encourage sustained effort. Today research policies consist mainly in response to different pressure groups. It may be that this is the only true democratic means of arriving at a consensus.

Innovation

Innovation is a chain of different creative processes. It entails turning an invention into a successful practical result. It is an essential element in modern industrial activity. It is the expression of the pressure which is put on scientists today to achieve useful results. In consequence of the growth and the size of the research and development community, pressure is being increasingly put on scientists to produce practical results in a short time. Whether the outcome of such an evolution will be an exploitation of the willingness of society to accept an increasing number of innovations is not certain. We observe that a human community, an industrial group, or even a laboratory does not readily accept changes (*7*). Practical experience shows that industries which are developing thanks to technical innovations are reluctant to change their traditional ways and to accept obsolescence. It seems that pressure for greater practical effectiveness of research and development must be coupled with a change in attitude toward accepting innovations. Often the necessary institutional system for turning inventions into economic successes is lacking.

Global Problems

Science policies are considered mainly on a national level because the funds for their realization are provided by national governments. This limitation gives disproportionate emphasis to the so-called "prestige" projects. Science has no national boundaries, but research and development projects almost always have such boundaries. Is it not strange that private enterprises in different countries should have found ways of establishing international collaboration whereas governments cannot find ways of letting taxpayers' money cross frontiers? One may hope that a new institutional solution will be found which will do away with the difficulties of today's negotiations among countries. It may be that an international science foundation should be set up, inspired perhaps by the National Science Foundation in the United States. Such an organization should get financial resources from all the developed nations, irrespective of what the donor gets in return. Such an institution might really be able to support international research on the earth's atmosphere, on space, on pollution, on natural resources, and on other global problems.

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NEWS AND COMMENT

HEW: The Department That Lost Its Head

The Administration shake-up, which started in the Department of Health, Education, and Welfare (HEW) and culminated last week in the plan for a more potent concentration of management and budget authority in the White House, has defined more clearly than ever how President Nixon intends to wield Executive power.

At the same time, the flurry of firings and resignations at troubled HEW attests the new dimensions of difficulty faced by both politically appointed officials and career bureaucrats who administer federal social programs.

The changes have stimulated an orgy of interpretation, and much speculation has been expended on the translation of Robert Finch from secretary of HEW to presidential adviser. One popular thesis is that Finch the moderate found himself so frequently at odds with White House positions affecting his domain that, because of personal loyalty to the President, he ultimately decided he would rather switch than fight.

Another view is that Finch was unsuited by temperament and talents to mastering the HEW hydra and that his old friend the President rescued him from a situation that was wearing on Finch's reputation and on his nerves. Nixon accentuated the positive in welcoming Finch to the White House inner circle, but administrative performance has been faulted bluntly by Nixon lieutenants in the case of two notable firings of recent weeks, those of Commissioner of Education James E. Allen, Jr., and National Institute of Mental Health (NIMH) director Stanley F. Yolles. There was ambiguity as well as bitterness in both firings, since Allen had publicly questioned United States actions in Cambodia and had earlier expressed views on several educational issues which diverged from those of his Administration superiors. Yolles had been similarly outspoken (*Science*, 12 June 1970), and both men had complained about political interference with the operation of their agencies.

To depict Allen, a political appointee, and Yolles, a career official, as liberal martyrs, however, or to accept the simple verdict that they were bad managers from an Administration that contributed to their difficulties would be to ignore the rich complexity of HEW's inner politics and a new mood in the bureaucracy.

There was a time when bureaucrats in the Office of Education collected statistics and Public Health Service officers ran public hospitals and worked to prevent and control infectious diseases. Since the New Deal, and particularly

since the mid-1960's with the deluge of Great Society social legislation, the scope and spirit of education and health legislation has altered dramatically. In the new health and education programs the principle of equal opportunity is a common theme. And administrators attracted to these new programs usually combine the appropriate professional competence with a sympathy for social action sanctified by act of Congress. As one official expressed it, "We're programmatically politicized."

The tidy idea that government administrators can be divided between political appointees who make policy and career civil servants who administer it, if ever it reflected reality, is now certainly too simplistic to serve.

A Democratic Label

Since most of the new model health and education legislation was enacted under Democratic auspices, the programs and their administrators are identified with the Democrats. When the Nixon Administration took over last year, therefore, it was faced with the question of what to do about the social programs they had inherited and the men running them, many of whom were career civil servants in "nonpolitical" posts.

The Republican approach to the problems of HEW was conditioned by traditional GOP inclination to limit the federal role in health and education affairs, specific doubts about the effectiveness of a number of the HEW programs, and a commitment to control federal spending in nonmilitary areas to counteract the pressures on the economy generated by the costs of the Vietnam war. To complicate things, they found a HEW bureaucracy in a state of disgruntlement that went much deeper than simple uneasiness about the prospect of new management.

HEW has always sheltered too motley an assortment of agencies to have developed any sense of departmental direction or high morale. But some close observers date HEW's current troubles from attempts in 1967 and 1968 by then Secretary John W. Gardner and his successor Wilbur J. Cohen to reshape HEW so that it could better carry the new burdens that Congress had loaded on it. In the health areas of HEW the pattern of growth had been for coexisting and, in a sense, coequal agencies to be established to handle programs for special groups (children, the aged, handicapped, and biomedical researchers, for example).

The Gardner reorganization was an attempt to group activities by function and to overcome some of the resistance to cooperation and coordination and the cutthroat competition for funds that characterized the relations between HEW subagencies. (Congress contributed to sibling rivalries at HEW by casually creating a multitude of new programs and then financing them far below authorization levels.) Health activities were distributed through four main agencies, the Consumer Protection and Environmental Health Service, Health Services and Mental Health Administration, the National Institutes of Health, and the Social and Rehabilitation Service (SRS is located in the Social Security Administration). The breakup of the guild pattern caused reactions ranging from mild insecurity among bureaucrats thrown into contact with strangers to die-hard resistance. A prime example of bureaucratic pertinacity is provided by the Public Health Service Commissioned Corps, the proud career contingent of physicians, dentists, and sanitary engineers whom reorganizers regarded—in the light of new demands on HEW—as an elite that had had its day and should strike its banner and quietly fade away. The Commissioned Corps has conducted a doughty rearguard action which has convinced many that it will outlast the reorganizers.

Bureaucratic infighting is by no means the only source of uneasiness at HEW. Disaffection over the Vietnam war is probably deeper and more widespread in HEW than in any other federal agency. Many HEW employees were attracted to the department by its new social action programs and are "politicized" in a way that makes them a new breed of bureaucrat. They are not drawn to the kind of overt partisan activity that is prohibited in the Hatch Act. Their efforts are directed against the war and in behalf of social programs. Many of them actively reject the concept of the politically neutral government employee and suggest that under the old criteria the perfect civil servant is an Eichmann. Like their contemporaries in the universities, many young professionals are sharply questioning authority. And upper-echelon administrators are grappling in varying ways with demands from dissidents for a share in making policy decisions. HEW staffers say that Gardner and Cohen were good about giving dissenters a hearing but that discontent germinated during their tenure because they were unable to do much about either policy or budget.

Evidence of a new temper in the higher bureaucracy is found in the acrimonious note struck in the exchanges over the departure of Allen and Yolles. The convention of discreet silence among those who jump or are pushed from the executive suites of an Administration, observed so faithfully during the Johnson years, seems to be giving way to candor. Thus, in a way that few anticipated, President Nixon is getting the "open administration" he promised.

Mixed Report on Appointments

To many liberal activists inside and outside HEW, Administration attitudes were symbolized by the long delay in appointing an assistant secretary for health and scientific affairs because of Administration refusal to accept Finch's choice of Massachusetts General Hospital Administrator John H. Knowles (*Science*, 11 April 1969) and by the firing of Leon E. Panetta, director of civil rights in the Secretary's office.

Critics also see the recent naming of Thomas C. Points of the University of Missouri Medical School as principal deputy to Assistant Secretary Roger O. Egeberg as a surrender to the American Medical Association (AMA). Points was the AMA-backed candidate for the top health post during the Knowles impasse, which ended when Egeberg was appointed to the assistant secretary's post. Points will be responsible for health care delivery programs, which is a highly sensitive area these days for both HEW and the AMA. Egeberg, in commenting on the Points appointment, has said only that Points was acceptable to him, leaving the implication that the nod came from the White House.

The replacement of Dr. Joseph T. English as administrator of the Health Services and Mental Health Administration was settled quietly several weeks before the Yolles-Allen explosions at HEW. English leaves at the end of June for the top job in the New York City health services, and he has so far talked about future challenges rather than past frustrations. English, who is still under 40, was something of a *wunderkind* in the Kennedy-Johnson era, and, although Administration officials have muttered some asides about

English's administrative performance, it is generally agreed that English had too clear a Shriver-Kennedy connection and that the Administration wanted its own man in charge of the agency which administers many of the big and politically visible community health programs.

Within HEW, criticism of Administration hiring and firing practices is somewhat muted these days because the Administration's latest choices are generally seen as strong ones.

The new HEW Secretary-designate, Elliott L. Richardson, is widely regarded as potentially the most effective HEW chief in years. Vernon E. Wilson, executive director of health affairs at the University of Missouri, who was picked to succeed English, and Bertram S. Brown, Yolles's former deputy at NIMH who will become his successor, are given high marks by former officials of HEW in the Johnson and Kennedy years who tend to be stern judges.

An earlier Nixon appointee, Charles C. Edwards, chosen to lead a rescue operation at the Food and Drug Administration, reportedly is achieving encouraging results at FDA, which in recent years has been a HEW disaster area.

Mixed feelings also describe the attitudes toward the campaign to evaluate programs and reduce delay and inefficiency in HEW operations by applying modern management practices. Spearheading this effort, which has solid Presidential support, is Deputy Undersecretary Frederick V. Malek, a West Point graduate, Vietnam veteran, and a man who made his million in business in his early thirties and has transferred his considerable energies and zeal for rational management to HEW. So far, Malek and his men have not wrought a managerial revolution at HEW, but they have caused an undeniable impact and considerable anxiety.

One career administrator who is by and large sympathetic to the Malek campaign says that Malek has had teams in the field talking to grant recipients and to people getting services. "They are taking a hard look at how people manage programs and are seriously evaluating them. Any time you begin to look at how well an agency is administering programs, people get upset."

The immediate emphasis of Malek and Co. is to press forward on decentralization to make the point of decision closer to the point of service (*Science*, 10 April 1970). HEW officials acknowledge that there is suspicion both among the ranks of HEW staff and outside the agency that the campaign for better management covers an intention to "foul up substantive programs," as one official put it.

Morale at HEW probably suffers less from a fear of managerial Machiavellianism, however, than from uncertainty about Administration long-term aims. The changes in HEW and in the White House have revealed much more about style than about policy. And it would be fair to say that at HEW, the Nixon Administration is suffering not from a credibility gap but from a policy gap and a communications gap.

When President Nixon introduced Egeberg to the press last year, for example, the President spoke of a crisis in health care and of the urgency of meeting it, but so far the Administration initiatives have mainly taken the negative form of budget cuts.

In its rigorous evaluation of social programs, the Administration seems to be observing the principle proclaimed by the President's shaman for the social sector, Daniel P. Moynihan, that the sheer expenditure of dollars does not necessarily ensure the quality of social programs. But the Administration has so far, except in the welfare area, not unveiled any of its own alternatives.

Both Allen and Egeberg, the Administration's initial choices for operating heads of federal education and health establishments, have complained that they lacked access not only to the President but to key White House aides. In Congress, both Democrats and Republicans concerned with education and health issues have said that the White House has maintained such a low profile on these issues that it's difficult to know which aides are "staffing" them, let alone know which "project manager" is in charge.

The emphasis on better management in HEW is hardly misplaced, and there are strong arguments for a further restructuring of HEW, perhaps along the often suggested lines of further separation of health, education, and welfare functions with the three arms run by undersecretaries with augmented powers and bigger staffs. Finch found himself beset by successive crises over desegregation decisions, pesticides, cyclamates, and oral contraceptives, for example, and never really had time to learn about his department or to ponder fundamental problems and policies. No reorganization of the department or management magic, however, will banish the difficulties of administering HEW's social programs—which inevitably reflect unrest in the society.

—JOHN WALSH

Reshuffling the Bureaucracy: Nixon Proposes Pollution Ocean Agencies

Every President reshuffles the federal bureaucracy a bit, the reshuffling signifying new perceptions of certain national problems or opportunities, shifts in political priorities, and the rise and fall of certain agencies and bureaucrats. Richard Nixon appears to be doing more reshuffling than most Presidents, and later this month he will submit to Congress plans to establish two new agencies—an independent Environmental Protection Administration (EPA) and a National Oceanographic and Atmospheric Administration (NOAA, pronounced "NOAH"), to be under the Department of Commerce.

These plans will take effect unless disapproved within 60 days by either the House or Senate. To judge from the initial reaction on Capitol Hill, neither plan is likely to be vetoed, although each could be modified to meet objections by key legislators. NOAA is intended to provide the new and greater emphasis on ocean science and technology which many members of Congress from coastal states have been calling for. EPA, in part an outgrowth