Agriculture: Academy Group Suggests Major Shake-Up to President Ford

In response to a White House request for advice on the world food crisis, a committee of the National Academy of Sciences (NAS) has proposed a major reorganization of the agricultural research system in the United States, including an implicit suggestion that an assistant secretary of the Department of Agriculture (USDA) be relieved of his responsibility for research and that a scientist be appointed in his place.

The report asks for more money for agricultural research, but at the same time is pointedly critical of the quality and present administrative structure of the research system. The committee chairman also criticizes what he sees as the NAS's dilatory response to President Ford's request for advice on how to cope with chronic world food shortages and malnutrition.

The academy committee, known as the Board on Agriculture and Renewable Resources, is chaired by Sylvan H. Wittwer, director of the Michigan State Agricultural Experiment Station. Its report,* transmitted to the White House last month, recommends that USDA appoint a high level administrator, at or near the assistant secretary level, who would "devote his major time and interest to agricultural research." At present, research comes under the Assistant Secretary for Conservation, Research, and Education, Robert W. Long (*Science*, 17 January). A staff member of the NAS committee interpreted the recommendation to mean that the USDA should create a new assistant secretaryship dealing solely with research. Wittwer says it means that research should come under "someone with a background in science and technology," whether he holds the present position or a new one. Long is a banker by profession. Asked if Secretary of Agriculture Earl Butz was likely to fire Long and appoint a scientist in his place, Wittwer replied, "I would hope so."

Asked if he shared this interpretation, Roy Lovvorn, a leading member of Wittwer's committee, said he supposed that would be implied in the recommendation. Lovvorn, who reports to Long, is director of the Cooperative State Research Service, a USDA agency which distributes research monies to the states. "I would hate personally to see the Secretary dispose of Mr. Long, but in the long run you could argue that the research community would be better served," Lovvorn observes.

The administrator of the Agricultural Research Service, Talcott W. Edminster, considers the NAS report in general to be "tremendous." As to its recommendations on an assistant secretary for research, he says he has the highest regard for Long. "Even though he didn't come from a scientific background, he has been a very effective administrator. However," Edminster adds, "if the Secretary were going to put in a man responsible only for research, he should be looking toward a scientist."

Deputy chief of the Forest Service Thomas C. Nelson, like Lovvorn a member of the NAS committee, said he had taken little part in drawing up the recommendations. (The report, however, records no dissents.) Long could not be reached for comment.

The NAS committee has suggested other major reforms to the White House, several of which are fairly critical of the existing state of affairs in the agricultural research system. Much the same set of criticisms were made 3 years ago by another NAS committee, chaired by Glenn S. Pound, but were huffily ignored. Wittwer is confident that all his committee's suggestions are acceptable because he drew them up in close consultation with USDA administrators.

The committee describes the situation it hopes to redress as one in which basic research is neglected and the administrative structure has become outmoded. Because of political pressures from commodity groups and other factors, the once substantial basic research effort mounted by USDA's Agricultural Research System and the state agricultural experiment stations languished for two decades and has now "virtually disappeared." The agricultural research system, both state and federal, has suffered from the "lack of any central means of support review and coordination." It has been slow to incorporate into its planning new research needs such as those relating to energy, the environment, and social factors. When it has tried to respond, "only marginal change in direction is achieved rather than the substantial redirections called for." In addition, the assortment of laws under which agricultural research is funded are "obsolete and impractical," because they create rigidities to flexible planning and distort priorities.

The committee's proposals for reform include the following initiatives:

- USDA, which recently identified 11 major missions, should include research as one of them. Lack of such emphasis has been a major problem in getting research the high level attention and funds that it needs. Many agricultural research administrators, the report notes, believe "that USDA has not been an effective proponent of agricultural research, that it does not now provide for an adequate consideration of the problems and needs of research in its top-level deliberations, and that it lacks administrative and budgeting arrangements that can effectively guide research in response to national and regional needs."
- State and federal support of research related to agricultural productivity, now totaling about $450 million a year, should be increased immediately by 40 percent ($180 million). The increase would restore the buying power of the 1960's, and would allow existing staff and facilities to be used to full capacity.
- Additional funds of some $110 million should be allocated immediately by USDA, the National Science Foundation, and other agencies to ten specific areas of basic research crucial to agricultural productivity. The research areas in need of enhancement include photosynthesis, nitrogen fixation, genetic manipulation by the DNA recombination and other techniques, alternatives to chemical pesticides, and alternative technologies which reduce consumption of energy.
- A program of competitive grants should be initiated and administered by USDA to encourage research in these areas.
- The Cooperative State Research Service, which channels money to the state agricultural experiment stations on a formula basis, should be revitalized so as to play a more active role in the federal-state system. The committee also suggests that the hallowed formula funding system should be reexamined and alternatives considered. CSRS director Lovvorn, a member of the committee, says he agrees with this recommendation. One possible alternative, Lovvorn suggests, would be to maintain formula grants to the states at their present level but distribute any extra funds in the form of competitive grants.
- A National Agricultural Research Policy Council should be set up to establish national policies and goals. The council would include representatives from the other agencies besides USDA that fund agricultural research. It would have the

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power to review agency strategies, but not to control budgets.

Among the committee's specific suggestions for scientific research is a proposal to "focus on ways of decreasing dependence upon chemically synthesized nitrogen fertilizer" and to increase reliance on biologically fixed nitrogen by use of manure and inter-cropping with nitrogen-fixing plants. Asked if he was advocating a return to the principles of organic farming, Wittwer said that "Obviously it relates to the so-called issue of organic farming, but it is broader than that. The use of legumes is becoming a lost technology. That and other techniques of nitrogen fixation are vastly lacking in our nation, and we need to use all the resources we have."

Wittwer seems to have played an unusually active—and maybe effective—role for the chairman of an academy committee. Not only has he drawn up a slate of quite radical suggestions for reform and got the victims to agree to them in advance, but he also intends to follow up on his committee's recommendations and see that they are implemented. "Too many times

House Committee Does Some Stargazing

A congressional committee last summer held hearings that should provide spiritual if not material sustenance for the National Aeronautics and Space Administration (NASA), which is now confined to a "bare bones" annual budget of $3.3 billion and trembling in anticipation of how it will be hit by the President's proposed $28 billion budget cut.

The hearings, published in early November, were on "Future Space Programs" and were held by the space subcommittee of the House Committee on Science and Technology. While the future promises of space may not sway the stony hearts at the Office of Management and Budget (OMB), the testimony at the hearings, conducted by subcommittee chairman Don Fuqua (D–Fla.), made it clear there are plenty of starry-eyed philosophers, scientists, and aerospace officials eagerly anticipating the day when America pulls out of its post-Apollo hangover and once again shows enthusiasm about exploring the universe.

The purpose of the hearings, according to a committee staff member, was to obtain a long-term, philosophically tinged look into space and the future; to provide a sense of direction; and "to prevent a post-Apollo, where-do-we-go-from-here type thing." Right now, NASA appears to feel that the space shuttle, now at the peak of its funding ($1.2 billion in fiscal 1976) is its lifeline to the future, but, as Cornell astronomer Carl Sagan observed, "shuttle represents a capability, not a program." So much thinking remains to be done.

The subcommittee's final report makes it clear that it was not interested in the views of the pessimists and naysayers. Instead it sought a broad range of opinion, not just from the same old aerospace people, but from adventurers and visionaries as well. The result makes for some fairly zippy reading (if any compilation totaling 1404 pages can be so described), heavily larded with what might be called pie in the sky.

Leading off the testimony was publisher and visionary Norman Cousins, who made some inspirational statements about man's need to become "a cosmic species instead of earthbound species," and some bordering on fatuousness, such as: "I think that we cease being unique if we lose our interest in the unknown." Princeton physicist Gerard K. O'Neill submitted a detailed description of his vision of orbiting space colonies (which received a good deal of attention in the press last summer) comprising up to 10,000 individuals luxuriously revolving in an earthlike paradise and getting all their raw materials with the aid of an automated launcher to chew off pieces of the moon.

Writer Arthur Clarke lamented the "failure of nerve" that has prevented us from moving on with orbiting solar power plants, putting heavy industries on Mercury, and developing space colonies, all of which he felt would lead to the uniting of all the people on earth. Krafft A. Ehricke of Rockwell International submitted several hundred pages of plans on how man could follow the "extraterrestial imperative," seeing as how mankind is obviously outgrowing its mother planet. Anthropologist Carleton S. Coon contributed recommendations for selection of candidates for, and social organization of, extraterrestial colonies for maximum comfort and harmony.

There was also plenty of attention given to the expansion of the existing space program: the future of satellite communications, earth resources and weather satellites, gravity-free biological and materials research, planetary probes, solar power transmission, and space science. The hearings contain a preview of the yet-to-be-published NASA study, "Outlook for Space," a year-long, in-house effort to identify and evaluate future possibilities of space.

The hearings were much more a rangy look into the future than an assessment of past and current NASA activities. One of the few contributors who had anything critical to say was John S. Lewis, planetary physicist at the Massachusetts Institute of Technology. Said he, "... the domination of the NASA budget by enormous politically inspired projects such as Apollo, Viking, and the space shuttle ... is ... a serious disservice to those interested in a rational, effective, and productive space program." He criticized the shuttle development schedule for being "unkeyed to payload development milestones," and said, "the peculiar fascination of some people with canals and little green men [on Mars] has led to the enormous leap from the Mariner 9 orbiter to the billion-dollar life-seeking laboratory called Viking." Far more sensible, in his view, would have been the launching of a series of small, inexpensive general-purpose spacecraft to find out what we were looking for first.

The recommendations of the report are fairly general, emphasizing the need for "clear and immediate benefits to the society on earth," and winding up with a recommendation that next year's NASA budget be increased by at least 25 percent.

The Fuqua (pronounced Few-quay) hearings may best be taken as an effort to reignite some congressional and public interest in the space program, and to persuade policy-makers of the need for a steady commitment to offset the wild oscillations in public interest and expectations that were the product of the Apollo program.

While NASA is, of course, pleased with all the attention, there is little likelihood that the hearings will change the budget picture. The agency doesn't have any particularly close friends at OMB, and the President's involvement in space has not extended visibly beyond shaking hands with astronauts. A former NASA official believes the agency is now suffering from unwarranted feelings of inferiority and neglect now that its high glamor days are, at least temporarily, over. He believes NASA administrator James Fletcher is trying too hard to "sell space" and justify the agency's existence on the basis of flashy projects when, in fact, the agency has abundantly demonstrated its worth and—whether or not it gets on television all the time—is obviously here to stay.—C.H.

academy committees have drawn up recommendations which go straight to the archives and never get acted on," Wittwer observes.

Wittwer is also critical of the amount of time the NAS has taken to respond to the President's request for advice on the world food crisis. Ford's letter was received by NAS president Philip Handler on 5 December 1974, and Handler appointed a steering committee to address the charge. According to Wittwer, the steering committee (of which he is a member) had accomplished so little by April this year that he decided to contribute a report from his own committee, the NAS Board on Agriculture and Renewable Resources. The report was completed in 4 months and was available in time to influence the 1977 budget proposals drawn up last month. "Everyone said it couldn't be done, but I have always felt it shouldn't take 2 years to get out an academy report," Wittwer remarks. "We should have got started in December 1974, not in April. Obviously I think action should have been taken earlier but there may have been extenuating circumstances I don't know about."

Handler comments that the contract for the academy's main report was not signed until June, and it was only then that the steering committee could get to work. The circumstances of Wittwer's operation were "completely different" because his was a standing committee already funded, although even he got to work by "spending money in advance we didn't really have."

An interim report from the academy's steering committee was sent over to the White House at the same time as that from the Wittwer committee. The interim report offers a broad overview of how the United States can contribute by research to combating world hunger, and sketches out areas for further emphasis. Study director Joel Bernstein says the three unique features of the report are that it assesses research possibilities in terms of their practical effects, that it picks out eight research areas of special priority, and that it stresses the importance of worldwide collaborative research. Bernstein, a former assistant administrator of the Agency for International Development who joined the NAS this July, says the first 6 months of the year were spent in discussing with the government the terms of what the academy should do. Thereafter, the NAS moved ahead with what he considers "truly remarkable speed." President Ford, if he is still in office then, will receive the academy's final report on what he should do about the world food crisis in June 1977, 2½ years after he asked for it.

Whatever guidance the White House may find in the academy's interim report, the proposals from the Wittwer committee are specific and, in the committee's belief, of urgent priority if the American agricultural research system is to contribute its best efforts to assisting with the long-term world food situation. White House planners may at first glance tend to dismiss the report as the work of another group of scientists requesting more money for their own specialty, but in fact the report can also be seen as an offer by the agricultural research community to make some radical and probably quite painful changes in its traditional system of governance. There are the elements of a deal here which, despite the present political requirement for a tight budget, it would probably be shortsighted to turn down.—NICHOLAS WADE

Energy: Nuclear Critics Say Academy Names a "Stacked" Study Panel

The National Academy of Sciences (NAS) has just established a Committee on Nuclear Power and Alternative Energy Systems to carry out what Philip Handler, the president of NAS, is billing as "perhaps the most important and complex [study] the Academy has ever undertaken." It could also turn out to be one of the Academy's most controversial studies because, while the study committee has the task of producing a report to clarify the issues associated with nuclear energy and foster a consensus of opinion, Ralph Nader and other leaders of the movement to stop or slow down nuclear development already are describing the committee as "stacked" in favor of pushing ahead with it.

Commissioned by the Energy Research and Development Administration (ERDA), the $2 million study will, according to the Academy announcement, "focus on the prospects for the various nuclear power options, particularly the breeder reactor, and compare them with other energy systems, such as liquid and gaseous fuels produced from coal and solar, geothermal, and fusion energy. The study will also address the problem of socio-economic effects of various mixes of energy technologies and of strategies for energy-demand management."

The committee has been established under the Assembly of Engineering of the National Research Council, the principal operating unit of the NAS and its offshoot, the National Academy of Engineering. Its cochairmen are Harvey Brooks, a former dean of engineering and applied physics at Harvard and now a professor there of technology and public policy, and Edward L. Ginzton, chairman of the board of Varian Associates, a company based at Palo Alto, California, which manufactures scientific instruments.

A nuclear engineer by background, Brooks was employed by the General Electric Company during the late 1940's and was a consultant to the Atomic Energy Commission, ERDA's predecessor, during the 1950's. Also, he was a member of the AEC's Ad Hoc Advisory Committee on Reactor Policies which, in January 1959, enthusiastically advocated development of the breeder reactor and of plutonium recycling. Brooks acknowledges that his present attitudes are "on the pronuclear side" but adds that they are not fixed and unchangeable. As for Ginzton, Handler says that neither he nor his company have been significantly involved in nuclear work and that, if anything, Ginzton is probably more interested in solar energy than in nuclear.

Included among the other 13 members of the committee* are several individuals who have been deeply involved in nuclear engineering and development—specifically, the head of the Bechtel Group of Companies, a high official of the Chase Manhattan Bank of New York, the executive vice-president of the Exxon Research and

*These other members are Stephen D. Bechtel, Jr., chairman, Bechtel Group of Companies; Kenneth E. Boulding, economist, University of Colorado; Robert H. Cannon, Jr., chairman, division of engineering and applied science, California Institute of Technology; Richard R. Doell, geophysicist, U.S. Geological Survey; Otis Dudley Duncan, sociologist, University of Arizona; Edward J. Gornowski, executive vice-president, Exxon Research and Engineering Co.; John P. Holdren, associate professor of energy and resources program, University of California, Berkeley; Hendrik S. Houthakker, economist, Harvard University; Henry L. Kohn, radiation biologist, Harvard Medical School; Stanley Lewand, vice-president in charge of the public utilities division, Chase Manhattan Bank; John C. Neess, zoologist, University of Wisconsin; David Rose, nuclear engineer, Massachusetts Institute of Technology; David Sive, New York attorney and specialist in environmental law; and Bernard I. Spinrad, nuclear engineer, Oregon State University.