must understand the ingredients of science, but he need not be a great scientist himself. It is better that he be a good administrator who can provide a stable environment in which scientists can work." Stone basically shares this view of the NIH directorship and says that he and Edwards, whom he never knew until a few weeks ago, get along well. Said Edwards of Stone, referring to reasons for hiring him, "I like his personality. He doesn't come on too strong, but has a firmness about him that is impressive." Stone, 51 years old, is a Republican.

At the NIH "reservation" in Bethesda, Maryland, where campus leaders initially were stunned by Stone's appointment, people seem to be coming around to the opinion that he may be acceptable after all. Until about a month ago, Stone was virtually unknown to the biomedical research community, although many medical school deans know who he is (*Science*, 25 May). To the man, every colleague of Stone's in the fraternity of deans who was contacted by *Science* said the Administration probably had made a good choice. The researchers were less sanguine. Many were, and are, uncomfortable with the thought that Stone is a "manager"—they would have preferred a man of considerable stature as a scientist—and they were a little put out to think that the Administration would name somebody *they* had never heard of. Many were naively hoping the President would appoint another James Shannon to the post. (Shannon was the tough, persuasive leader who built NIH into the research empire it is during the 1950's and early 1960's.)

But those scientists who have had a chance to deal with Stone since his arrival on the scene say they feel much less apprehensive. As one of them remarked, "We were all relieved to discover that he has only one head." Stone, apparently, has convinced at least some of his colleagues that his interest in management does not mean that he is against research and that he has no intention of supervising the demise of the NIH.

This is not an easy time to be the director of the NIH. Money is short and investigators are continually worried about where funds are going to come from. The traditional values of the biomedical community are under attack, and, whether anyone in the Administration really wants to dismantle the peer review system (*Science*, 8 June) or substitute contract research for investigator-initiated studies, it is a fact that people outside the scientific community are asking questions that researchers find threatening.

Robert Stone sees himself as a man who must step into this breach and try to get scientists and administrators to talk to each other. He sees himself as a translator, converting the language of management to a form of English the scientists can comprehend and the language of science to one administrators can understand. Stone's own word for it is "linkage." "My perception of this job, after being here only a few days," he said, "is that there are enormous requirements for linkage."

Stone takes the case of investigator-initiated projects and grant applications as an example. Most biomedical researchers are partial to the grant system and are busy defending this way of supporting research as the one most likely to produce new and imaginative ideas. Persons versed in management, on the other hand, often see this as work that falls into the so-called research for research's sake category, which, in their view, is something this nation can no longer afford—better to conduct research by contract, in which experiments are designed to answer more specific questions.

Stone suggests that the real issue here is one of understanding. "We must dispel the notion that investigator-initiated research is a random, unplanned process that does not have much to do with getting somewhere," he says. "Actually, it is highly planned." As Stone sees it, part of the problem lies in the fact that grant applications, quite reasonably, are written in scientific terms, not those of management. He believes that most grant applications

could be rewritten in management terms as a way of demonstrating to administrators that the research is not as random or far out as it might seem. And, although he is *not* proposing that researchers run out and learn management jargon, he does see the process of translation as a part of his own job.

Stone, who adamantly believes in management training, is concerned that scientists will misunderstand what he means by it. He begins by talking about what he does not mean. When he refers to "management," he does not mean good bookkeeping or fiscal accounting geared to profit-making or a program by which someone at the top controls every action of those underneath. "I'm not trying to control people," he declares emphatically, adding, "All of the things we commonly think of as management won't work if people don't want them to."

Along these lines, Stone explains that there are two kinds of organizational management—top down and bottom up. The former is, perhaps, the more traditional. The man at the top gives an order and, in descending order in the hierarchy, people below carry it out. The latter approach is one in which as many decisions as possible are made by the people who will have to carry them out. Although ideally Stone prefers the bottom up approach, he says it is probably unrealistic to think it will work in an organization as large and complex as the NIH, particularly because NIH is also a part of, and must be responsive to the needs of, HEW as a whole. "I think that NIH will work best with a combination of the top down and bottom up philosophies," he says.

As Stone sees it, "NIH is a system, which is composed of subsystems. It, itself, is part of a larger system, the 'H' [for health], if you will, in HEW. In order to optimize NIH, we have to understand how those systems work." One thing that Stone considers optimal for NIH, and for the biomedical community, is stability. He believes good management can help bring this about.

Stone got into academic studies of management partly because, as dean at New Mexico and as a member of an NIH committee that reviewed institutional grants from the Bureau of Health Manpower Education (which is now being moved out of NIH), he came to the conclusion that many institutions are not well run and that most deans are not adequately trained to handle the administrative responsibilities that go with running a major medical complex.

Among Stone's first forays into the management field was one with the

Laird Return Could Aid Research

The appointment of Melvin R. Laird as counsellor to the President for domestic affairs is expected to bring an improvement in relations between the White House and Congress. It could also mean a dividend for research and other programs in the health field.

A Wisconsin congressman from 1953 until 1969 when he became President Nixon's first Secretary of Defense, Laird was for a decade a member of the House Appropriations subcommittee that handles money bills for health, education, and welfare programs. It was a period marked by spectacular growth for the National Institutes of Health (NIH), and Laird is remembered on Capitol Hill as a Republican member of the subcommittee who "worked hand in glove" with the subcommittee chairman, the late John E. Fogarty, to make NIH fortunes soar.

Laird was a junior partner in the alliance formed by Fogarty, Senator Lister Hill, and NIH director James A. Shannon which engineered an increase in NIH's annual budget from some $100 million in the middle 1950's to about $1 billion a decade later.

Laird's return to public life is, therefore, greeted as good news at NIH where the budget tide has been ebbing. John F. Sherman, who was acting director of NIH during the recent search for a new head and is a veteran of the Shannon era, says Laird in the White House "represents a very hopeful point of view as far as we're concerned. Like John Fogarty, he not only had a great interest but a real understanding [of NIH affairs] . . . although he didn't accept our line without question."

On Capitol Hill Laird is remembered by one majority staff member with long experience of health legislation as "a consummate politician, a bright fellow who did his homework" and who also was expert at turning developments in the health field to the advantage of his district and state.

At the White House Laird takes over from John Ehrlichman who resigned as a result of the Watergate revelations. At this point, however, Laird's impact on biomedical research and health programs is unpredictable. Laird's political experience is regarded as an asset, but his interests and loyalties as a member of the White House staff will be different from those he followed as a congressman. As Secretary of Defense he was judged a staunch advocate of Administration policy and a particularly effective operative on Capitol Hill in behalf of those policies.

Laird's role at the White House will probably depend on how his relationship with the President evolves. This is the first time since the departure of Daniel P. Moynihan that the White House has had a staff member with an independent public reputation as a heavyweight, dealing with domestic policy outside the economic sphere. The impression is that Nixon prefers his staff to offer detailed options on domestic issues rather than strong policy advice. Laird, a political figure in his own right, is thought to have opinions of his own on domestic issues and to be likely to press for them.

In a press briefing on 6 June, Laird displayed a willingness to take a line counter to prevailing White House doctrine. Commenting on the effects of Watergate he said, "The government in some quarters is at a standstill, and this cannot be allowed to continue. That is one of the reasons that I have reluctantly decided to come back to serve the Presidency and to serve our country as a whole."

Biomedical researchers may take heart from Laird's reply when asked what quarters of government are at a standstill. He reminisced briefly about his days with Fogarty when "we created the National Institutes of Health." He went on to say, "We are in a position where some of the health problems are not being discussed as openly and as freely as they should be in the United States. . . we have got to get on with the business of solving these problems."—J.W.

Robert S. Stone

American Association of Medical Colleges (AAMC), which, about 2 years ago, began thinking about creating what has become its "Management Advancement Program" for deans and their associates. Stone refers to it as a good example of what he means by management education and is enthusiastic about the way it has evolved.

A couple of years ago, a group of deans got together to define some of the problems they face and came up with questions such as these: In a complex medical center, full of highly individualistic men and women, how do you get people to work toward institutional goals? How, for that matter, do you set those goals? How do you deal with decision-making processes?

The Sloan School, responding to an AAMC request, prepared a special 1-week management seminar for deans. The first was held about a year ago. Sloan faculty members Edward Roberts, Richard Beckhard, and others talked with the deans about "Moving toward a healthy organization," "Managerial styles and environment," "Strategies for change," "Team development," and "Managing intergroup conflict." So far, participants reportedly have been pleased with it, although it is too early to know whether what they learned will have a long-range effect on their institutions.

At Sloan, Stone studied management in greater depth. He took part in an organizational studies group (which, he says, was made up of persons with backgrounds in organizational and behavioral psychology, among other disciplines), and learned about systems analysis and computer modeling.

(His previous academic work was in medicine and pathology. He graduated from the State University of New York College of Medicine at Brooklyn in 1950 and trained at Columbia University. Later, he taught at the University of California School of Medicine at Los Angeles and was deputy coroner of Los Angeles County. He also served as research pathologist with the Atomic Bomb Casualty Commission in Japan.)

Roberts, who is professor of management at Sloan, describes his institution as a "discipline-based" one that emphasizes the analytical study of management. "We teach principles of organizational psychology, problems of planning and control, systems analysis, and economics, for example," he says. Roberts suspects that scientists do not fully appreciate the "idea that management is a disciplined study, that it deals with a real body of knowledge. We do know some things about getting scientists to work productively and about structuring research," he states.

Stone foresees the emergence of the trained scientist-manager as a new breed of specialist in the biomedical world and says frankly that he thinks it will be better to have medically or biologically trained persons learn about and enter management than to have professional managers assume sole responsibility for running medical and research centers. What it boils down to is this: If scientists cannot learn to manage their various enterprises, somebody else will.

Deans and other administrators who have worked with Stone describe him as a modest man who probably does not expect to revolutionize NIH or be loved by all. His colleagues also say that he is not a charismatic man, but rather a person who works in indirect ways. This view seems to have been borne out by Stone's performance at his first meeting with the Washington press, held in the glare of lights just 2 days after his appointment was officially announced. It was a difficult press conference.

Stone, accompanied by John Sherman, deputy director of NIH, and Robert Berliner, deputy director for science, began the "informal" session by saying that he was willing to be open, to put himself on record at any time. (Several of his colleagues told *Science* that the one sure thing about Robert Stone is that you always know exactly where he stands on an issue.) He then proceeded to spend the better part of an hour deftly dodging most of the questions put to him. To many of the reporters present, he sounded like a political pro, versed in the art of giving nonanswers. Later, he said that he did not think he had been evasive at all but had tried to respond candidly, within the bounds of good sense.

He was asked whether he believes in training grants and peer review—he does—and what he thinks about the current emphasis on cancer and heart research to the detriment of other fields. He says "balance," which is at issue here, is a "subjective" word and that he cannot really speak to the question because it is not in his power to control the situation. He was asked whether he agrees with Senator Edward Kennedy's (D–Mass.) opposition to Administration's health policy and said it was such a broad question he could not possibly answer it. However, even though it is generally true that he failed to give direct answers, it is also true that many of the questions posed were ones that no one could expect him to answer in a public forum after 2 days in office.

What he did say quite clearly, over and over again, is that when a matter is up for discussion, he intends to "participate" actively in any debate within the NIH or HEW and that, privately, he will not be the least bit shy about making his point of view known to Edwards and others. "I need to be a responsible part of this organization if I am to be effective," he declares, "and one cannot expect me to take open op-

position to HEW policy. But I certainly plan to participate."

As a principle, he believes that conflict within organizations is inevitable and that the best way to deal with it is to get it out on the table and face it. (That does not necessarily include the public press.) And, as head of NIH, it is likely he will operate that way. Already, there are some persons who are hoping he does not intend to be *too* frank.

Stone's candidacy for the NIH job cropped up in late April or early May, and the entire process, from first interview to final appointment, took only about 6 weeks. He first came to the attention of HEW and White House recruiters through Merlin K. DuVal, former assistant secretary for health. He was interviewed by Edwards and by undersecretary of HEW Frank Carlucci, who came to that job from the Office of Management and Budget, where he had previously worked with HEW Secretary Caspar Weinberger. Stone saw Weinberger and a White House troubleshooter named John Vickerman. Finally, he met briefly with Richard Nixon on the day his appointment became official. Their conversation was general.

He says he has been given no "instructions" about how to run NIH, that he has no "marching orders." He is reluctant to talk in particulars about what he intends to do because, he says, no one is going to judge him by his intentions, only by his behavior. Thus, anyone who wonders should assume that, because he accepted the job of director of NIH, he supports the institution to which he comes and all that it stands for. But he is not sure what his powers or options as NIH director are, or that they will ever be constant. "As an individual in a role, I suppose I'll continually be testing them," he notes.

This is one of the aspects of Stone's position that the biomedical community is most concerned about. People want to know whether Stone will really be in charge or whether he will have to take orders from above. Stone thinks the situation is, ultimately, far more complex than that and that it is, therefor, an irrelevant question.

—BARBARA J. CULLITON

Mexico (II): Growing Pains for Science Policy Agency

In 30 years of rapid industrial development, Mexico has thoroughly tasted the power of modern technology, virtually all of which, however, it has had to import at considerable cost from the United States and Europe. Now, driven by a new thirst for some technological power of its own, the Mexican government has undertaken an ambitious campaign to strengthen the country's small research establishment and to tie its activities closer to national economic needs. National pride and some serious economic problems form part, but not all, of the impetus behind this drive (*Science*, 15 June). As a government progress report noted last March, the country urgently needs technical specialists in many fields to "select, absorb, and adapt the technology that we import." At the same time, however, a detectable strain of nationalism is evident. As one government science official expressed it, "We are fighting for our technological independence, and we are far behind in the race."

The central instrument in Mexico's attempt to rationalize and mobilize re-research is the National Council of Science and Technology (Consejo Nacional de Ciencia y Tecnología, or CONACYT). Now 2½ years old, CONACYT has compiled a noteworthy record of accomplishment. It is helping to set up several new applied and basic research institutes around the country; hundreds of graduate students are going to school in Mexico and abroad on new government fellowships administered by CONACYT; the agency has arranged a flurry of joint research and technician-exchange agreements with nations on four continents; and a generally improving research environment has enticed a small but significant number of expatriate scientists and engineers to come home.

In the process, the council's activities have touched nearly every aspect of Mexican science. Not surprisingly, its efforts at reform have aroused tensions and suspicions in a small and fractious research system whose instincts for survival have been keenly honed by years of hardship. In recent months the agency has found itself fending off attacks from the press and the scientific establishment, and it has even caught a lashing from President Luis Echeverría himself. On balance, some of the criticism from the scientific community—focusing on the administration of the agency—seems accurate, although some (including Echeverría's) appears wide of the mark. While it would be overstating the situation to say that Mexico's first real experiment in national science policy is in danger of sinking without a bubble, the sailing is anything but smooth.

CONACYT is not the first agency the government has set up to invigorate research, but qualified U.S. observers in Mexico City generally rate its chances of success considerably higher than the agency's several predecessors dating back to 1935. Uniformly ineffectual, they lacked the budget, staff, and political clout to accomplish much. For example, the main function of the council's immediate progenitor—the National Institute for Scientific Research (Instituto Nacional de la Investigación Científica, or INIC)—was to grant some 200 fellowships a year with a budget that never exceeded $500,000. To its credit, though, INIC did conduct a survey of the state of science in Mexico during 1970 which led to its dissolution and CONACYT's formation.

The new council, in spite of its troubles, is clearly in a different league. Its budget reached $8.7 million last year (almost 8 percent of all R & D expenditures), and there is a good chance that it will double this year. Significantly, CONACYT answers directly to the secretariat of President Echeverría (much as the National Science Foundation is tied to the White House staff), thus giving the council, on paper at least, an unencumbered line of authority to an office even more powerful than the American presidency.

One diplomat in Mexico City calls CONACYT's full-time staff of 540 per-